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CHAPTER 3

EARNINGS RATES IN DIFFERENT INDUSTRIES

1. VARIATION IN PARTICULAR YEARS

IF ONE takes any single year of the period 1919–28 and examines the rates of net income upon capitalization earned by the numerous specific industries into which Manufacture, Trade, Finance and Mining can be divided, he finds a substantial variation. The purpose of the present chapter is to examine the discrepancies that prevail in individual years and to see if they disappear over a period.

In 1919, a year of pronounced post-War prosperity, the average return for the 3,144 Manufacturing, Trading, Financial and Mining corporations belonging to our ten-year series[1] was 17.7 per cent.[2] Dividing Manufacture, Trade, Finance and Mining, however, into specific individual industries or trades such as Bakery Products, Castings and Forgings, or Department Stores, we obtain 73 groups in Manufacturing, 22 in Trade, 5 in Finance, and 6 in Mining, or 106 separate groups in all. These we may call either

[1] The larger corporations for which average figures were discussed in the preceding chapter.
[2] This is not precisely equal to the average given in Ch. 2, Table 2. That figure, 17.1 per cent, was a deliberately weighted average, applied to the sample for the four divisions (see note 5, Ch. 2). The present average of 17.7 per cent is weighted only because it is an aggregate, i.e., is weighted only in the first of the three senses described in note 6. Deliberate weighting of the present average was avoided because of the mathematical treatment to which data that were compared with it were subjected.

'industries' or 'minor groups'.[3] The number of corpora-
tions contained in each depends upon the nature of the
group; it ranges from nine or ten in some groups to 100 or
more in others.[4] But in every case, identical corporations
are classified in the same groups from year to year. Cor-
porations with losses as well as those with gains are thus
included. The classification of industries is given in Table
12.[5]

Examining the average rates of return in these 106 in-
dustries during 1919, we find the median minor group earn-
ing 21.2 per cent, as compared with the arithmetic mean

[3] In contrast to the broader 'major groups', for example, Food Products,
Metals or Retail Trade, to which they belong respectively and which are
discussed in the next chapter.

[4] Three-quarters of the groups, however, contain 16 or more corporations
each. The complete list is given in Table 12.

[5] *In toto*, of course, these 106 minor groups comprise the 3,144 companies
series for which general averages were discussed in the preceding chapter.
See, for qualifications, Ch. 43, 46.

It will also be noted in Table 12 that the numbering of the groups runs
from 1 through 111. This is because of the necessity of combining several
groups into miscellaneous categories in preparing the original *Source-Book*
tables. The numbering scheme of the *Source-Book*, however, is retained in
the present volume, although only 106 separate groups are available for
analysis. (For illustration, consult Table 12 where Group 8 does not ap-
pear separately but is shown in combination with Group 11, as 'Group
11–8'.) The original Group 8 was Cane Sugar manufacturing, but the
sample contained too few corporations to be significant as a separate classi-
fication, hence Cane Sugar was thrown into the Miscellaneous Food Products
category.

It may here also be observed that in the analysis of these 106 groups, the
term 'median industry' or 'median group' is often used because it has a
less abstract connotation than merely 'the median' or 'median value'. By it
is meant the industry that stands in the middle of the list when the 106
groups are arrayed according to their rates of return. To be sure, in an
array containing an even number of items, such as 106, the mid-point is
statistically not item 53 or 54 but 53½. But with the 53rd industry showing
a return of perhaps 12.6 per cent and the 54th industry showing a return
of 12.5, the median is taken as 12.6, which is the value obtained by round-
ing off 12.55 per cent.

When the upper or lower quarter of these 106 industries is discussed,
reference is to the first 27 industries from the top or bottom of the list and
not to an interpolated value.

TABLE 12

MINOR GROUP CLASSIFICATION, 3,144 CORPORATIONS, SHOWING SIZE OF SAMPLES

MINOR GROUP		NUMBER OF CORPO- RATIONS	MINOR GROUP		NUMBER OF CORPO- RATIONS
Manufacturing			35	Book and music publish- ing	17
1	Bakery products	17	36	Job printing	46
2	Flour	32	37	Miscellaneous printing	
3	Confectionery	21		and publishing	17
4	Package foods	19	38	Crude chemicals	9
5	Dairying	26	39	Paints	42
6	Canned goods	16	40	Petroleum refining	52
7	Meat packing	23	41	Proprietary preparations	56
9	Beverages	11	42	Toilet preparations	9
10	Tobacco	23	43	Cleaning preparations	16
11–8	Miscellaneous food products	27	44	Miscellaneous chemicals	26
12	Cotton spinning	12	45	Ceramics	48
13	Cotton converting	18	46	Glass	18
14	Cotton weaving	49	47	Portland cement	21
15	Weaving woolens	31	48	Miscellaneous stone and clay products	27
16	Silk weaving	17	49	Casting and forgings	99
17	Carpets	18	50	Sheet metal	20
18	Men's clothing	25	51	Wire and nails	20
19	Knit goods	42	52	Heating machinery	42
20	Miscellaneous clothing	23	53	Electrical machinery	54
21	Miscellaneous textiles	54	54	Textile machinery	18
22	Boots and shoes	25	55	Printing machinery	12
23	Miscellaneous leather products	29	56	Road machinery	22
24	Rubber products	26	57	Engines	11
25	Lumber manufacture	64	58	Mining machinery	12
26	Planing mills	26	59	General factory machinery	23
27	Millwork	17	60	Office machinery	13
28	Furniture (non-metal)	55	61	Railway equipment	25
29	Miscellaneous lumber products	28	62	Motor vehicles	32
30	Blank paper	35	63	Firearms	11
31	Cardboard boxes	33	64	Hardware	40
32	Stationery	20	65	Tools	30
33	Miscellaneous paper products	23	66	Bolts and nuts	15
34	Newspapers and periodicals	20	67	Miscellaneous machinery	32
			68	Non-ferrous metals	48

TABLE 12 *(continued)*

MINOR GROUP CLASSIFICATION

MINOR GROUP		NUMBER OF CORPO- RATIONS	MINOR GROUP		NUMBER OF CORPO- RATIONS
Manufacturing (cont.)			91	Building material and hardware	13
69	Jewelry	24	92	Paper	18
70	Miscellaneous metal products	45	93–85	Miscellaneous wholesale trade	82
71	Scientific instruments	23	*Trade—Wholesale and Retatil*		
72	Toys	12	95	Commission dealers	
73	Pianos	11	96	Coal, wood and fuel	10
74	Miscellaneous special manufacturing	43	97	Hardware	16
Trade—Retail			98	Lumber	11
75	Automobiles	15	99–95	Miscellaneous wholesale and retail trade	52
76	Men's clothing	17	*Mining*		
77	Department stores	93	100	Bituminous coal	33
78	Drygoods	27	101	Gas and oil wells	11
79	Furniture	12	102	Stone quarrying	9
80	Groceries	14	103	Clay, sand and gravel	9
81	Jewelry	11	104	Metals, various	15
82	Building material and hardware	27	105	Miscellaneous mining, other than metal	11
83	Lumber and coal	15	*Finance*		
84	Miscellaneous retail trade	52	106	Savings banks	18
Trade—Wholesale			107	Commercial banks	30
85	Coal, fuel and wood		108	National banks	105
86	Drugs	25	109	Trust companies	56
87	Drygoods	29	110	Investments, various sorts	
88	Groceries	59	111–110	All other finance (except life insurance)	137
89	Hardware	43			
90	Importers and exporters	23			

figure of 17.7 per cent above cited. But some industries earn more than 40 per cent, while others earn less than 1 per cent. The upper quarter of these 106 industries all show rates of over 29 per cent; the lowest quarter, under 16 per cent. The average departure or 'spread' of all 106 minor groups above or below the median figure is 8.5 per cent[6]—

[6] The expression 'per cent' is here, of course, used in an absolute, not a

a spread equal to about two-fifths as much as the median itself. In appraising these figures, it is of course to be recalled that 1919 was an exceptionally prosperous year.

Turn, however, to a year of depression such as 1921. The median industry here earns only 7.1 per cent on its capitalization. Fifteen groups suffer actual losses. At the same time five others earn 20 per cent or more. The actual variation, in absolute terms, is less than in 1919; the average departure from the median is 5.2 per cent as against 8.5 per cent. But in relative terms the variation between these 106 industries in 1921 is substantially greater than in 1919; their average departure of about 5 per cent from the median represents an amount two-thirds as large as the median figure itself.

Finally, as a third example, take a prosperous year such as 1928. Here the median industry earns 11 per cent. The upper quarter earn 14.8 per cent or over; the lower quarter, 8.5 per cent or under. The average departure from the median is 3.8 per cent, a smaller figure than in either 1919 or 1921. Even so, it amounts to about one-third of the median figure.

These three distributions of earnings rates, together with those for other years, are shown in Chart 3. *In no year is anything approaching a uniformity of return seen between the different industries,* although it is true that in the last

relative, sense. The rate of return upon which attention is fastened in this chapter is the percentage of total net income to capitalization. In some ways, the rate of total profits to total capital (as these terms are defined in Ch. 2 and in the Glossary) would be preferable as a measure of comparative earning power. It is not employed in this chapter because our data show funded debt figures only for 1924–28, and ten–year comparisons are thus not available in terms other than those of total income upon capitalization. The two ratios, however, are not very different for the purpose in hand. On the close correspondence between them see Table 4, Ch. 2; also Ch. 8.

five years of the period the majority (slightly over half) of those 106 minor groups earn between 8 and 15 per cent.[7] The earnings rates of each individual industry, for 1921 and 1928, are given in Table 13.[8]

TABLE 13

EARNINGS RATES, 106 MINOR GROUPS IN 1921 AND 1928, RANGED IN ORDER OF PROFITABLENESS FROM THE LOWEST TO THE HIGHEST FIGURES

Trade Groups are Distinguished from Manufacturing by the Letters R (Retail), W (Wholesale) or W—R (Wholesale and Retail)

1921 PERCENTAGE INCOME TO CAPITALIZATION	*1928* PERCENTAGE INCOME TO CAPITALIZATION
−12.6 Rubber products	1.3 Rubber products
−12.4 Sheet metals	1.5 Weaving woolens
−7.0 Meat packing	3.4 Railway equipment
−6.6 Miscellaneous leather products	4.5 W—Building material and hardware
−5.4 Miscellaneous food products	4.5 Bituminous coal
−3.1 Tools	4.6 Meat packing
−2.9 Miscellaneous metal products	4.7 Cotton weaving
−2.7 W—Paper	4.7 Silk weaving
−2.6 Miscellaneous machinery	5.1 Miscellaneous leather products
−2.5 Stationery	5.1 Blank paper
−2.3 Metals, various	5.1 W—R Lumber
−1.8 Bolts and nuts	5.8 Gas and oil wells
−1.5 W—Hardware	5.9 Pianos
−0.4 Castings and forgings	6.0 Castings and forgings
−0.4 Wire and nails	6.7 Carpets
0.8 Cardboard boxes	6.8 Lumber manufacture
0.9 Beverages	6.9 Engines
1.1 Gas and oil wells	7.4 Groceries
1.4 Miscellaneous R—Trade	

[7] The shape of the distributions varies somewhat from year to year, although in several years a rough approach to symmetry is approximated. Whether or not a symmetrical pattern would be approximated more closely if the samples were larger is debatable; but even so, the ranges of variation would scarcely be narrowed. As to the degree of reliability attaching to the present samples, see Ch. 43–45.

[8] Data for other years may be found in the chapters which contain detailed discussion of particular major and minor groups (the several chapters of Book II).

TABLE 13 *(continued)*

EARNINGS RATES, FROM THE LOWEST TO THE HIGHEST
FIGURES

1921 PERCENTAGE INCOME TO CAPITALIZATION	*1928* PERCENTAGE INCOME TO CAPITALIZATION
1.5 Miscellaneous stone and clay products	7.6 W—R Hardware
1.8 Millwork	7.7 Miscellaneous textiles
1.9 Blank paper	7.9 Miscellaneous mining, other than metal
1.9 Hardware	8.1 Commercial banks
1.9 Non-ferrous metals	8.3 Cotton converting
2.0 Miscellaneous W—Trade	8.3 Millwork
2.0 W—R Hardware	8.4 R—Building material and hardware
2.1 Firearms	8.4 W—Drygoods
2.1 Jewelry	8.5 Planing mills
2.3 Pianos	8.5 Ceramics
2.5 Lumber manufacture	8.5 Metals, various
2.5 W—Building material and hardware	8.6 Beverages
2.6 Groceries	8.6 W—Hardware
3.4 Mining machinery	8.7 Miscellaneous W—Trade
3.8 General factory machinery	9.0 Miscellaneous paper products
4.2 R—Lumber and coal	9.2 Heating machinery
4.3 Miscellaneous clothing	9.4 Miscellaneous food products
4.3 Railway equipment	9.4 R—Department stores
4.7 R—Jewelry	9.4 National banks
4.9 Paints	9.5 Cotton spinning
5.1 Heating machinery	9.7 Dairying
5.3 Miscellaneous paper products	9.7 Miscellaneous W—R Trade
5.3 Miscellaneous chemicals	9.8 Petroleum refining
5.9 Stone quarrying	9.8 R—Furniture
6.0 All other finance (except life insurance)	10.1 Miscellaneous lumber products
6.1 W—Drygoods	10.2 Mining machinery
6.4 Ceramics	10.2 W—Paper
6.4 Electrical machinery	10.4 W—Drugs
6.4 Office machinery	10.5 Furniture (non-metal)
6.6 Confectionery	10.5 Stationery
6.6 Crude chemicals	10.6 R—Lumber and coal
6.7 Men's clothing	10.7 W—Importers and exporters
6.8 R—Building material and hardware	10.8 W—R Coal, wood and fuel
7.0 W—R Coal, wood and fuel	10.8 Stone quarrying
7.2 Trust companies	10.9 Trust companies
7.3 W—R Lumber	11.0 Hardware
	11.2 Knit goods
	11.2 Savings banks

TABLE 13 *(continued)*

EARNINGS RATES, FROM THE LOWEST TO THE HIGHEST
FIGURES

1921 PERCENTAGE INCOME TO CAPITALIZATION	*1928* PERCENTAGE INCOME TO CAPITALIZATION
7.6 W—Drugs	11.4 Men's clothing
8.0 Miscellaneous lumber products	11.8 Glass
8.1 Portland cement	11.8 Sheet metal
8.1 Clay, sand and gravel	11.9 Crude chemicals
8.3 Dairying	11.9 R—Drygoods
8.3 Silk weaving	11.9 All other finance (except life
8.3 Cleaning preparations	insurance)
8.4 Furniture (non-metal)	12.0 Flour
8.4 Motor vehicles	12.1 Book and music publishing
8.5 Printing machinery	12.1 Jewelry
8.7 Road machinery	12.3 Printing machinery
8.9 Flour	12.4 Miscellaneous clothing
9.0 Bituminous coal	12.4 Miscellaneous special manu-
9.0 National banks	facturing
9.1 Canned goods	12.5 Clay, sand and gravel
9.1 R—Men's clothing	12.6 R—Men's clothing
9.2 W—Importers and exporters	12.7 Canned goods
9.4 Cotton weaving	12.8 Cardboard boxes
9.4 Engines	12.8 Portland cement
9.5 Glass	13.4 General factory machinery
9.9 Planing mills	13.5 Miscellaneous machinery
10.3 R—Furniture	13.8 Wire and nails
10.4 Cotton spinning	13.9 Job printing
10.6 Miscellaneous special manu-	14.6 Textile machinery
facturing	14.8 Boots and shoes
10.7 Miscellaneous W—R Trade	14.8 Paints
11.1 R—Automobiles	14.8 Non-ferrous metals
11.2 Toys	15.1 Confectionery
11.4 Weaving woolens	15.1 R—Jewelry
11.4 Boots and shoes	15.2 Tools
11.4 Proprietary preparations	15.2 Miscellaneous R—Trade
11.4 Savings banks	15.6 Tobacco
11.6 Commercial banks	15.6 Miscellaneous metal products
11.7 R—Drygoods	16.1 Motor vehicles
11.9 Cotton converting	16.1 Toys
12.2 Miscellaneous textiles	16.5 Electrical machinery
12.6 R—Department stores	17.0 Road machinery
13.0 Miscellaneous mining, other	17.1 Miscellaneous printing and
than metal	publishing
13.1 Tobacco	

TABLE 13 *(continued)*

EARNINGS RATES, FROM THE LOWEST TO THE HIGHEST
FIGURES

1921 PERCENTAGE INCOME TO CAPITALIZATION	*1928* PERCENTAGE INCOME TO CAPITALIZATION
13.1 Job printing	17.1 Miscellaneous clay and stone products
13.1 Scientific instruments	
13.5 Book and music publishing	17.5 Bakery products
14.5 Petroleum refining	17.6 Package foods
14.9 Package foods	17.7 Office machinery
15.0 Bakery products	17.8 Miscellaneous chemicals
15.9 Carpets	18.2 R—Automobiles
16.5 Knit goods	19.0 Bolts and nuts
21.5 Newspapers and periodicals	19.4 Cleaning preparations
22.6 Textile machinery	19.6 Firearms
24.4 Miscellaneous printing and publishing	21.6 R—Groceries
	21.8 Proprietary preparations
26.1 R—Groceries	25.4 Toilet preparations
29.2 Toilet preparations	26.5 Newspapers and periodicals
	27.3 Scientific instruments

The degree of departure of the earnings rates of these
106 industries from the median figure, in particular years
of the period 1919–28, is highest in 1919, 1920 and 1921.
In all years subsequent to 1921 the relative variation re-
mains almost constant from year to year, at a figure about
equal to one-third of the median itself. These figures—
'coefficients of variation'—are printed with the diagrams of
Chart 3.[9] They indicate that, over the period 1922–28, no
significant change in the extent of the variation between
different industries took place. Chart 4 affords another
measure of the relative variation of earnings in different
years by presenting the 'interquartile ranges' to supplement
the broader figures.

[9] The term 'coefficient of variation' is employed in the sense of the ratio
of the arithmetic mean deviation to the median, and not to represent, as is
more usual in statistics, the ratio of the standard deviation to the arithmetic
mean.

2. VARIATION IN TEN-YEAR RATES

But neither the fact that the variation between industries is less in 1928 than in years before 1922, nor the fact that it remains much the same from 1922 to 1928 affords evidence as to the degree in which the alleged tendency of the return in different industries to approach an equality over a period is realized in practice. For it is conceivable that the several industries might constantly be changing their positions, yet the *average* amount or extent to which their rates varied from the median remains much the same. This might be true even were a pronounced tendency to equality indeed present; for it might be exactly *through* such a shifting of the high industries of one year into the low positions of another year, and *vice versa,* that the aggregate average earnings of a particular industry *for a period* would correspond with those of other industries for the same period. One industry might enjoy prosperity during one set of years, other industries earn above average rates in different years. To reiterate, a marked variation during any given year could conceivably be the mechanism through which approximate equality was realized in the long run.[10]

But is this what takes place? The available evidence would indicate that it is not—at least, over the ten-year period for which we have continuous data.

The 106 industries, the net incomes of each totalled for ten successive years and then divided by the aggregate capitalizations shown by each industry over the ten successive years, display a wide diversity indeed in their 'ten-year

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[10] Were the frequency distributions entirely symmetrical, such shifting as would equalize earnings rates over a period could conceivably result not only in the absolute maintenance of a marked annual variation during the period but also in yearly variation coefficients of exactly the same magnitude.
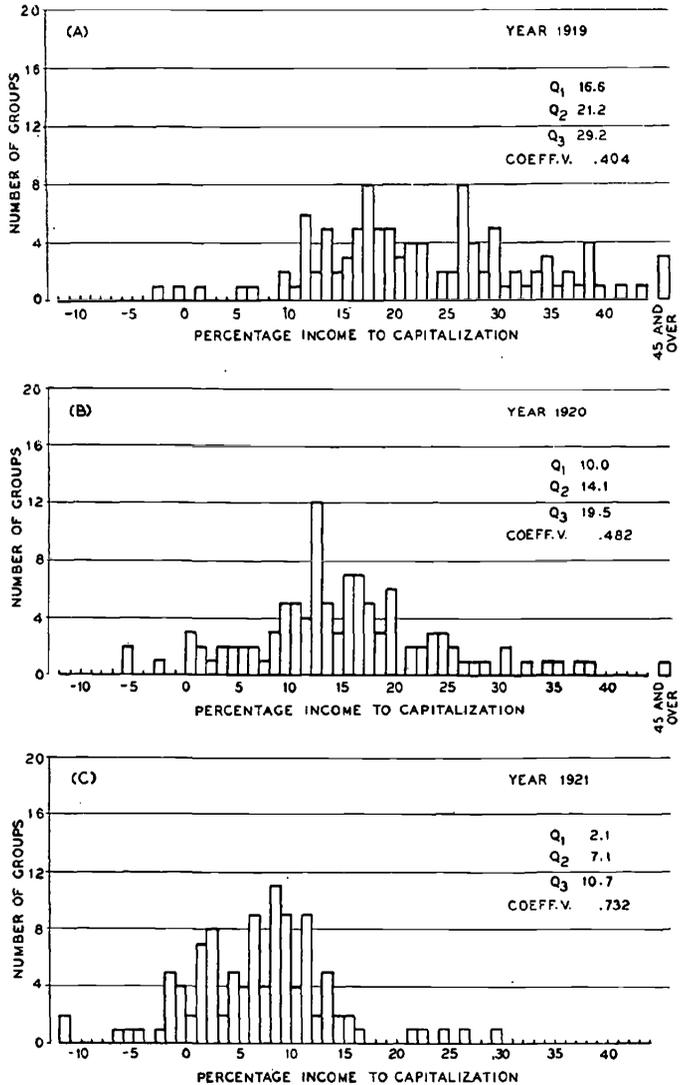
CHART 3
FREQUENCY DISTRIBUTIONS OF PERCENTAGE OF INCOME
TO CAPITALIZATION, 106 MINOR GROUPS

(A)   YEAR 1919

Q_1 16.6
Q_2 21.2
Q_3 29.2
COEFF.V. .404

PERCENTAGE INCOME TO CAPITALIZATION

(B)   YEAR 1920

Q_1 10.0
Q_2 14.1
Q_3 19.5
COEFF.V. .482

PERCENTAGE INCOME TO CAPITALIZATION

(C)   YEAR 1921

Q_1 2.1
Q_2 7.1
Q_3 10.7
COEFF.V. .732

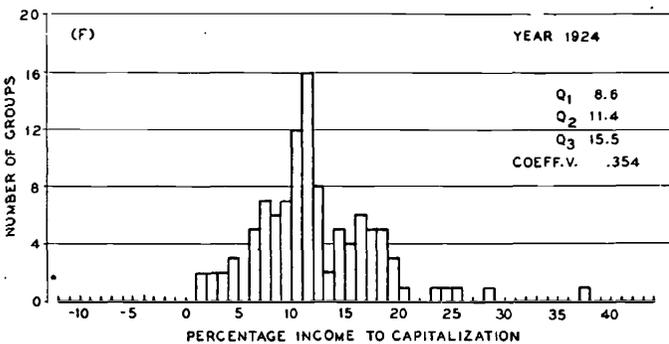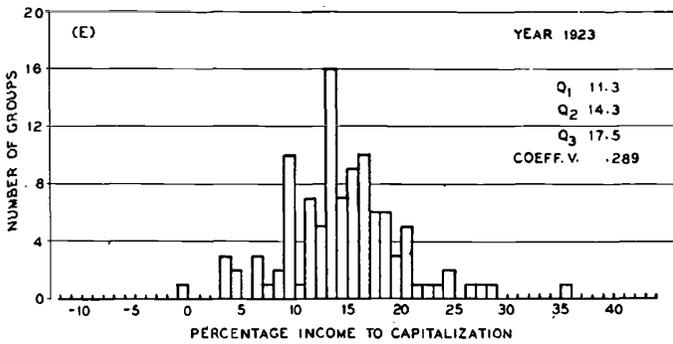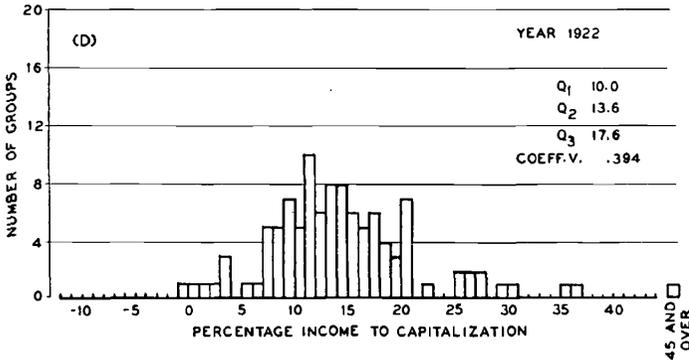PERCENTAGE INCOME TO CAPITALIZATION

CHART 3 (CONT.)

FREQUENCY DISTRIBUTIONS OF PERCENTAGE OF INCOME
TO CAPITALIZATION, 106 MINOR GROUPS

CHART 3 (CONT.)

FREQUENCY DISTRIBUTIONS OF PERCENTAGE OF   INCOME
TO CAPITALIZATION, 106 MINOR GROUPS

(G)   YEAR 1925

Q₁   9.3
Q₂   12.3
Q₃   16.0
COEFF.V.   .326

PERCENTAGE INCOME TO CAPITALIZATION

(H)   YEAR 1926

Q₁   8.9
Q₂   12.5
Q₃   15.5
COEFF.V.   .326

PERCENTAGE INCOME TO CAPITALIZATION

(I)   YEAR 1927

Q₁   8.9
Q₂   10.5
Q₃   13.4
COEFF. V.   .329

PERCENTAGE INCOME TO CAPITALIZATION

CHART 3 (CONT.)

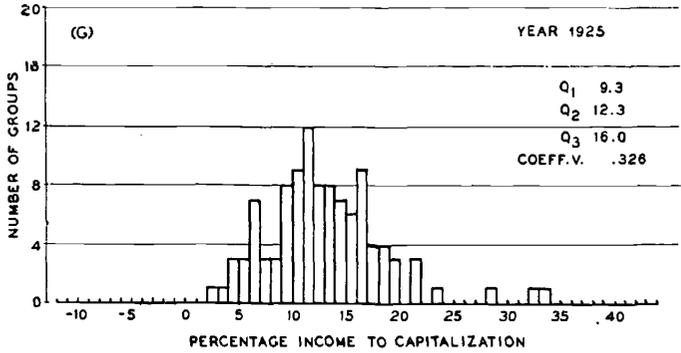### FREQUENCY DISTRIBUTIONS OF PERCENTAGE OF INCOME TO CAPITALIZATION, 106 MINOR GROUPS
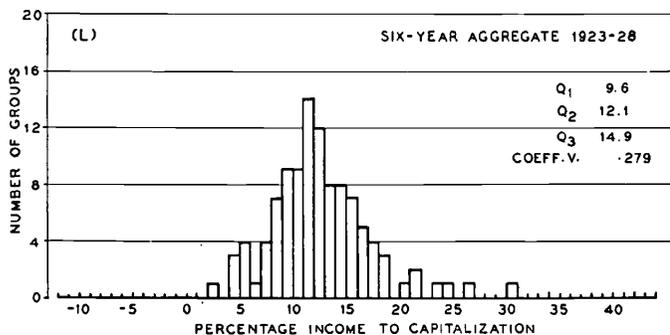

(J)   YEAR 1928

Q_1 8.5
Q_2 11.0
Q_3 14.8
COEFF. V.   .342

NUMBER OF GROUPS

PERCENTAGE INCOME TO CAPITALIZATION

(K)   TEN-YEAR AGGREGATE 1919-28

Q_1 10.6
Q_2 12.6
Q_3 15.4
COEFF. V.   .264

NUMBER OF GROUPS

PERCENTAGE INCOME TO CAPITALIZATION

(L)   SIX-YEAR AGGREGATE 1923-28

Q_1 9.6
Q_2 12.1
Q_3 14.9
COEFF. V.   .279

NUMBER OF GROUPS

PERCENTAGE INCOME TO CAPITALIZATION

rates' of earnings. Some industries, for example, Meat
Packing, Castings and Forgings, or Rubber Products, earn
less than 6 per cent upon capitalization for the period.
Others, such as Scientific Instruments, Newspapers, Toilet
Preparations, earn over 25 per cent. The lowest quarter of
the 106 industries earns under 10.6 per cent; the highest
quarter, over 15.4 per cent. The median return is 12.6 per
cent, as compared with an arithmetic mean of 10.7 per cent.
Chart 3, section K shows the distribution of all of these
'ten-year aggregate' figures.

A comparison of this distribution with those for the sev-
eral individual years of the period (in other parts of Chart
3) does, however, establish the fact that although the ten-
year earnings of the different industries in no sense ap-
proach uniformity, they do vary somewhat less widely than
the earnings rates of any one year. The average departure
from the median, in the case of the ten-year figures, is 3.3
per cent, or about one-fourth of the median itself, whereas
the average departure in individual years is equal to one-
third of the median figure. Likewise the interquartile range
for the period is somewhat less than in all individual years,
save one. Yet, in spite of this, we are not able to conclude
that equality of return in different industries over a period
is at all realized. It is not attained, at least, over the ten-
year period covered by this investigation. All that can be
said is that the rather *wide* discrepancies found in all indi-
vidual years are narrowed somewhat over a run of years.
But so substantial a variation still remains that no 'leveling
mechanism' can be said to operate very effectively, over our
ten-year period.

While we do not have continuous data for any longer
period it will be of interest briefly to examine those for a
somewhat shorter span. The first few years of the period
1919–28 are characterized by rather violent fluctuations in

CHART 4

INTERQUARTILE RANGE, PERCENTAGE INCOME TO CAPITALIZATION, 106 MINOR GROUPS
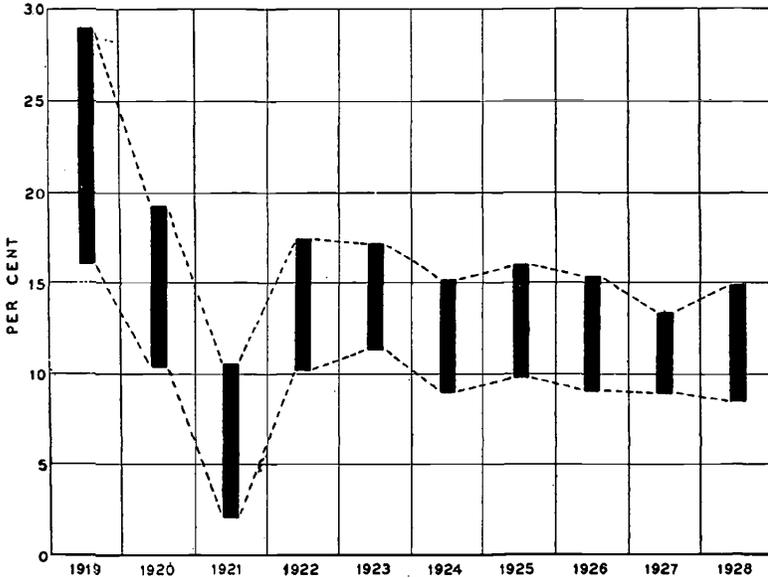
business conditions. On the other hand, the last six years, 1923–28, constitute a period of general expansion, broken by recessions far less severe than during the earlier period.[11] We may, therefore, survey the 'six-year rates' for this relatively stable period and observe to what extent they differ from those for the ten-year figures.

Chart 3, section L shows this distribution. It is to be compared with Chart 3, section K. The six-year distribution is roughly symmetrical: the 106 industries are grouped on either side of the median (which is 12.1 per cent) in a somewhat more regular pattern than in the case of the

[11] This statement refers, of course, to industrial activity and not to security speculation.

other distributions. The quartiles, however, are not very
different, and the coefficient of variation from the median is
only slightly higher than for the ten-year figures.

We leave these distributions without extended comment
at this point. But it seems clear that the 'tendency towards
equality over a period' is scarcely more effective over a ten-
year period than over a six-year one. It would also appear,
so far as the evidence goes, that the distorting influences
which prevent this tendency from actually working itself
out are quite as much in evidence during a stable and pros-
perous period as over a longer period which includes ex-
treme expansion and depression phases (1919–21) in addi-
tion to years of relatively stable prosperity.[12]

3. INVALIDITY OF THE RISK EXPLANATIONS OF DIFFERENT
EARNINGS RATES

Without endeavoring in this chapter to account for the
non-equality of earnings rates which has been established,
we must, however, comment upon one matter. It is fre-

[12] This conclusion contradicts the tentative hypothesis set forth by R. C.
Epstein in Statistical Light Upon Profits, As Analyzed in Recent Literature,
Quarterly Journal of Economics, February 1930, in which it was said:
"Crum (in his *Corporate Earning Power*) alludes to 1926 as 'a fairly
typical year' (p. 138). Probably he is right. In the sense of being relatively
free from price fluctuations, and from customarily accepted boom or depres-
sion characteristics, 1926 was 'normal'. But profits and losses in business
appear not merely during such normal years, but in years less typical as
well. And it may indeed be that the principal distorting elements which
perhaps prevent profits from reaching either relative equality or relative
stability, as between different industries and trades, occur during the *non-
typical* years which every business repeatedly goes through."

Distorting elements which prevent profits from reaching equality do
indeed exist, as our present data show; but they are no more operative in
the entire period under survey than in that portion which contains 'normal'
years chiefly. In fact, upon the basis of the above ranges and coefficients,
they seem even somewhat less operative during the shorter period; but the
margins of possible error in the data prevent attaching much importance to
this slight difference.

quently said that a tendency to equality between the several industries is operative, 'differences in risks considered'. Such statements are loose and betray a misconception of the problem.

Differences in the degree of risk to which industries are subject, to be sure, do exist. If the hazards are susceptible of close estimation in advance, they may be allowed for. The charge then becomes one for insurance and is deducted from gross income before net earnings appear. If, as is more often the case, no actuarial estimate of such risks is possible, then in the profits of any one (good) year there might appear a component that would properly be characterized as compensation for risk, or more accurately, for the uncertainty attaching to the economic circumstances of an industry in any particular year.[13] But here what holds true of the short run is emphatically not true of the long run. An excess of return in any one industry over the average rate in a good year, in so far as it constitutes a risk differential, would be received in order to offset a deficiency of return in a bad year; and if the principle which holds that differences in profits serve to equalize differences in risks were true, the 'differential surpluses' of the good years would, over a period, exactly equal the 'differential deficits' of the poor years.

If this did not occur, then it would always be advantageous to invest capital in the most risky, or rather the most 'uncertain', industries, for they would consistently return earnings (over a time period) at higher than average rates! In other words, the classical doctrine of compensation for risk can properly be applied in the explanation of such differences in earnings rates as exist in any one year, but not in the explanation of discrepancies that prevail over

[13] See Frank H. Knight, *Risk, Uncertainty and Profit* (1921).

a long period. Interpreted correctly, the principle of "the tendency towards an equality of profit rates in different industries differences in risk considered", in so far as it operated perfectly, would result in absolutely *no* differences in returns, extraordinary gains and losses combined, over a period sufficiently long to include years in which the hazards were realized.[14] Accordingly, 'differences in risk' can scarcely be said to account for the variation in earnings shown by the ten-year aggregate rates of the 106 industries here under examination.[15]

4. PERMANENCE OF THE POSITIONS OF 'HIGH' AND 'LOW' INDUSTRIES

The evidence afforded by the discrepancies found to exist among the 'ten-year earnings rates' of different industries may be supplemented by a somewhat less summary set of analyses. Earnings rates in general, we have found, fail to attain equality over a decade. But exactly how great and how continuous are the differences which specific minor

[14] Smith and Ricardo were perhaps not so explicit upon this score as might be desired, but a careful reading of Mill or a fair interpretation of Marshall leaves no doubt as to the logic of the position here taken: differences in risk, if compensated accurately, would equalize, not vary rates of return.

[15] This is not to say that capital is not withdrawn from industries in which, over a ten-year or longer period, it receives remuneration at substantially *less* than 'average' rates; in this sense, continued and recurrent uncertainties may affect the decisions of entrepreneurs just because they are not compensated for. The whole question of the calculation of risk is, however, involved, and in most discussions of it, gratuitous assumption and guesswork have played all too prominent parts. The question of the renewal or non-renewal of capital is again mentioned in Ch. 47.

Professor F. C. Mills, in commenting upon the general argument of the text, agrees that differences in risk do not account for the wide variations in earnings shown by our ten-year figures but suggests that the average return in a risky business might in the long run exceed that in a less risky enterprise, "the differential representing a reward for the high (year-to-year) variability of the return".

groups are able to maintain year by year? Do the influences which in some instances serve to reduce the extreme differential advantages enjoyed by specific industries operate steadily throughout a period or only at certain times? And do any industries manage to escape entirely the 'erosive' influences of competition upon persistently high profit rates?

Numerous statistical measures were applied to our data in an effort to answer these questions as completely as possible. From the several analyses made, two types of approach were finally selected as most suitable for the purpose at hand, in terms of fruitfulness and comparative simplicity alike. Neither method, however, avoids making some demand upon the reader's patience. For the benefit of the non-statistically minded reader, each is explained rather fully.

The first method of approach is to list the 106 industries, for each of the ten years separately, in the order of their respective rates of return upon capitalization in that year. Each list or array is then divided into four equal parts, the points of division being termed 'quartiles'. The 27 industries that are highest in point of net return may be said to stand 'above the first (or upper) quartile'. Similarly, in the list for any year the 27 lowest ranking industries occupy positions below the third (or lower) quartile. The industry at the second (or middle) quartile is the median industry and its rate of return is the median figure.[16]

Thus any particular industry, or set of industries, may

[16] In a series of 106 items the twenty-seventh item (counting from either end of the array) is theoretically merely a point of division between groups and does not, strictly speaking, belong to the group of items above or below it. In order, however, to include all of the 106 industries in the analysis, both the twenty-seventh item and the eightieth item have been included in the groups above the first quartile and below the third quartile. There are thus actually 27 items in each of these two groups, and 26 items in each of the two groups between the median and the upper and lower quartiles. See note 5, Ch. 3.

be compared with the median industry in any one year, or its position relative to the quartiles in any year may be traced throughout the period. The same industry might, of course, stand above the first quartile in one year but below it in another. Both with individual industries and with different sets of industries it is of interest to know not merely whether they consistently remain above the highest (or below the lowest) quartiles in position, but also the *extent* to which either their individual or their averaged rates of earnings regularly stand above or below the median figure. Our first method of measuring the degree and the permanence of profit differentials, therefore, consists of counting the changes in position, and examining the earnings rates, of the various minor groups that consistently remained above or below certain division points in the list.

Of the 106 industries four are to be found above the first quartile in all ten years: Scientific Instruments, Toilet Preparations, Miscellaneous Printing and Publishing, and Retail Automobiles. The first three are manufacturing groups, the last a trading group. The Scientific Instrument group includes 23 corporations, with an aggregate capitalization of 149 million dollars (annual average). Its net income upon capitalization ranges from 13.1 to 33.1 per cent per year. In six years of the ten its rate is equal to twice or more that of the median industry in the same year.[17] In no year does the return fail to exceed the median by about one-half.

In the case of Toilet Preparations the group includes only nine corporations. Their aggregate capitalization annually averages about nine million dollars. But on this capitalization three million dollars or over is earned in six of the ten years. The result is a rate of return that is ordinarily

[17] That is, the coefficient of variation for this one item is always 1.00 or more.

two or three times the median figure in each year. Beyond question, the great differentials enjoyed by the companies in this group rest upon the combination of low manufacturing expense and the high market prices that can be obtained for strongly advertised trade marked products.

The Retail Automobiles group comprises 15 corporations with a total investment of 13 million dollars (annual average). This group's variation from the median rate is in some years much like that of the Scientific Instruments group, but shows greater year-to-year fluctuation. Since 1925, however, its differential advantage has declined. Doubtless this is an instance in which the advantage would not be of permanent character if a period longer than ten years were taken, for we know that the secular trend of motor vehicle consumption has changed during the last half of the period. It is also to be noted that the corporations in question are relatively large for retail trading establishments and may not be very typical of motor car and distribution experience as a whole, even for this period.

Of the Miscellaneous Printing and Publishing group nothing need be said here other than to state that in most years the earnings of the 17 companies involved stood at a figure half as large again as the median.

Table 14 shows the ratios by which the earnings rates of the four groups in question exceeded the median rates. In each case the 'median difference coefficient' represents the difference between the group's earnings rate for the year and the median rate, divided by the median rate for the same year.

Although only four of the 106 minor groups are found above the first quartile in every year, two others, Newspapers and Retail Groceries, remained there in all years of the period save one. Details for these and other groups discussed in this section appear in Tables 14 and 15.

TABLE 14

MEDIAN DIFFERENCE COEFFICIENTS, RELATIVELY PROFITABLE INDUSTRIES [1]

GROUP NAME	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Above first quartile during ten years										
Miscellaneous printing and publishing	.47	2.23	2.44	.92	.31	.55	.74	.53	.66	.55
Toilet preparations	.85	.39	3.11	2.91	1.48	2.30	1.63	1.30	1.58	1.31
Scientific instruments	.56	.57	.85	1.26	1.00	.47	1.35	1.36	1.31	1.48
Retail automobiles	2.86	1.42	.56	1.15	.91	1.22	1.71	.85	.61	.65
Above first quartile during nine years										
Newspapers	.	1.13	2.03	1.64	.87	1.14	.48	1.38	1.17	1.41
Retail groceries	.40	.	2.68	1.01	.55	1.06	.71	.74	1.02	.96
Above median during ten years										
Boots and shoes	.56	.29	.61	.50	.13	.44	.31	.22	.61	.35
Newspapers	.25	1.13	2.03	1.64	.87	1.14	.48	1.38	1.17	1.41
Miscellaneous printing and publishing	.47	2.23	2.44	.92	.31	.55	.74	.53	.66	.55
Proprietary preparations	.31	.21	.61	.92	.35	.72	.71	.78	1.07	.98
Toilet preparations	.85	.39	3.11	2.91	1.48	2.30	1.63	1.30	1.58	1.31
Road machinery	.27	.56	.23	.03	.34	.66	.48	.40	.44	.55
Motor vehicles	.83	.30	.18	.86	.45	.52	.93	.66	.48	.46
Scientific instruments	.56	.57	.85	1.26	1.00	.47	1.35	1.36	1.31	1.48
Retail automobiles	2.86	1.42	.56	1.15	.91	1.22	1.71	.85	.61	.65
Retail groceries	.40	.14	2.68	1.01	.55	1.06	.71	.74	1.02	.96
Above median during nine years										
Furniture	.46	.73	.18	.49	.28	.32	.34	.22	.07	.
Job printing	.	.86	.85	.23	.09	.36	.21	.16	.17	.26
Paints	.28	.17	.	.47	.20	.30	.29	.24	.19	.35
Glass	.38	1.28	.34	.29	.66	.52	.26	.09	.	.07
Textile machinery	.29	.22	2.18	.64	.28	.	.20	.15	.46	.33
Toys	.24	.74	.58	.	.10	.38	.26	.12	.37	.46
Miscellaneous special manufacturing	.24	.28	.49	.49	.24	.04	.	.26	.21	.13

[1] See text for explanation.

The six groups just discussed all maintained positions *above the first* quartile for either nine or ten years. But what is the situation with respect to the groups that remained continuously, or almost continuously, *below the third* quartile?

Only one industry, Meat Packing, persistently retains sufficiently large (negative) differentials to place it below the lowest quartile in all ten years.[18] Regularly over the ten-year period the rate of return in this group falls far short of the median figure. For the ten-year period the aggregate rate of return in Meat Packing is 1.9 per cent as compared with the median group's ten-year aggregate rate of 12.6 per cent.

Four groups remained in the lowest division in every year except one. Two are manufacturing groups, Beverages and Castings and Forgings. The latter contains 99 corporations with an aggregate capital of about $3.4 billion (annual average). On this capital it earns in most years less than 8 per cent. From 1923 to 1928, the degree to which its earnings stand below the median changed hardly at all.

The other two industries that remained below the third quartile in all years except one are mining groups, Gas and Oil Wells, and Metals (ferrous and other). In the case of Gas and Oil Wells, however, the regularly low earnings may be more apparent than real because of the accounting practices in the matter of depletion that are peculiar to this field.[19] It is here somewhat difficult to distinguish the causes of low return due to the aleatory character of the industry from those due to the peculiar circumstances of accounting and valuation methods.

[18] In the case of these negative differentials the 'median difference coefficient' is, of course, the amount by which the group rate falls short of the median, divided by the median figure.

[19] See Ch. 25, where so-called 'discovery depletion' and related matters are discussed.

5. PERMANENT POSITIONS OF GROUPS ABOVE AND BELOW THE MEDIAN

A similar analysis may be made of the comparative profit-ableness of those industries that remained above the median in all years. This set of industries comprises ten groups. If we average their several median difference coefficients, we find that these ten industries regularly earned from about one and one-half to two times the median rate, and that, from 1924 to 1928, the differential scarcely narrowed at all.

If to these ten industries we add the seven that remained above the median in all years but one, we have 17 groups in the 'almost permanently-above-the-median' category.

Take now those groups that remained *below* the median in all years, as well as those which did so in all years but one. In the first category are seven groups, in the second, six. In some instances, for example, in Railway Equipment and in Rubber, declining secular rates of growth in the in-dustry may partly account for the persistently poor show-ing, but in most instances such an obvious explanation is not apparent. The seven groups that remain below the median in all years average a 'median difference' which in most years amounts to at least 50 per cent of the median itself. Data for all groups discussed in this section appear in Tables 14 and 15.

6. SPECIFIC PROGRESS OF THE LEADING GROUPS OF EACH YEAR

Another method of analysis, in our search for measures of the permanence or non-permanence of differences in earnings rates, may now be employed. This is not to isolate the industries that remain above or below any quartile or

TABLE 15

MEDIAN DIFFERENCE COEFFICIENTS FOR RELATIVELY UNPROFITABLE INDUSTRIES[1]

GROUP NAME	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Below third quartile during ten years										
Meat packing	1.17	.98	1.99	.86	.73	.61	.74	.50	.79	.58
Below third quartile during nine years										
Beverages	1.09	.99	.87	.76	.57	.74	.46	.48	.59	:
Castings and forgings	.46	:	1.06	.85	.52	.59	.54	.38	.59	.45
Gas and oil wells	.76	:	.85	1.08	1.13	.89	.84	.69	.72	.47
Metals (mining)	.93	.91	1.32	.96	.78	.78	.62	.61	.64	:
Below median during ten years										
Meat packing	1.17	.98	1.99	.86	.73	.61	.74	.50	.79	.58
Beverages	1.09	.99	.87	.76	.57	.74	.46	.48	.59	.22
Miscellaneous food products	.18	.51	1.76	.43	.35	.15	.45	.27	.35	.15
Castings and forgings	.46	.26	1.06	.85	.52	.59	.54	.38	.59	.45
Railway equipment	.20	.25	.39	.47	.06	.26	.57	.39	.49	.69
Gas and oil wells	.76	.23	.85	1.08	1.13	.89	.84	.69	.72	.47
Metals (mining)	.93	.91	1.32	.96	.78	.78	.62	.61	.64	.23
Below median during nine years										
Rubber products	.10	.85	2.77	.74	.58	.36	:	.31	.37	.88
Blank paper	.38	:	.73	.51	.31	.08	.44	.47	.48	.54
Wholesale drygoods	:	.62	.14	.15	.12	.35	.26	.45	.17	.24
Wholesale hardware	.01	:	1.21	.32	.98	.40	.30	.38	.29	.22
Wholesale paper	.15	:	1.38	.27	.07	.07	.15	.33	.23	.07
Wholesale groceries	:	.67	.63	.15	.23	.05	.24	.38	.11	.33

[1] See text for explanation.

other division point *throughout* successive years, but to take
the highest or the lowest industries of each year and, what-
ever their positions in succeeding years, ascertain the degree
to which they maintain or lose their advantage or disad-
vantage.

Specifically, we take the 27 highest ranking industries in,
say, 1919 (those above the first quartile) and tabulate the
amount by which the return in each exceeds the median rate.
We then total these differences and divide by the number of
industries (27). This gives us the average amount by which
the return of the 27 industries exceeds the median rate. To
illustrate, in 1919—a highly prosperous year—the median
return is 21.2 per cent. Some of the highest 27 industries
earn over 45 per cent, others around 30 per cent; they aver-
age an earnings rate of 37.5 per cent as compared with the
median of 21.2 per cent. The average departure from the
median, as we have termed it in another connection earlier
in this chapter, we may now, in accordance with the lan-
guage of statistics, term the *average deviation.*[20]

But for purposes of comparison with the deviations pre-
vailing in other years, such an average deviation can best
be expressed as a ratio to the median itself. In this instance
we regard the difference of 16.29 not as 16.29 but as about
three-quarters (.77) of the median rate, 21.2. Again in the
language of statistics this figure of .77 we may term the
coefficient of variation. It expresses the degree to which
the several rates of earnings in the 27 highest industries

[20] Deviations may, of course, be based upon other averages than the
median as statistically conversant readers are aware. To such readers
much of the explanation contained in this and other chapters of Book I
will prove somewhat tedious because of its elementary character. But in
view of the needs of other readers, some prolixity of explanation as well
as a relative simplicity of statistical methods seems desirable, at least
throughout Book I. However, for the sake of accuracy of expression, it is
perhaps wise to employ the terminology of statistics in most instances where
repeated use is made of the same statistical device.

vary, on an average, from the median rate. It will be noted
that this comparison is relative rather than absolute—the
median is divided into the average of the deviations from
it, and the resulting coefficient simply shows *the proportion
of the median which the average deviation is*. For this rea-
son, coefficients of average deviation afford better compari-
sons, between data of different years, than do the absolute
deviations themselves, and will thus be employed through-
out the remainder of this chapter.

We take, then, the industries that are the 27 highest in
point of earnings in 1919, and analyze the earnings rates of
those same industries in each of the succeeding nine years.
If a tendency towards equality between different industries
were effective, the coefficient of variation for these 27 indus-
tries would steadily decline, and to the extent that this
tendency operated perfectly, would approach zero. Chart 5
shows that the coefficient does indeed decline at first; during
the first five years the excessively large variation of these
27 groups' earnings from the median rate is reduced. The
ratio falls from .77 in 1919 to .33 in 1923. But from 1923
through 1928 the average advantage of these 27 industries
is consistently maintained; their earnings are always from
.33 to .46 in excess of the median figure (that is, are from
1.33 to 1.46 times it). The course of these coefficients may
be traced in Chart 5, while Table 16 gives them in numerical
form.

In similar fashion coefficients are computed for the 27
industries that stood highest in 1920 (some of which were
found above the first quartile in 1919, others not), and
these same industries are then followed through the remain-
ing years of the period.

Exactly the same analysis is applied to the highest indus-
tries of 1921, 1922, 1923 and 1924 respectively. The re-
sults of the several analyses, data for all of which are

CHART 5
COEFFICIENTS OF VARIATION OF 27 HIGHEST MINOR GROUPS
IN EACH YEAR, 1919-24, FOLLOWED THROUGH SUCCESSIVE YEARS[1]
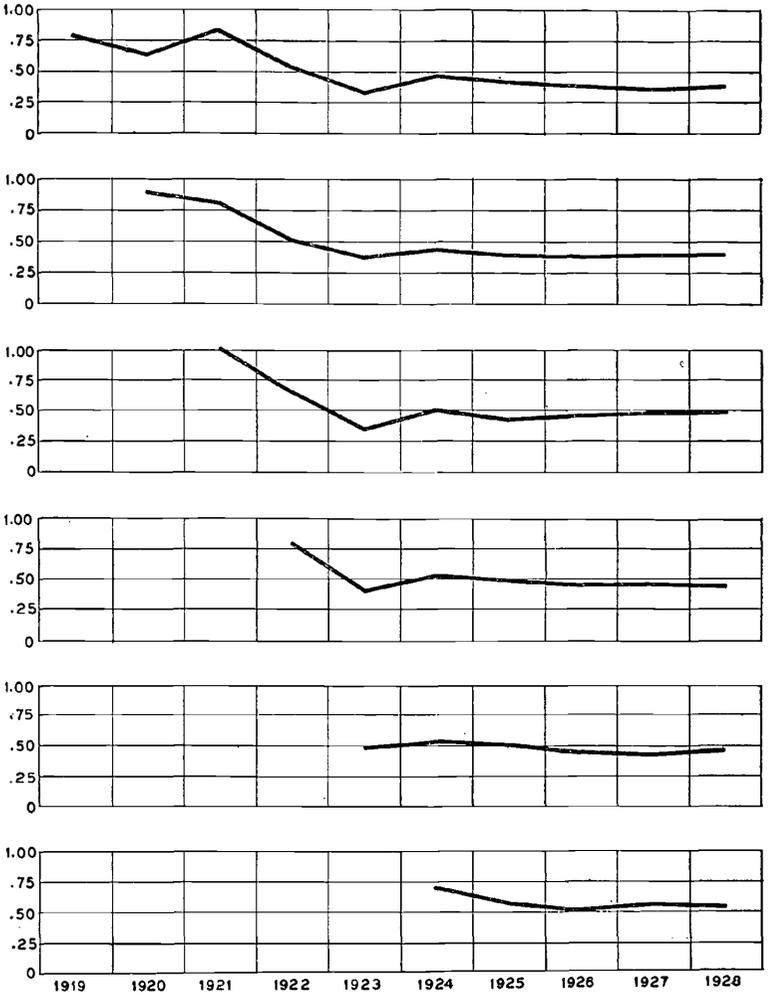
^{1}SEE TEXT.

TABLE 16
AVERAGE DEVIATIONS AND COEFFICIENTS OF VARIATION FOR PERCENTAGES OF NET INCOME TO CAPITALIZATION, 27 HIGHEST MINOR GROUPS[1]

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Average deviation	16.289	8.863	5.878	7.259	4.737	5.241	5.211	4.856	3.930	4.230
Coefficient	.768	.629	.828	.534	.331	.460	.424	.388	.361	.385
Average deviation		12.759	5.659	7.000	5.541	4.985	5.026	4.833	4.319	4.470
Coefficient		.905	.797	.515	.387	.437	.409	.387	.396	.406
Average deviation			7.900	8.707	5.081	5.604	5.244	5.748	5.281	5.419
Coefficient			1.113	.640	.355	.492	.426	.460	.484	.493
Average deviation				10.741	5.778	5.930	5.933	5.719	5.070	4.978
Coefficient				.790	.404	.520	.482	.458	.465	.453
Average deviation					7.111	5.967	6.311	5.807	4.770	5.252
Coefficient					.497	.523	.513	.465	.438	.477
Average deviation						8.137	6.948	6.341	6.022	5.896
Coefficient						.714	.565	.507	.552	.536

[1] See text for explanation.

shown in Chart 5 and Table 16, are identical in that the earnings differentials are in all cases permanent. In the three series starting before 1922 a marked decline in the coefficient takes place after 1921, but in nearly all of the series the coefficients exhibit no appreciable fall from 1923 on.

That the coefficients in several instances do show a substantial decline after the first year or two might seem to indicate that competition, while not serving to equalize profit rates, reduces excessive discrepancies. But a careful examination of these figures, and other rather complicated data related to them, reveals that two fortuitous factors are mainly responsible for the initial, but really specious, declines in the coefficients. The first is the presence, in any given year, of a few very high earnings rates enjoyed by industries that are not persistently 'big money-makers'. The second is the excessively low average or median rate of earnings in 1921. A coefficient of variation affords a better measure of relative disparities than does the mere average deviation itself, but the coefficient may nevertheless be unstable and misleading if considered apart from fluctuations of the average on which it is based. In this case, that average is the median return for our 106 groups, and this figure fell from 21.2 in 1919 and 17.9 in 1920 to 7.1 per cent in 1921. It then jumped to 13.6 per cent in 1922.

In other words a large part of the explanation of the initial fall in the coefficients of Table 16 is that a year of depression such as 1921 brings about temporarily *greater* relative differentials in the standing of profitable industries relative to the median group because the latter in such a year shows a very much lower figure.[21] When recovery occurs the following year, the median return rises more sharply

[21] Mrs. John D. Sumner has given valuable criticism and aid in the interpretation of the misleading initial declines of these coefficients.

than the earnings rates of the most profitable groups (in general); and the relative differential between the median and the rates of the 'high groups' is reduced—not because the earnings rates of the latter (in general) *decline* but because the median rate rises. Competition does not greatly reduce the earning power of the high groups, but general cyclical improvement disproportionately enhances that of the others. This is evident if one glances at Table 17. The median increased from 7.1 in 1921 to 13.6 in 1922, or nearly doubled. (Similarly, the arithmetic mean of the 106 groups jumped from 4.4 to 10.6.) The average earnings rates of the 27 groups which were highest in 1921, however, increased only from 15.0 to 21.8, or by less than one-half.

As final evidence that the initial declines in the coefficients are largely spurious, so far as signifying any very effective tendency towards an equality of profit rates is concerned, we may 'run back' all of our computations into earlier years, that is, in the case of the ten industries that were highest in 1920, calculate their average deviations and coefficients for 1919; similarly, in the case of the highest industries for 1921, calculate their coefficients for 1920 and 1919, etc. When this is done, the 1919 coefficients for all series are much smaller than those for 1921; most of them are roughly half as large. And, roughly again, all of the 1919 coefficients are the same size as the 1928 figures. In other words, no marked reduction in the average deviation of any of these series from the median, in relative terms, took place over the ten years in question. Table 18 repeats the data of Table 16, but contains, in addition, data for the years preceding that in which the industries of each series are the ten highest. The figures for that year—the year of origin for each series, as it were—are shown in italics.

We are thus forced to conclude that the industries in which earnings exceed the median return by the largest rela-

TABLE 17

AVERAGE EARNINGS RATE, 27 HIGHEST MINOR GROUPS IN EACH YEAR 1919–28, TRACED THROUGH SUCCESSIVE YEARS AND RUN BACK THROUGH 1919

(Arithmetic mean and median figures shown first are for all 106 groups)

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
1919										
Arithmetic mean	17.1									
Median	21.2									
Average rate, 27 groups	37.5	17.9	9.6	19.4	16.9	13.6	15.7	14.6	13.8	13.1
1920										
Arithmetic mean		11.6								
Median		14.1								
Average rate, 27 groups	27.0	26.9	8.7	17.9	17.3	14.2	15.1	14.5	12.5	13.1
1921										
Arithmetic mean			4.4							
Median			7.1							
Average rate, 27 groups	27.8	16.9	15.0	21.8	18.1	15.5	16.2	15.7	14.6	14.2
1922										
Arithmetic mean				10.6						
Median				13.6						
Average rate, 27 groups	29.8	17.8	13.4	24.3	19.7	17.0	17.2	16.8	15.0	14.8
1923										
Arithmetic mean					10.9					
Median					14.3					
Average rate, 27 groups	27.8	20.4	11.6	22.7	21.4	17.2	17.7	17.2	14.8	14.6

1924										
Arithmetic mean						9.6				
Median						11.4				
Average rate, 27 groups	27.4	17.8	11.7	20.8	19.7	19.5	18.8	18.6	16.3	16.2
1925										
Arithmetic mean							11.3			
Median							12.3			
Average rate, 27 groups	27.0	16.7	10.5	21.1	19.1	18.0	19.7	19.0	16.7	16.3
1926										
Arithmetic mean								11.5		
Median								12.5		
Average rate, 27 groups	27.2	16.4	10.0	20.3	18.8	17.1	18.6	19.6	17.1	17.0
1927										
Arithmetic mean									9.8	
Median									10.9	
Average rate, 27 groups	27.0	17.0	10.9	20.0	18.5	17.2	19.0	19.2	18.3	17.5
1928										
Arithmetic mean										10.7
Median										11.0
Average rate, 27 groups	26.8	15.9	9.3	18.6	17.6	16.6	18.4	19.0	17.2	18.2

TABLE 18

AVERAGE DEVIATIONS AND COEFFICIENTS OF VARIATION FOR PERCENTAGES OF NET INCOME TO CAPITALIZATION, 27 HIGHEST MINOR GROUPS[1]

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Average deviation	16.289	8.863	5.878	7.259	4.737	5.241	5.211	4.856	3.930	4.230
Coefficient	.768	.629	.828	.534	.331	.460	.424	.388	.361	.385
Average deviation	10.322	12.759	5.659	7.000	5.541	4.985	5.026	4.833	4.319	4.470
Coefficient	.487	.905	.797	.515	.387	.437	.409	.387	.396	.406
Average deviation	9.422	6.837	7.900	8.707	5.081	5.604	5.244	5.748	5.281	5.419
Coefficient	.444	.485	1.113	.640	.355	.492	.426	.460	.484	.493
Average deviation	11.041	7.204	6.693	10.741	5.778	5.930	5.933	5.719	5.070	4.978
Coefficient	.521	.511	.943	.790	.404	.520	.482	.458	.465	.453
Average deviation	10.096	7.752	6.163	9.078	7.111	5.967	6.311	5.807	4.770	5.252
Coefficient	.476	.550	.868	.668	.497	.523	.513	.465	.438	.477
Average deviation	9.152	9.085	5.681	7.856	5.763	8.137	6.948	6.341	6.022	5.896
Coefficient	.432	.644	.800	.578	.403	.714	.565	.507	.552	.536

[1] See text for explanation.

tive amounts in any one year lose no significant part of their high relative earning power over a six-, eight- or even ten- year period. Indeed except for such temporary changes in average levels of earnings as accompany a year of marked depression, they retain a rather constant measure of advan- tage. This dictum does not necessarily apply to every indi- vidual industry that enjoys a large advantage in a particular year, but is based upon averages illustrative of the general situation.[22]

Much the same sort of process is at work in the case of the industries which stand, not highest, but lowest in each year. Taking the 27 minor groups standing under the lowest quartile in 1919, we find their coefficient of variation to be .50. By 1922 it falls to .37, but it continues regularly to stand at about that figure. Table 19 presents the data for the 1919 'low' groups and those starting with other years.

In the second and third of these cases, those of the indus- tries standing lowest in 1920 and 1921 respectively, there is a sharp fall in the coefficient after one or two years— that is, the average return in the 'low' industries rises greatly. But for the remainder of the period this return remains definitely and steadily below the median rates. In the case of the last three series, those starting in 1922, 1923 and 1924 respectively, the fall (denoting an increase in the relative prosperity of the 'low' industries) is not so marked. Perhaps this is because 1922–24 were not as extreme years, cyclically speaking, after which readjust- ments could be expected to take place, as were 1919–21.

[22] Although these coefficients are derived from arithmetic means, they are not as non-typical as most arithmetic averages. It is to be noted that the selection of the items is such that *all* the components of each series stand above the first quartile in the initial year. Thus the mean of the deviations from the median is not so much influenced by the presence of extreme variants from the central figure, or by an extreme range, as it would be were all items of the entire range employed as components—as was done in some earlier sections of this chapter.

TABLE 19
AVERAGE DEVIATIONS AND COEFFICIENTS OF VARIATION FOR PERCENTAGES OF NET INCOME TO CAPITALIZATION, 27 *LOWEST* MINOR GROUPS[1]

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Average deviation	10.530	6.556	4.019	5.004	4.448	3.719	3.959	4.119	4.081	3.615
Coefficient	.497	.465	.566	.368	.311	.326	.322	.330	.374	.329
Average deviation		9.674	5.285	4.544	4.204	3.915	3.581	4.252	3.826	4.022
Coefficient		.686	.744	.334	.294	.343	.291	.340	.351	.366
Average deviation			8.763	5.737	4.993	3.570	4.185	3.819	3.504	3.856
Coefficient			1.234	.422	.349	.313	.340	.306	.321	.351
Average deviation				6.896	5.589	3.985	4.037	3.930	3.693	3.852
Coefficient				.507	.391	.350	.328	.314	.339	.350
Average deviation					6.485	4.207	4.141	4.122	3.304	3.622
Coefficient					.453	.369	.337	.330	.303	.329
Average deviation						5.367	4.470	4.881	3.589	4.215
Coefficient						.471	.363	.390	.329	.383

[1] See text for explanation.

Our conclusion here is thus more tempered than in the case of the highest ranking industries above discussed, but it remains true that the industries showing low earnings in any one year, while tending to lose *some* of their disadvantage, still permanently retain a substantial and rather constant measure of disadvantage.

If, as corroborative evidence of a more extreme sort, we perform similar analyses upon, not the 27 highest or lowest of our 106 industries, but upon the *ten* highest and lowest groups of each year, we again obtain approximately the same results. These are presented in Tables 20 and 21. The coefficients are, of course, larger. The initial declines that occur are sharper. But even towards the ends of the several spans of years in question the coefficients never go below .24, and the advantage or disadvantage of both sets of groups is permanent for the period. Here again the sharp initial declines suggest that competitive influences, cyclical readjustments, technological changes, and consumption shifts all do indeed force *some* reduction of extreme differentials, whether positive or negative. But the regular persistence of the coefficients above zero also affords clear evidence that competitive influences do not serve to bring about equality, over the period of years under survey, in different industries. Whether any greater tendency towards such an approximate equality would assert itself over longer than a ten-year period cannot, of course, be told.

Undoubtedly the highly specialized character of much fixed capital in modern industry, making it difficult if not impossible to withdraw all of the capital of an enterprise over a ten-year period, is one factor that prevents whatever 'tendencies towards equality' that may exist from becoming effective. Many enterprises that do not earn returns at rates that accord with the expectations of their owners still continue in business, for a smaller return is better than

TABLE 20

AVERAGE DEVIATIONS AND COEFFICIENTS OF VARIATION FOR
PERCENTAGES OF NET INCOME TO CAPITALIZATION,
10 *HIGHEST MINOR GROUPS* [1]

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Average deviation	24.25	7.51	5.08	9.76	5.83	6.89	7.02	5.40	4.46	4.54
Coefficient	1.144	.533	.715	.718	.408	.604	.571	.432	.409	.413
Average deviation		19.86	6.73	8.46	6.15	5.26	5.38	5.07	4.71	4.41
Coefficient		1.409	.948	.622	.430	.461	.437	.406	.432	.401
Average deviation			12.96	14.88	7.47	8.02	6.06	7.49	7.61	6.90
Coefficient			1.825	1.094	.522	.704	.493	.599	.698	.627
Average deviation				18.21	10.02	9.35	10.02	9.43	8.38	8.79
Coefficient				1.339	.701	.820	.815	.754	.769	.799
Average deviation					11.27	9.41	8.79	8.08	6.69	7.34
Coefficient					.788	.825	.715	.646	.614	.667
Average deviation						12.24	8.83	8.40	8.22	8.02
Coefficient						1.074	.718	.672	.754	.729

[1] See text for explanation.

TABLE 21

AVERAGE DEVIATIONS AND COEFFICIENTS OF VARIATION FOR
PERCENTAGES OF NET INCOME TO CAPITALIZATION,
10 *LOWEST* MINOR GROUPS[1]

	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928
Average deviation	15.25	8.19	5.69	8.07	8.00	6.15	6.60	5.80	5.49	3.77
Coefficient	.719	.581	.801	.593	.559	.539	.537	.464	.504	.343
Average deviation		14.87	7.94	6.30	6.07	6.62	5.68	6.67	5.96	5.87
Coefficient		1.055	1.118	.463	.424	.581	.462	.534	.547	.534
Average deviation			12.88	6.92	5.43	3.24	3.66	3.71	2.62	3.70
Coefficient			1.814	.509	.380	.284	.298	.297	.240	.336
Average deviation				10.35	8.31	5.69	5.86	5.18	5.02	4.30
Coefficient				.761	.581	.499	.476	.414	.461	.391
Average deviation					9.86	6.14	5.95	5.34	4.84	3.89
Coefficient					.690	.539	.484	.427	.444	.354
Average deviation						8.00	6.99	6.78	5.06	4.51
Coefficient						.702	.568	.542	.464	.410

[1] See text for explanation.

none at all; were production entirely abandoned, all fixed capital investment of a specialized character might be completely lost. In extreme cases operations may be continued for considerable periods even though the product is sold at an absolute loss, if prices that repay something more than prime costs (direct labor and material) are realized.

Then, too, under the corporate form of enterprise, reorganization is far more frequent than liquidation. Old enterprises are not discontinued in one field and new ones readily started in another. The old shell—the framework of the enterprise—continues; but policies are drastically altered, methods are changed, executive personnel is replaced. The corporation may remain in the same industry, but its activities are reorganized and reoriented. New types of product within the same general field may be developed; and these new products or methods may prove no more successful competitively than their predecessors. At all events, it is often a long time before an unsuccessful corporation gives up the struggle entirely. Even then, the enterprise frequently disappears in name only; if the establishment is of any size, it may be absorbed by, or merged with, some other concern.

When reorganizations or mergers of this sort take place, 'capital values' are written down on the books of the unsuccessful corporation, or the fact of failure to earn a satisfactory return is recognized by the payment of far smaller amounts, in cash or stock, for the securities of the unsuccessful companies, than the sums that have been invested in them. In other words, declines in capital values are often formally recognized by owners or purchasers of unsuccessful enterprises, but the physical plant is not abandoned or even necessarily devoted to other uses. It may continue to produce the same products, but since book investment has been lowered, the same earnings as before will

show as a higher rate of return on the capital as currently valued. Practices such as these do not affect our figures for industries of low return in the sense that the discrepancy between them and the median industry is accentuated, for, as just stated, the 'new' rate of return after capital values are written down is higher than the old and tends to raise the apparent earnings level of the industry in question. But such practices do throw light upon the reasons why ten-year differences in earnings rates prevail in spite of such recapitalizations: the recapitalization device is utilized just *because* large, specialized corporate capitals usually can *not* be withdrawn in the physical sense.

Finally, the imperfect character of competition—the prevalence of trade-marks, special designs of products, quasi-monopoly advantages of all sorts—serves also to explain why the tendency towards equality is not realized. Just as the classical doctrine of value—the standard explanation of the prices of individual commodities—assumed that the price of an article could not long remain much below cost of production because capital would be withdrawn from the field of enterprise, so did it also assume that new producers would soon enter the field were price long above cost of manufacture. It was thus tacitly assumed that what one producer could do, another could and would do; that identical products, in other words, are offered by different producers competing for the consumer's favor. The manufacture and sale of modern trade-marked products and specialty goods, however, do not fit this description. Great numbers of consumer goods commonly used today— automobiles, radios, vacuum cleaners, washing machines, electric cooking devices, furniture, even many articles of clothing and numerous food specialties—are given highly distinctive characters by virtue of their differentiated designs and particular specifications. The same is true of some

producers' goods—machinery of different types designed
to perform the same kinds of work. So long as different
sets of purchasers either see or are led to believe they see
advantages of the one product over the other, the markets
for such products will not be fully competitive in the ortho-
dox sense of that term. And competition, while preventing
the very large net revenues that might accrue under condi-
tions of real monopoly, will not necessarily equalize returns
between either industries or enterprises.

The character of modern manufacturing and merchandis-
ing, therefore, furnishes some explanation of the lack of
uniformity in the average profit rates of large corporations,
when classed by industries, for two important conditions
essential to perfect competition—a quick mobility of capital
and a homogeneity of competing products—are absent in
a large proportion of industries. To be sure, a substantial
mobility of capital exists over a period of time. But, on the
side of withdrawal, this mobility exists in the possibility of
not creating *new* plant and organizations of particular
types rather than in withdrawing from service those that
at any given time are under way. We do not thus undertake
to say that the classical doctrine of equality of profit rates
is invalid as a 'tendency'; but we do say that under modern
conditions, as they existed in 1919–28, the evidence seems
clear that the tendency was scarcely effective over this ten-
year period.[23]

[23] Whether or not a 'long-run tendency' ought to show an effect over a
ten-year period depends upon one's definition of 'long-run'. The writer's
feeling is that a fairly considerable effect ought to be noted within *ten*
years if over, say, fifteen or twenty years the tendency really works out as
alleged. But present data relate to ten years only.

Probably the persistence in an individual industry of an earnings rate
far lower than the median figure would indeed not continue for several
decades if the rate fell much short of the 'normal' interest rate or the cost
of borrowed capital. Nor might an earnings rate in an individual industry,
even if equal to this cost, persist for several decades at a level far below
the median—*assuming that the median were known.* Either or both of these

situations might cause the withdrawal of capital or its 'non-renewal' in one industry, and its investment in another. To grant deductively that sec- ular trends in one industry may serve to cause the eventual withdrawal of capital is one thing; but to allege that this process results in an equality of the rate of earnings upon capital *between* industries over a period is quite another. Sometimes it results, as in the case of wagon manufacture, in a gradual collapse of the entire industry. And returns in the successor in- dustry can hardly be added to losses of the capital employed in the predeces- sor and 'averaged' so as to see if equality with other industries over a quarter-century or more perhaps results.

Statistically it would be interesting to have data for twenty or thirty years running, but the problems of classification and analysis would be more difficult, and the results in some ways accordingly less significant, than with data covering only a ten-year period. See Ch. 46 on industrial classification; see also Ch. 47, where the question of the non-renewal of capital is again touched upon.