Inter-industry Correlation Between the Organic Composition of Capital and the Rate of Profit.*

Joseph M. Gillmann

A. The Theoretical Framework

1. *As Marx Saw It.*— Students of Marx who have concerned themselves with his theory of the relation between the organic composition of capital and the rate of profit, have generally concentrated on the question of its long run tendencies. The question they set for themselves to answer has been whether in the course of time that relation leads to a tendency of the rate of profit to fall as Marx asserted it did. This question formed the central theme of my own, recently published book, *The Falling Rate of Profit*[1]. Professor K. Shibata treated of this question a quarter century ago[2]. The prior question of the existence of a simultaneous, concurrent relationship between the two has not, to my knowledge, been explored.

It was Marx's theory, we know, that "with the progress of industry", with its increasing mechanization and the rise of labor productivity, the value of plant, equipment and materials used up in production—the value of the "constant" capital (c)—tended to rise faster than worker's wages—than the "variable" capital (v). The ratio of one to the other, $\frac{c}{v}$, which he called the "organic composition of capital"[3], therefore, would tend to rise.

From this Marx concluded that, assuming a constant rate of surplus-value, and with due allowance for the rates of turnover of the capitals, the rate of profit (p′) would tend to fall as the o. c. c. tended to rise. By surplus-value (s), we will recall, Marx meant the difference between the value of a commodity workers produce and the wages they get for producing it. He expressed the rate of surplus-value (s′) or the "rate of exploitation" as the ratio of surplus-value to wages as $\frac{s}{v}$. He then figured the rate of profit (p′) as the percentage which s is of the combined capitals, as $\frac{s}{c+v}$. The total value of a commodity, thus, equals $c+v+s$[4].

The concentration of economists on this long-run effect of a changing o. c. c. on the rate of profit is understandable. It bears directly on Marx's very basic theory of capitalist development, and he himself treated of this aspect of the question first. (*Capital*, Vol. III, Part I). But in the chapter immediately following, he wrote (p. 170):

> It was seen in the preceding part, that the rate of profit varied, when the degree of exploitation [s′] was constant while the value of the component parts of constant capital, and the time of turnover of capital changed. The obvious conclusion from this was that the rates of profit of different spheres of production existing simultaneourly side by side had to differ, when, other circumstances remaining unchanged, the time of turn-over of the invested capitals differed, or when the proportions of the values of the organic components of these capitals were different in the different lines of production. That which we previously regarded as changes occurring successively in the same capital will now be considered as simultaneous differences of contemporaneous investments of capital in different

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*) Editors' Note: Owing to the limitation of space only a part of the appendix tables submitted by the author are printed here with the author's permission. Other tables, which would occupy more than ten printed pages of this journal, are kept in file for the inspection of any one interested.

1) Dennis Dobson, London, 1957 and Cameron Associates, New York, 1958.

2) "On the Law of Decline in the Rate of Profit", Kyoto University *Economic Review*, July 1934.

3) Henceforth, in this text, the o. c. c., for short.

4) For more detailed definitions of these terms, see *The Falling Rate of Profit*, Chapter 2, "The structure of The Law", pp. 11—19, and the references to Marx's *Capital* cited there.

spheres of production.

In general, then, his thesis was that rates of profit varied with differences in the compositions of the capitals and their rates of turn-over, and that they varied successively in time for the same capital and concurrently for different capitals. In other words, insofar as the o. c. c. of any industry changes (rises) *over the years*, its p′, with due allowance for changes in the rates of turnover of the capital, will also change (in the opposite direction ; that is, fall) over the years. Insofar as at *any given time* different industries operate with different o. c. c.'s, their profit rates will simultaneously also differ (inversely, that is), again, with due allowance for the effects of the rates of capital turnover.

In this article, I test the validity of the thesis that rates of profit vary *concurrently* (and inversely) with differences in the o. c. c. 's of different industries as in my book I tested the thesis that they do so vary *successively* in time for the "same industry". There I tested the assumption of this relationship as applying to American manufacturing industries taken as a whole over a long series of years. Here I test it as applying contemporaneously to a number of separate manufacturing industries of America, having different o. c. c. 's and different rates of profit. The test is to discover to what extent. if any, these two Marxist operating ratios vary inversely with one another. Marx, it will be recalled, based his argument on purely hypothetical data. Here we tested it on the basis of actual economic data which have become available only in recent years.

2. *Qualifying Factors.*—Several complications, however, must be cleared away before we can proceed with the tests. One is the inadequacy of what I have called the flow-base method of measuring the Marxist ratios. In this method the o. c. c. is measured as the ratio of the value of the constant capital *consumed* to wage payments. c in the $\frac{c}{v}$ ratio is measured in terms of the value of raw materials and supplies consumed in the production in any given time, plus the value of depreciation of the fixed capital employed. v, of course, stands for the wages of the production workers engaged in that process. But this method of computing the o. c. c. tends to understate its trend over the years. A rise in the consumption of the constant capital must mean also a rise in the amount of labor employed, and so of wages. v would rise parallel to c and the $\frac{c}{v}$ ratio would not rise significantly, if at all. The statistics for American manufacturing industries since 1849 bear out this surmise. (See *The Falling Rate of Profit*). Measured on this traditional basis, the o. c. c. does not appear to have risen over an entire century of capitalist development in America. What is required, as I showed there, to measure the *trend* of this ratio is the value of the constant capital *invested*, not the value of the amount consumed. Measured on an invested-capital basis, the o. c. c. displays a clear tendency to rise over the years of the mechanization of industry before the advent of modern capital-saving technology and integrated industrial ownership and management.

However, these considerations do not apply when the ratios $\frac{c}{v}$, $\frac{s}{v}$ and $\frac{s}{c+v}$ are measured on a concurrent basis. The question of trends do not apply here. Hence, here the flow method is permissible, at least, as an approximate measure.

The same holds true for Marx's assumption of a constant rate of surplus-value when figuring these trends. It can be shown, as I have done in *The Falling Rate of Profit*, that this assumption ceases to hold true under conditions of rapid technological innovation and monopoly profit maximization. Rather is it true that under these conditions s' tends to rise, instead of remaining constant. Modern capital-saving technology, in the hands of integrated industry, tends to make labor more productive of surplus-value at the same time that it "cheapens" the value of c. The $\frac{c}{v}$ ratio tends to remain constant, or even fall, while the $\frac{s}{v}$ ratio tends to rise. The result under these circumstances is a tendency for p' to remain constant or even to rise.

Again, this consideration does not apply when the relation between the o. c. c. and p' is measured on a simultaneous basis, instead of a trend basis. For the at-one-time calculation s' may be assumed to be invariant.

A more serious complication arises from the lack

of information on the rates of capital turnover for different industries. In computing these ratios and their relation to each other for a whole economic sector, such as all of the manufacturing industries taken together, this turnover factor may conceivably be assumed away. Its effect on the profit rates may be assumed as balanced out when these are related to the average o. c. c. In the case of relating p' to the o. c. c. for individual industries, failure to take into account the different rates of capital turnover may seriously distort the results. This, as we will have occasion to observe, is especially true when capital is used most intensively, as is the case in time of war production. The degree of relationship between the o. c. c. and p' which may be cast up in our tests should be judged accordingly.

Finally, in treating industry for a diversity of profit rates we would seem to be in contradiction with Marx's theory of the tendency of profits towards an average rate. "There is no doubt", he wrote (*Capital*, vol. III, p. 181), "that, aside from unessential, accidental, and mutually compensating distinctions, a difference in the average rate of profit of the various lines of industry does not exist in reality, and could not exist without abolishing the entire system of capitalist production".

Marx located the answer to this apparent contradiction in the distinction between value and price. Commodities, he pointed out, seldom, if ever, exchange at their values as determined by the labor embodied in them. They do not sell at the value c+v+s. They sell at higher or lower prices than the equivalent of c+v+s. They sell at what he called their "prices of production". These prices for individual commodities cover the prime costs of c and v and include only so much of the *total* s of the community as competition among the capitalists permits each individual capitalist to retain of his own s. Thus the answer is found in the distinction between the *production* of surplus-value, as derived from the exploitation of labor, and its *distribution as profit*. The production of surplus-value is in proportion to the variable segment of the capitals. Its distribution as profit is in proportion to the total capitals of the different industries. The same amounts of capital do produce different amounts of surplus-value, in direct proportion to the variable capitals they contain. But under the forces of competition and the mobility of capital, industries operating with low organic compositions and producing higher rates of profit do not retain all the surplus-value which their capitals thus differentially produce. They retain only pro rata shares of the total surplus-value produced in the economy as a whole, in proportion to their respective capitals. In this way all industries tend to *receive* approximately equal rates of profit, even though because of their different compositions they *produce* different individual rates.

Postulating a diversity of profit rates as existing *at the point of production*, then, in no way violates Marx's law of the tendency towards an equality of rates *in the market place*. The *equalization* of profit rates is a realization phenomenon. It concerns the sharing of the community's total surplus-value in proportion to respective invested capitals, *after* it had been produced differentially by capitals of different organic composition and different rates of capital turn-over. The *diversity* of profit rates is a production phenomenon. It results from the effects of the different organic compositions in the creation of surplus-value.

It is this diversity of rates that competition tends to equalize. But even so, diversities persist. Initially, because of the existing differences in capital compositions and capital turn-over rates. Frequently, because of the barriers which industrial monopolies and large scale investment in fixed capital impose upon the competitive mobility of capital[5]. Always, because the very competition which compels capitalists in the long run to accept an average rate of profit compels them also to seek higher-than-average rates of profit. Engels went so far as to suggest that an "average rate of profit" exists in no mo-

5) See *Capital*, Vol. III, pp. 230; 231; 244, and 1003. On page 200 Marx wrote: "Within each sphere, there is a certain playroom for a space of time in which the local rate of profit may fluctuate, before this fluctuation... consolidates... for exerting an influence on the average rate of profit".

re real sense than as a statistical datum, as a tendency, as an approximation. In a letter to Conrad Schmidt (London, 12 March 1895) he explained that the "general rate of profit" at any moment exists only "approximately". Any identity of the rates of any two undertakings "would be a pure accident". "In reality", he went on to say, "the rates of profit vary from business to business and from year to year... and the general rate only exists as an average of many businesses and a series of years"[6].

B. The Tests

1. *The Premises.*— We now examine the statistical evidence which may bear on the question whether the rate of profit changes inversely with the composition of capital concurrently for different capitals as it has been assumed to change successively for capital in general. In this case the test takes the form of an inter-industry correlation analysis of rates of profit and capital compositions. That is, we calculate the degree of the inter-relationship between these two „variables" which may exist in a cross section of an industrial economy at any moment of time, say, in the course of year. More precisely, our aim is to establish the degree of the assumed inverse relationship between the rate of profit and the organic composition of capital for a cross section of American industry. For this purpose we have a fairly representative, and official, sample of individual industry statistics for 1935 and equally representative but unofficial, samplings for 1939 and 1940 and for the five war years 1941—45.

2. *The Data.*— We have for the one year 1935 the familiar census data for the 275 largest American manufacturing industry classifications which the United Bureau of the Census tabulated for a study in industrial concentration by the National Resources Committee[7]. These were produced in three master-tables, each consisting of two panels. In one panel the data were given for the largest four producers of each industry classification—the four largest producers in the motor vehicles manufacturing group, for example. In the second panel the data were given for the largest eight producers. Each panel, in turn, was divided in three parts. In the first part the data were given for the 21 "large" industry groups of the 275 largest in America. These employed more than 100,000 persons each. In the second part of each panel the data are for the 44 "medium" size industries, those employing between 25,000 and 100,000 persons each. The remaining 210 "small" industry groups, each employing under 25,000 persons in 1935, are listed in the third part of the panels. The size of the industries was set, for Table I there, on the basis of the number of persons employed; for Table II, on the basis of value of products, and for Table III, on the basis of value added by manufacture.

For each industry classification in each table the data included the number of persons employed, amount of wages and salaries, the number of wage earners, the amount of wages, value of product, cost of materials, etc., and value added by manufacture[8].

These are the data which I used as the major source for the comp utation of the Marxist ratios, $\frac{c}{v}$, $\frac{s}{v}$ and $\frac{s}{c+v}$, and the coefficients of correlation between the o. c. c. and p'. However, I used only the data from Table I and the panels for the eight largest producers. I saw no theoretical reason to believe that any other selection among these tables and panels would have given any different results, nor for repeating the tests for these other groupings. I did use certain supplementary data from other sources, to be described in their appropriate places below.

C. The Findings

1. *First Experiment.*— From the data just described I computed four paired sets of rates of profit and capital compositions, and for those I computed four coefficients of correlation: one for part 1, one

6) *Marx-Engels Correspondenec*, pp. 527—529.

7) *The Structure of the American Economy.* Part I. Basic Characteristics. National Resources Committee, Washington, D. C., June 1939, Appendix 7, pp. 239—263.

8) Also given there are the percentages of these items for the four and the eight largest producers in the country's total of each industry classification; also the number and percent of establishments in each classification.

for part 2, and two for part 3 of the eight-industry panel of Table I. The reason for the extra calculation for part 3 will be explained in a moment.

The Marxist ratios were calculated on the traditional flow basis. No pertinent stock data are available in the Census tabulations. The Cesnus does not report even the data for depreciation allowance. (See Appendix 1 for the original data and the computations for the case of the 21 large industries.)

The coefficients of correlation were computed by the "rank-difference" method. The symbol used for coefficients computed by this method is the Greek letter ρ.

The four ρ 's thus computed are:

For the 21 large industries,	$\rho=-.38$
For the 44 medium industries,	$\rho=-.41$
For the 210 small industries,	
first sample,	$\rho=-.26$
second sample,	$\rho=-.46$

The first fact that strikes the eye in this listing is that all four coefficients are negative,—they all support the law's assumption of an inverse functional relation of the rate of profit to the organic composition of capital. And all but one are significantly high for economic data.

The second fact that strikes the eye is the relatively low coefficient cast up for the first of the two samples drawn from the 210 small industries. While still passing as probably significant for economic data, the question nevertheless arises, why this sharp departure from the apparent norm for these tabulations?

The reason we find for this difference throws an unexpected sidelight of basic significance to this entire discussion. It is this:

The computation of ρ for the first group of industries was based on all the 21 entries. That of ρ for the second group was based on every other of the 44 entries, or on 22 paired ratios—to keep down labor and to treat approximately equal-size samples.

For the 210 small industries we first computed ρ on the basis of a 10-percent sample which we drew by taking the 10th item of each consecutive 10 entries of the listing. Now, it so happened that among the 21 entries so drawn, nine were for what are called "hand industries". These were, watchcases; musical instruments; pianos; carriages and sleds; clocks; watches and other time recording devices; mirrors and "other" glass products; saddlery; harness and whips; hand stamps; lighting equipment; and photoengraving, outside printing establishments.

The second sample was constructed on the basis of the 21 median values—the 6th in value of product of each 10 listings. In this sample, none of the entries was of a "hand industry". The startling difference in the size of the ρ 's was the result.

In this, then, we have a confirmation of the Marxist principle that as industry develops "capitalistically", that is, as production shifts from "hand" to mechanized industry, the degree of dependence of the rate of profit on the composition of the capitals increases.

2. *Second Experiment.*— Besides the census tabulations which we have just treated, two other sets, of semi-peacetime production data, are available for the calculation of coefficients of correlation for our standard variables. These are Federal Trade Commission trial-run tabulations of the financial statistics of a number of American industrial corporations for the years 1939 and 1940[9]. The one for 1939 covers the returns of 544 manufacturing firms, loosely grouped in 61 industry classifications. The one for 1940 comprises the returns of 386 manufacturing firms, grouped in 10 industry classes. (See Appendix 2A and 2B for the data and the computations for the latter.) The data for 1939 yielded a coefficient of correlation, $\rho=-.23$. Those for 1940 yielded a coefficient, $\rho=-.30$. In both these instances the paired ratios were calculated on the flow basis with allowance for depreciation on the fixed capital.

Although these two coefficients are relatively low, they both are negative and to this extent, at least, they tend to support the preceding findings.

It so happens, however, that the Commission's tabulations contain also a column of the book values of the fixed captal of the covered corporations. Ac-

9) United States Federal Trade Commission: *Financial Statistics for Industrial Corporations, 1939 and 1940.* Unpublished. Available as photo-offsets.

cordingly, I calculated ρ 's also for the paired ratios computed on this "stock" basis. The o. c. c. was calculated by dividing the value of the fixed capital by and p' by dividing s by the value of the fixed capital. Not unexpectedly, the coefficients of these ρ 's turned out to be considerably larger than those of the ρ 's calculated for the flow-based ratios. In fact, they are almost three times as large. For 1939, the stock-based $\rho = -.60$, against the former—.23 and for 1940, the new $\rho = -.88$, against the former —.30. As a byproduct, we have in these differences a reflection of the inadequacy of the flow basis for computing the organic composition of capital and the related p' ratio discussed in an earlier page.

3. *Third Experiment.*— Finally, we have the results cast up in the ρ's calculated for data for 22 industry groups which come from a Federal Trade Commission study of wartime (O. P. A.) statistics[10]. We may expect that the multiple-shift wartime production greatly accelerated the rate of capital turnover. That tended to distort the flow-based computation of the rate of profit. Unless corrected for these changes in capital turnover the correlation coefficients between the o. c. c. and p' would also be affected. That, in fact, is the result we got. The ρ's calculated for the flow-based war-time ratios are extremely low, although still persistently negative. On the other hand, the ρ 's calculated on the fixed-capital based ratios would seem to be equally extreme in the other direction, as was the case with the corresponding ρ 's of 1939 and 1940.

The two sets of ρ 's for the war years follow. (The original data and the computations for 1944 are given in Appendixes 3.)

Year:	*1941*	*1942*	*1943*	*1944*	*1945*
Flow basis	$\rho = -.04$	$-.18$	$-.11$	$-.16$	$-.16$
Fixed capital basis					
	$\rho = -.65$	$-.72$	$-.75$	$-.72$	$-.71$

For these years, however, we have also the year-end inventories. This makes possible the computation of the organic compositions and the related profit ratios on the more acceptable basis of the total invested capital. The ρ 's computed for the paired ratios thus based would, therefore, appear to be the most reliable of all those so far computed. The year 1941 appears to be an exception, undoubtedly a result of the distortions from the onset of the war.

Year:	*1941*	*1942*	*1943*	*1944*	*1945*
Invested capital base					
	$\rho = -.11$	$-.34$	$-.48$	$-.55$	$-.48$

4. *Fourth Experiment.*— Finally, we perform a test which in some ways, departs from the strictly Marxist formula. We compute correlations between the o. c. c. (total invested capital base) and profit rates as calculated by the capitalists themselves. Following the standard accounting practices, we compute these rates on the basis of corporate net worth[11]. In doing so, we not only automatically make allowance for *all* production expenditures, but we also compute two sets of paired ratios which are not so closely related to each other by derivation as are the same ratios computed by the standard Marxist method. (The data for 1944 are given in Appendix 4.)

Surprisingly enough, the ρ 's computed for the capitalists' rates of profit and the corresponding organic compositions are also all negative and of the same general magnitude as for the other paired ratios. Here they are:

Year:	*1941*	*1942*	*1943*	*1944*	*1945*
	$\rho = -.35$	$-.61$	$-.67$	$-.67$	$-.52$

D. Conclusions

From all these findings it would seem justifiable to state that Marx's thesis of the existence of an inverse correlation between the organic composition of capital and the rate of profit has been established.

However, before we leave this conclusion as stated, we must raise one more theoretical question. Marx conceived his law of the falling rate of profit in value terms. We have treated it all along in price

10) Federal Trade Commission: *Report on Wartime Costs and Profits for Manufacturing Corporations, 1941 to 1945.* Appendix. October 6, 1947.

11) Net income before income and excess profit taxes, divided by net worth. Net worth = book value of capital stock and capital surplus + earned surplus and surplus reserves.

terms. Without first transforming values into prices, were we sound in proceeding as we did? Is it not likely that all we have done in our tests is correlate the o. c. c. with what Marx called the "unessential, accidental, and mutually compensating distinctions" of rates of profit on their way to coalesce into a general, average rate of profit? That all our correlations are, therefore, spurious? The persistence with which the inverse correlations, for a diverse number of industry samples, were cast up, both for peacetime and wartime data, would seem to negate these doubts. But the need for further discussion is clearly indicated.

Appendix 1. Computation of the Marxist Ratios s, o. c. c. and p' for the Eight Largest Producers in Each of 21 "Large" Industry Classifications. From 1935 Census data; flow basis.

(Dollar amounts in millions.)

Industry	Value product (1)	Material (c) (2)	Wages (v) (3)	Total capital (2)+(3) (4)	S (1)−(4) (5)	o.c.c. (2)÷(3) (6)	p' (5)÷(4)×100 (7)
Moter vehicles	2,253	1,719	197	1,916	337	8.7	17.6
Motor vehicles bodies & parts	1,192	798	249	1,047	145	3.3	13.8
Steel-works & rolling-mills	1,231	744	270	1,014	217	2.8	21.4
Electrical machinery	502	177	101	278	224	1.8	80.5
Meat packing, wholesale	1,500	1,313	84	1,397	103	15.6	7.4
Railroad repair shops	200	93	95	188	12	.98	6.4
Wool & hair manufactures	234	150	44	194	40	3.4	20.6
Boots & shoes	198	108	50	158	40	2.2	25.3
Canned & dried fruit, etc.	198	120	17	137	61	7.1	44.5
Bread & other bakery products	317	155	59	214	103	2.6	48.1
Printing & publishing, news-paper & periodical	304	73	43	116	188	1.7	162.0
Paper	154	91	21	112	42	4.3	37.5
Men's cotton garments	56	30	13	43	13	2.3	30.3
Cotton manufactures	145	91	38	129	16	2.4	12.4
Machinery, n. e. c.	64	24	18	42	22	1.3	52.3
Men's etc. clothing,	46	21	15	36	10	1.4	27.7
Furniture	38	19	10	29	9	1.9	31.0
Knit goods	52	21	18	39	13	1.2	33.3
Printing & publishing, books, etc.	45	11	12	23	22	.91	95.6
Lumber & timber products	42	13	17	30	12	.76	40.0
Women's, misses', & children's apparel	28	15	6	21	7	2.5	33.3

Appendix 2A. Financial Statistics of 10 United States Manufacturing Industry Groups, Federal Trade Commission Data. 1940

(Dollar amounts in millions.)

Industry group	Number of firms	Net sales (1)	Cost of materials (2)	Depreciation allowance (3)	Wages of production workers (4)	Value of fixed capital (5)
1. Cement manufacturing	23	100,190	18,879	8,855	11,799	136,814
2. Cranes, dredging, excavating & road building machinery	29	135,137	48,365	2,388	15,841	31,892
3. Electrical machinery & apparatus	49	710,228	166,237	16,317	106,182	147,717
4. Food products machinery mfg.	23	58,750	18,467	1,238	5,876	13,566
5. Machine tool mfg.	40	270,673	61,430	5,378	49,396	67,774
6. Pump, pumping equipment & air compressors mfg.	20	40,816	14,345	988	5,145	13,735
7. Railroad equipment mfg.	32	384,783	176,910	15,088	45,116	258,864
8. Screw machine products & wood screw mfg.	23	52,816	14,527	1,452	10,774	16,082
9. Special industry machinery mfg.	98	80,394	29,607	1,745	13,659	44,770
10. Textile machinery mfg.	49	77,518	19,422	2,035	14,113	34,475
Total	386	1,911,305	568,189	55,484	277,901	765,689

Appendix 2B. Marxist Ratios Computed for the Data of Appendix 6A. Flow basis.

Industry number	(6) Constant capital(c) (2)+(3)	(7) Total capital (2)+(3)+(4)	(8) o. c. c. (6)÷(4) $(\frac{c}{v})$	(9) Surplus value(s) (1)−(7)	(10) p' (9)÷(7)×100
1.	27,734	39,533	2.4	60,657	153
2.	50,753	66,594	3.2	68,543	103
3.	182,554	288,736	1.7	421,492	146
4.	19,705	25,581	3.3	33,169	127
5.	66,808	116,204	1.4	154,469	133
6.	15,333	20,478	3.0	20,338	99
7.	191,998	237,114	4.3	147,669	62
8.	15,979	26,753	1.5	26,063	96
9.	31,352	45,011	2.2	35,383	80
10.	21,457	35,570	1.5	41,948	117
Totals	623,673	892,574	2.2 (average)	1,009,731	113.1 (average)

Appendix 3. Financial Statistics and the Computation of the Organic Composition of Capital, the Rate of Surplus-Value and the Rate of Profit of 22 United States Manufacturing Industries. Federal Trade Commission-O. P. A. Data. 1944

(Dollar amounts in millions)

Industry	No. firms	Net sales (1)	Materials (2)	Depreciation (3)	C (2)+(3) (4)	V (5)	Total Capital (c+v) (6)
1. Food products	445	8,822	6,311	68	6,379	705	7,084
2. Beverage	144	861	227	13	240	65	305
3. Tobacco	32	1,250	423	5	428	73	501
4. Textile mill products(except cotton)	283	1,448	692	22	714	329	1,043
5. Cotton textile	111	600	285	10	295	135	430
6. Apparel & other finished products	127	380	197	2	199	88	287
7. Leather & leather products	152	574	307	4	311	130	441
8. Lumber & timber basic products	106	383	149	20	169	105	274
9. Rubber products	61	2,231	1,099	38	1,137	527	1,664
10. Furniture & finished lumber products	194	504	234	6	240	116	356
11. Paper & allied products	309	1,832	826	62	888	365	1,253
12. Chemicals & allied products	306	2,311	1,180	52	1,232	258	1,490
13. Printing, publishing & allied	97	164	56	3	59	39	98
14. Petroleum & coal products	48	4,086	2,250	228	2,478	241	2,719
15. Stone, clay & glass products	178	858	230	27	257	224	481
16. Iron, steel & their products	591	4,747	2,035	138	2,173	1,263	3,436
17. Nonferrous metals & their products	94	918	486	13	499	191	690
18. Electrcial machinery	104	4,710	1,822	69	1,891	1,331	3,222
19. Machinery except electrical	475	5,079	1,995	86	2,081	1,243	3,324
20. Automobile & equipment	81	7,543	3,781	98	3,879	1,797	5,676
21. Transportation equipment except automobile	38	1,153	602	8	610	306	916
22. Other manufacturing	131	949	308	22	330	251	581
Total	4,007	51,403	25,495	994	26,489	9,782	36,271

Industry Line	o. c. c. (4)÷(5) (7)	S (1)−(6) (8)	P' (8)÷(6)×100 (9)	Fixed capital (10)	Selling & adm. expense (11)	Cost of goods sold (12)
1.	9.0	1,738	24.5	947	685	7,661
2.	3.7	556	182.3	153	105	557
3.	5.9	749	149.5	47	80	1,063
4.	2.2	405	38.8	285	97	1,169
5.	2.2	170	39.5	121	33	502
6.	2.3	93	32.4	24	43	304
7.	2.4	133	30.2	41	48	485
8.	1.6	109	39.8	230	29	298
9.	2.2	567	34.1	285	189	1,790
10.	2.1	148	41.6	72	50	406
11.	2.4	579	46.2	723	135	1,459
12.	4.8	821	55.1	500	344	1,651
13.	1.5	66	67.3	32	32	109
14.	10.3	1,367	50.3	2,228	362	3,261
15.	1.1	377	78.4	309	115	642
16.	1.7	1,311	38.2	1,203	299	3,986
17.	2.6	228	33.0	97	48	794
18.	1.4	1,488	46.2	282	263	3,878
19.	1.7	1,755	52.8	633	438	3,927
20.	2.2	1,867	32.9	483	220	6,541
21.	2.0	237	25.9	79	31	1,023
22.	1.3	368	63.3	149	132	662
Total	2.7	15,132	41.7	8,923	3,778	42,168

Appendix 4. Computation of Ranked Coefficient of Correlation (ρ) Between o. c. c. and p'. Federal Trade Commission (O. P. A.) Data. Net Worth Basis. 1944.

(Dollar amounts in millions)

Industry number	(1) Net income (before inc. taxes)	(2) Cap. stock and surplus	(3) Earned surplus and reserves	(4) Net worth (2)+(3)	(5) p' (1)÷(4)
1.	470	1,192	857	2,049	22.9
2.	100	131	161	292	34.2
3.	105	343	228	571	18.3
4.	184	452	268	720	25.5
5.	65	174	113	287	22.6
6.	34	73	51	124	27.4
7.	41	127	79	206	19.9
8.	59	209	173	382	15.4
9.	253	379	263	642	39.4
10.	50	153	87	240	20.8
11.	241	801	425	1,226	19.6
12.	325	715	634	1,349	24.0
13.	23	39	45	84	27.3
14.	476	1,930	1,056	2,986	15.9
15.	107	399	260	659	16.2
16.	472	1,401	815	2,216	21.2
17.	80	169	132	301	26.5
18.	596	676	614	1,290	46.2
19.	730	1,257	951	2,208	33.0
20.	783	921	1,087	2,008	38.9
21.	99	99	71	170	58.2
22.	157	265	220	485	32.3