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CHAPTER 5

Labor and Capital

IN OUR comprehensive view of capital, which includes land, there are only two productive agents—capital and labor. They necessarily receive the total net product after taxes, and the division of this product (or income) between them gives rise to some of the most important questions of public policy. Since labor and capital constitute the productive agents, their allocation among industries is equally important in relation to the productive process.

For many purposes it is necessary to study individual workers and pieces of capital, but we shall restrict our discussion to industry aggregates. Even on this summary level, our material on the number and remuneration of workers is much less complete than that on amount and returns to capital. Comprehensive data are available (from the *Census of Manufactures*) only for 1939, 1947, and 1954, but they are reported on an establishment basis rather than a company basis, so discrepancies in the capital figures will arise because many companies operate in more than one (three-digit) industry.[1] Even with these limitations, some interesting problems can be examined.

1. *Wages and Returns to Capital*

The predominant part of the total income in manufacturing, as we know, goes to labor. The main percentage distributive shares are shown in the tabulation below.

	Payroll	*Return to Capital* (after taxes)
1939	80.1	19.9
1947	77.6	22.4
1954	85.9	14.4

These precise numbers are sensitive to the state of business because rates of return fluctuate more widely than wage rates do. If, for example, we had used the 1953 rate of return this share would have been 17.8 per cent. But with the rates of return of the last decade, wages have been more than four-fifths of the total income.

The division of income varies widely among industries: in 1954 labor's

[1] An attempt is made to reduce this source of discrepancy by (1) using two-digit classifications, or (2) excluding the industries where discrepancies (measured by receipts) are large, or (3) adjusting the labor data on the basis of receipts data. But the distortion that remains may be appreciable.

TABLE 27

AGGREGATE PAYROLL AS PERCENTAGE OF TOTAL DISTRIBUTIVE SHARES IN MANUFACTURING INDUSTRIES, SELECTED YEARS, 1939–54

Industry	*Payroll as Per Cent of Total*			*Total Payroll and Return to Capital, After Taxes* (billions of dollars)		
	1939	1947	1954	1939	1947	1954
Food and kindred products	77.2	76.7	86.2[a]	1.61	4.16	5.30[a]
Beverages	63.0	66.3	81.9	0.35	0.90	1.06
Tobacco products	43.8	60.1	58.9	0.20	0.34	0.44
Textile mill products	88.7	74.0	95.6	1.23	3.83	3.17
Apparel, fabric products	95.2	86.8	96.8	0.90	2.91	3.31
Basic lumber	93.1	70.9	86.1[b]	0.41	1.52	2.00[b]
Furniture, finished lumber	91.0[c]	87.1	93.8	0.41[c]	1.34	1.28
Paper, allied products	81.5	68.5	82.8	0.55	1.87	2.68
Printing, publishing	89.5	83.8	91.9	1.09	2.72	3.94
Chemicals, allied products	60.4	64.7	76.3	1.02	3.05	4.47
Petroleum, coal products	54.5	37.2	43.8	0.46	1.93	2.51
Rubber products	81.2	86.0	89.0	0.28	0.91	1.19
Leather products	91.6	86.0	94.1	0.40	1.02	1.09
Stone, clay, glass products	76.1	80.5	82.9	0.53	1.50	2.34
Metals, metal products	83.5[d]	81.2	88.2	2.43[d]	8.18	10.77
Machinery, except transportation, electrical	81.2	82.8	88.9	1.37	5.58	8.09
Electric machinery, equipment	78.7	82.4	87.6	0.66	2.82	4.51
Transportation equipment, except vehicles	83.4	104.1[e]	92.1	0.36	1.45[e]	5.31
Motor vehicles	76.7	74.7	78.9	1.03	2.95	4.32
Miscellaneous manufactures, including instruments	83.4[f]	86.3	89.0	0.57[f]	1.86	3.17
All manufactures	80.1	77.6	85.9	16.02[g]	51.16[g]	72.17[g]

NOTE: Total distributive shares is defined as payroll plus return to capital, after taxes.

[a] Excludes fluid milk.

[b] Excludes logging.

[c] Excludes matches, for comparability with IRS.

[d] Excludes clocks and jewelry.

[e] Losses in 1947.

[f] Includes matches, clocks, and jewelry.

[g] Independently calculated, not equal to sum of two-digit entries.

SOURCE: *United States Census of Manufactures, 1939, 1947,* and *1954* (Bureau of the Census), and *Statistics of Income, Corporation Income Tax Returns,* for 1939, 1947, and 1954 (Internal Revenue Service).

share ranged from 43.8 per cent (petroleum) to 96.8 per cent (apparel), as shown in Table 27.[2] We shall see later that average wage *rates* do not differ greatly among industries, so the functional distribution of income is dominated by the amounts of capital per worker in the various industries. Since the differences among industries in the relative use of capital are

[2] The wage share in petroleum products is depressed by the inclusion of the mining operations of the integrated petroleum refining companies.

persistent over long periods, we expect, and find, that the share of wages in total income has a stable industrial pattern (the rank correlation coefficient between 1947 and 1954 was .82).

There is a large literature on the alleged constancy over time of the share of wages in the distribution of total income. Even the concept of constancy is in dispute: if the attraction of bodies were an inverse function of the 1.99 power of distance on weekdays and the 2.01 power on Sunday, the physical world would be rather eccentric; but if the percentage of consumer income spent on a commodity never exceeded these limits, the constancy would be astonishing. Our own data certainly suggest no such order of constancy. Even within our broad industry categories, from 1947 to 1954 the share of wages rose 10 or more per cent in half the industries. The fluctuations are possibly even larger in more precisely defined industries.

When we turn to income per worker and per thousand dollars of capital, we are faced with a dimensional problem. A doubling of prices all around, leaving relative prices unchanged, would double earnings per worker but leave the rate of return on capital (measured in dollars) unchanged. Broadly, that is what happened between 1939 and 1954: average earnings tripled while average rates of return rose slightly, in 1947 prices (and fell slightly, in book values). The average dollar of 1939 capital roughly doubled in nominal value over that period, so the return to the owner of that dollar fell by one-third relative to the earnings of a worker.

The differences among industries in average annual earnings per worker are largely due to differences in the use of skilled labor, location in large or small communities, and so on. These differences tend to persist over substantial periods, since they are compatible with long-run equilibrium. The rank correlations of average earnings (see Table 28) were, in fact, quite high: 1939 and 1947, .95; and 1947 and 1954, .91. As a result, the dispersion of average earnings in one year is a fairly good estimate of the dispersion over longer periods: the coefficient of variation was 22.2 per cent in 1939, 15.5 per cent in 1947, and 19.5 per cent in 1954—approximately 20 per cent on average.

The differences among industries in rates of return, on the contrary, are considerably larger in the short run than over long periods. The short-run fluctuations in business impose large fluctuations on returns to capital, which are a residual share in the short run (although not in the long run). The coefficient of variation of rates of return was 24.4 per cent in 1947, for example, when the coefficient of annual earnings was 15.5 per cent. As the period over which returns are calculated is lengthened, the dispersion

TABLE 28

ANNUAL EARNINGS PER WORKER AND RATE OF RETURN ON CAPITAL IN MANUFACTURING INDUSTRIES, SELECTED YEARS AND PERIODS, 1938–55

Industry	*Annual Earnings* (dollars)			*Rates of Return* (annual average, per cent)		
	1939	1947	1954	1938–40	1946–48	1953–55
Food and kindred products	1,242	2,575	4,279	5.36	9.45	5.60
Beverages	1,690	2,955	3,645	8.74	11.22	5.37
Tobacco products	904	1,841	2,738	10.25	6.74	6.39
Textile mill products	941	2,299	2,923	2.87	14.74	2.72
Apparel, fabric products	1,014	2,336	2,690	2.68	10.51	2.90
Basic lumber	955	2,104	3,020	1.72	13.05[a]	—
					12.86[b]	6.55
Furniture, finished lumber	1,107	2,556	3,515	3.42	9.78[a]	—
					10.28[b]	5.32
Paper, allied products	1,375	2,847	4,182	5.33	13.70	7.50
Printing, publishing	1,770	3,183	4,507	4.60	11.18	6.29
Chemicals, allied products	1,536	3,021	4,608	8.46	11.20	7.43
Petroleum, coal products	1,791	3,487	5,105	2.79	9.16	6.59
Rubber products	1,515	3,024	4,297	4.81	8.66	5.43
Leather products	1,018	2,280	2,881	3.32	9.63	4.82
Stone, clay, and glass products	1,303	2,620	3,941	5.72	10.40	7.99
Metals, metal products	1,507	3,019	4,444	4.41	8.94[a]	—
					9.00[b]	6.23
Machinery, except transportation, electrical	1,631	3,109	4,664	6.90	8.75	6.02
Electrical machinery, equipment	1,551	2,834	4,119	8.95	7.24	6.54
Transportation equipment, except vehicles	1,639	3,147	4,844	4.40	0.01	5.96
Motor vehicles	1,723	3,148	4,900	6.46	8.88	9.71
Miscellaneous manufactures, including instruments	1,321	2,695	3,843	6.28	7.75[a]	—
					7.83[b]	5.74
All manufactures	1,334	2,777	4,025	5.25	9.63[a]	—
					9.65[b]	6.41

[a] Using 1947 profit rate on 1946 classification basis.
[b] Using 1947 profit rate on 1948 classification basis.

SOURCE: *Census of Manufactures, 1939, 1947,* and *1954*; and Tables A-14 to A-59.

of rates is reduced,[3] and the coefficient of variation approaches that of annual earnings (see Chapter 3).

Industries that have high rates of return tend also to have high annual earnings per worker, although the correspondence is only moderate.[4] Let us consider this relationship more closely.

[3] The rank correlations of three-year average rates of return in Table 28 are −.45 in 1939 and 1947 (compared with .95 for earnings), and −.09 in 1947 and 1954 (compared with .91).

[4] The rank correlations (Table 28) were .30 in 1939 and .55 in 1954. There was no correlation in 1947, but that period was much affected by postwar demobilization of the economy.

2. *The Capital-Labor Ratio*

The average employee in manufacturing worked with $12,320 of capital in 1939, when much capital was underemployed because of depressed business conditions, $10,614 in 1947, and $13,031 in 1954 (all measured in 1947 prices). Thus he was supplied with capital equal to the equivalent of two to three years' wages, or twenty to thirty times his own annual savings. This capital-labor ratio has of course been rising secularly in manufacturing industries.

The capital-labor ratio varies widely among industries: even in the limited group of industries for which capital and labor data are fairly comparable, the range in 1954 was from $1,900 in millinery to $39,300 in "other tobacco" (chiefly cigarettes).[5] The relative dispersion of the ratios has been diminishing in recent years.[6]

		Capital Per Worker		
Year	Number of Industries	Average Capital	Standard Deviation	Coefficient of Variation (per cent)
1939	38	$4,340	$3,090	71.2
1947	49	6,930	4,840	69.8
1954	53	10,500	7,200	68.6

Our concept of capital extends to working capital and inventories, so only in a correspondingly enlarged sense can we speak of differences in "technology" as underlying the capital-labor ratios. Even so, the pattern among industries of these ratios is remarkably stable: the correlation coefficient between 1939 and 1947 ratios was .83 (thirty-seven industries) and that between the 1947 and 1954 ratios was .96 (forty-nine industries).[7]

[5] The asset data are adjusted by the ratio of receipts as reported in *Census of Manufactures* to receipts as reported in *Statistics of Income*, and industries in which the unadjusted ratio of receipts from these two sources fell outside the range of 4 to 5 and 5 to 4 are excluded. In subsequent analyses the wider range, 2 to 3 to 3 to 2, is used. See Tables D-1 and D-2 for list of Internal Revenue Service industries for which comparable Census data are available.

[6] If one restricts the 1939 and 1947 comparison to 30 identical industries, the coefficient of variation falls from 71.8 per cent to 62.1 per cent.

[7] The regression equations are:

$$(C/L)_{47} = 1{,}680 + \underset{(.12)}{1.11}\ (C/L)_{39},$$

$$(C/L)_{54} = 630 + \underset{(.06)}{1.40}\ (C/L)_{47}.$$

In each period the industries are those for which the Census to IRS-receipts ratio falls between 3 to 2 and 2 to 3 in *both* years.

The stability of technology is the basic determinant of the short-run industry structure of capital-labor ratios.

Workers in industries with larger capital-labor ratios on average receive somewhat higher than average annual earnings (see Table 29).[8] One can

TABLE 29

ANNUAL EARNINGS AND CAPITAL PER WORKER, MANUFACTURING INDUSTRIES, 1939 AND 1954

(dollar amounts in thousands)

Approximate Deciles	Average Capital Per Worker	Number of Industries	Average Annual Earnings
	1939		
1	$0.94	3	$1.08
2	1.84	4	0.98
3	2.38	3	1.12
4	3.16	4	1.26
5	3.71	4	1.09
6	4.04	4	1.48
7	4.88	4	1.50
8	7.22	4	1.36
9	8.52	4	1.50
10	14.06	3	1.47
Total	5.02	37	1.29
	1954		
1	3.21	5	3.01
2	5.07	5	3.34
3	6.20	5	3.81
4	6.94	5	3.54
5	7.83	5	4.54
6	8.51	5	4.07
7	11.61	5	3.90
8	14.33	5	4.68
9	18.92	5	4.01
10	27.81	4	3.91
Total	10.70	49	3.88

SOURCE: Tables D-1 and D-2.

interpret this association as indicating that industries with larger capital per worker employ slightly better-trained workers on average; this interpretation is more appealing than the alternative that higher wage *rates* are paid to comparable workers in these industries. We do not possess data on a comparable basis for wage *rates* for given types of workers, but

[8] The correlation coefficients for capital-labor ratio and average earnings were .365 for 1939 and .215 in 1954. No such relationship was present in 1947.

the composition of workers by sex suggests that the moderate differences in earnings can be accounted for by differences in type of labor.[9]

Since capital-labor ratios have a tolerably stable industrial pattern, it is not surprising that those industries in which capital grew most rapidly are also those in which the number of workers increased most rapidly.[10] Moreover, industries with unusually large relative increases in their capital stock also had the larger relative increases in annual earnings ($r = .641$ in 1947–54). And again, those industries in which capital per worker rose most over the period 1947 to 1954 had the largest relative increases in annual earnings ($r = .501$).[11] All these relationships reflect one basic force: the differing rates of expansion of industries imply differing rates of increase in both labor and capital inputs, and higher remuneration for both inputs is a part of the mechanism of drawing in these resources.[12]

3. *Substitution of Capital for Labor*

The principle of substitution has been in neoclassical economics the basis of the theories of both production and distribution:

> Every agent of production, land, machinery, skilled labour, unskilled labour, etc., tends to be applied in production as far as it profitably can be. If employers, and other business men, think they can get a better result by using a little more of any one agent they will do so. They estimate the net product (that is, the net increase of the money value of their total output after allowing for incidental expenses) that will be got by a little more outlay in this direction, or a little more outlay in that; and if they can gain by shifting a little of their outlay from one direction to another, they will do so.[13]

The empirically minded economist is naturally concerned with how strong this principle is—how completely, and how rapidly, one resource is substituted for another if their relative costs or marginal productivities change.

[9] Seven out of the fifteen lowest-earnings industries in 1954 could be approximately matched in the *1950 Census of Population*; they had an average of 49.6 per cent female employees. The corresponding figure for six of the fifteen highest-earnings industries was 19.0 per cent.

[10] In the 1939–47 period, the correlation between log (C_{47}/C_{39}) and log (N_{47}/N_{39}) was only .278 (for thirty-seven industries) but in the 1947–54 period it was .617 (for forty-nine industries).

[11] This relationship, unlike that between relative increases in total capital and annual earnings, held also over 1939 to 1947 ($r = .502$).

[12] The correlation between relative increases in profit rates (1947–49 to 1951–54) with the relative increase in annual earnings was .618; the corresponding coefficient for the earlier period is .560 (where profit-rate averages were calculated for 1938–40 and 1945–47).

[13] Alfred Marshall, *Principles of Economics*, 8th ed., London, Macmillan, 1938, p. 521.

The quantification of the principle is elusive when the available information pertains to industries rather than firms. If we observe the relationship between wage rates and capital per worker in a group of industries at one time, we need not expect to find that there is more capital per worker in those industries in which wage rates are higher.[14] The industries have different techniques of production, which exert a large (and, at least over the moderate time periods, independent) influence upon the proportions between inputs. Moreover, labor is not homogeneous, and just as a steam shovel is more capital than a shovel, so is a skilled worker more labor than an unskilled worker.

Evidence of the importance of technological differences among industries in the ratio of capital to labor has already been provided by the comparison of capital per worker and average annual wages for 1939 and 1954 (in Table 29). There is in fact a weak positive relationship between annual wages and the amount of capital per worker (except in 1947), but it is attributable to differences in the quality of labor.

A more precise analysis encounters formidable difficulties in attaching a meaning to the cost of capital services. A given machine, for example, has costs composed of (1) interest on its purchase price, (2) depreciation, and (3) maintenance. Each component is obviously influenced by wage rates—original cost and depreciation, by wage rates in the machine building industry; maintenance, by wage rates in the industry in question. A proportional rise in wage rates for all types of labor raises simultaneously the cost of a given machine, and hence the cost of capital.

If product prices are proportional to the wage outlays which directly or indirectly go into the production of a piece of capital equipment, then a universal rise in wage rates by a given percentage will raise the price of the equipment in the same proportion. In this case, we should not expect a rise in wage rates—interest rates unchanged—to affect the optimum combination of capital and labor appreciably. In fact, however, there is reason for believing that a rise in wage rates would lead to a less than proportional rise in capital costs for a firm. Some outlays of capital goods are not resolvable into labor costs. This is clearly true of raw materials, cash balances, etc., and since these are essential to produce capital goods, it is therefore true also of capital goods. Yet there is no reason to believe that a 25 per cent rise in wage rates relative to interest rates will lead to anything like so large a rise in labor costs relative to the costs of capital.

We cannot test this argument for it rests on something we have never experienced, an equal proportional rise in wage rates throughout the

[14] Assuming that the cost of capital is the same for the industries.

economy. When wage rates rise at substantially different rates in different industries, substitution of capital for labor in the industries in which wages have risen relatively more is to be expected, because on average the prices of capital items to these industries will have fallen relative to wage rates.

The extent of substitution between capital and labor can be estimated from the changes in the capital-labor ratio over a period. There is, however, the usual problem of disentangling substitution from other forces, such as technology, which also affect the ratio. There has been some substitution due to the rising relative cost of labor, but changes in technology may have concealed or exaggerated the substitutability. Of course, the advances in technology may fundamentally be directed also by factor price changes.

If we attribute all of the substitution of capital for labor to relative factor price movements, we can estimate the elasticity of substitution by the regression equation: $(C/L)' = a + bE'$, where $(C/L)'$ is the percentage change in the capital-labor ratio and E' is the percentage change in earnings per worker. Here b is numerically equal to the elasticity of substitution,[15] on the assumption that capital costs are constant. For 1947–54, the equation is:[16]

$$(C/L)' = 10.939 + .931\ E', \qquad (n = 49)$$
$$(.234)$$

These gross comparisons indicate that the elasticity of substitution is roughly of the order of unity—a 1 per cent rise in earnings leads to a 1 per cent increase in the capital-labor ratio.

Two serious objections may be raised against the foregoing estimates of the elasticity of substitution. At best, analysis of different industries yields an average elasticity, about which the elasticities of individual industries may vary widely. The estimate of the average itself may be biased because of the operation of forces not taken into account. For example, if the quality of workers was rising in industries in which earnings rose most, the relative increase in the capital-labor ratio is overstated (and with it the elasticity). Or changes in technology could be acting to exaggerate (or conceal) substitution. Such possible extraneous influences can always be invented for any empirical relationship, of course.

[15] The elasticity of substitution of capital for labor is defined as $\Delta \left(\frac{C}{L}\right) \Big/ \frac{C}{L}$ divided by $\Delta \left(\frac{E}{i}\right) \Big/ \frac{E}{i}$, where i is the cost of capital (assumed to be constant).

[16] The corresponding equation for 1939–47 is:

$$(C/L)' = -57.74 + 1.076\ E', \quad (n = 37)$$
$$(.313)$$

Estimates of elasticities of substitution for individual industries have been made by various economists for individual (usually two-digit) industries, chiefly by comparing capital-labor (value added-labor) ratios by states.[17] The method assumes that differences in the price of labor reveal true differences in labor costs, and not differences in quality of labor. Our data permit an alternative set of estimates, by comparing the capital-output ratios of large and small companies with differences in average earnings of workers.[18] This approach assumes that the differences in earnings of workers of large and small companies represent real differences in labor costs, and that capital costs are the same for both sizes of company. The costs of capital are probably somewhat less for larger companies,[19] and some of their higher wage costs may represent higher quality of workers. Both possible biases work in the direction of exaggerating the elasticity of substitution, so our procedure yields a maximum estimate of the elasticity.

The procedure consists of comparing the ratio of capital to receipts in two company sizes (capital under $250,000 and over $5 million) with annual earnings in small and large *plants* (less than 50 and more than 500 employees). The comparison can be converted into an elasticity of substitution, which is reported in Table 30.[20]

[17] These studies include K. J. Arrow, H. B. Chenery, B. S. Minhaus, and R. M. Solow, "Capital-Labor Substitution and Economic Efficiency," *Review of Economics and Statistics*, Aug. 1961, pp. 225–251; J. Minasian, "Elasticities of Substitution and Constant-output Demand Curves for Labor," *Journal of Political Economy*, June 1961, pp. 261–270; and an unpublished study by Phillip Nelson.

[18] Direct capital-labor ratios cannot be computed, because no data are available on employees of large and small companies.

[19] The common findings of much lower interest rates for large bank loans, and much lower flotation costs on large security issues, are not conclusive. These capital sources clearly favor large companies, but small companies have other sources (trade credit, retained earnings) for which the differential may be much smaller.

[20] Let C be capital, M materials, L labor, and R receipts. Then

$$R = M + Lw + Ci,$$

where w is annual earnings and i is the rate of yield of capital services. If $M = \lambda R$ (so materials are proportional to sales), value added is

$$V = R(1 - \lambda) = Lw + Ci.$$

The elasticity of substitution between L and C is defined as

$$\sigma = -\frac{\partial\left(\frac{L}{C}\right)}{\partial w} \cdot \frac{wC}{L},$$

that is, the relative change in L to C divided by the relative change in the prices (= marginal products) of the factors, assuming that i is constant. Since

$$V = Ci + Lw,$$

The estimated elasticities are generally large, and are fairly similar for 1947 and 1954, which increases somewhat our confidence in them. The average elasticity is about 4 in both years. Although this is an upwardly biased estimate, the elasticity of substitution obtained from comparisons of large and small firms should exceed the average elasticity of unity obtained from the 1947–54 regression, and not merely because our procedure exaggerates the former elasticity. The differentials in factor prices to large and small firms are persistent and should have been adjusted to more fully than industries were able to adjust to wage changes within a seven-year period.

These estimates of the long-run elasticity of substitution between capital and labor are highly tentative, but if more refined data and analyses confirm the high elasticities we find, this result will have a large import for economics. High substitution elasticities lead one to predict that movements in relative wage rates or returns to capital—whether induced by state or private action—will lead to larger changes in the relative roles of labor and capital in the production process. Many important policies rest upon some assumption as to the effects of prices of resources on their employment, and few would be unaffected by the facts of substitution. It is the long-run substitution that dominates the questions of employment and income, and refinements of our procedure may contribute to its determination.

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and

$$\frac{V}{C} = i + \frac{L}{C} w,$$

$$\frac{\partial \left(\frac{V}{C}\right)}{\partial w} = \frac{L}{C} + w \frac{\partial \left(\frac{L}{C}\right)}{\partial w}$$

$$= \frac{L}{C}(1 - \sigma)$$

and

$$\sigma' = \frac{\partial \frac{V}{C}}{\partial w} \cdot \frac{wC}{V} = \frac{Lw}{V}(1 - \sigma)$$

Let

$$\log \left(\frac{V}{C}\right) = \sigma' \log w - \text{constant},$$

where σ' is defined above. Our estimate of σ' is

$$\frac{\log \left(\frac{R}{C}\right)_u - \log \left(\frac{R}{C}\right)_l}{\log w_u - \log w_l},$$

where u and l denote upper and lower size classes.

TABLE 30

ANNUAL EARNINGS OF EMPLOYEES, AND CAPITAL-RECEIPTS RATIO, FOR SMALL AND LARGE PLANTS AND FIRMS, 1947 AND 1954

Industry	*Earnings*[a] Small[c]	Large[d]	*Ratio, Capital to Receipts*[b] Small[c]	Large[d]	Ratio Value Added to Payroll	Elasticity of Substitution
			1947			
Malt beverages	1.23	1.58	.531	.482	2.86	−0.11
Meat products	1.11	1.29	.144	.149	1.64	1.38
Bakery products	0.95	1.12	.264	.404	1.78	5.68
Confectionery	0.83	1.10	.346	.488	2.74	4.34
Men's clothing	1.09	1.12	.290	.463	1.72	[e]
Pulp, paper, and allied products	1.17	1.31	.368	.753	2.41	16.25
Paints	1.19	1.42	.395	.471	2.55	3.55
Structural clay products	0.97	1.18	.661	.896	1.66	3.57
Pottery	0.84	1.31	.534	.511	1.53	0.85
Tin cans	1.08	1.31	.464	.728	1.82	5.15
Hand tools, hardware	1.10	1.31	.521	.771	1.68	4.77
Agricultural machinery	1.04	1.41	.489	.725	1.52	2.97
Construction machinery	1.23	1.40	.484	.671	1.80	5.49
Special industry machinery	1.38	1.40	.535	.894	1.60	[e]
Jewelry, except costume	1.35	1.35	.455	.516	1.81	[e]
Only 1947 Data Available						
Canning and preserving	0.83	1.16	.541	.628	2.19	1.98
Broad-woven wool	1.07	1.21	.409	.609	1.76	6.70
Knit goods	1.00	1.07	.428	.597	1.73	[e]
Newspapers	1.13	2.01	.566	.835	1.88	2.28
Periodicals	1.30	1.72	.383	.656	2.82	6.42
Drugs and medicines	0.97	1.29	.607	.836	3.18	4.56
Leather tanning	1.20	1.37	.355	.468	2.58	6.39
Footwear	0.98	1.08	.294	.422	1.55	6.75

(continued)

TABLE 30 (concluded)

Industry	*Earnings*[a] Small[c]	Large[d]	*Ratio, Capital to Receipts*[b] Small[c]	Large[d]	Ratio Value Added to Payroll	Elasticity of Substitution
			1954			
Malt beverages	1.87	2.64	.276	.576	2.64	6.62
Meat products	1.55	2.08	.159	.167	1.56	1.27
Bakery products	1.35	1.78	.247	.421	1.76	4.36
Confectionery	1.16	1.50	.339	.494	2.34	4.41
Men's clothing	1.36	1.35	.299	.531	1.52	[e]
Pulp, paper, and allied products	1.72	1.97	.429	.923	2.35	14.27
Paints	1.70	2.19	.414	.557	2.62	4.12
Structural clay products	1.43	1.75	.634	.934	1.59	4.06
Pottery	1.24	1.80	.459	.690	1.50	2.63
Tin cans	1.65	2.16	.347	.593	1.97	4.91
Hand tools, hardware	1.59	2.05	.554	.732	1.74	2.92
Agricultural machinery	1.54	2.21	.613	.826	1.74	2.45
Construction machinery	1.81	2.14	.476	.816	1.77	6.78
Special industry machinery	1.81	2.18	.589	.889	1.61	4.56
Jewelry, except costume	1.63	1.82	.500	.672	1.63	5.36
Only 1954 Data Available						
Broad-woven cotton	1.42	1.32	.432	.719	1.44	[e]
Narrow-woven fabrics	1.28	1.25	.451	.832	1.54	[e]
Hats	1.40	1.99	.418	.849	1.51	4.06
Drugs and medicines[f]	1.39	2.00	.550	.897	3.13	5.20
Perfumes	1.33	1.59	.522	.583	4.43	3.75
Industrial and miscellaneous chemicals	1.78	2.23	.435	1.029	2.58	10.88
Footwear[f]	1.31	1.45	.266	.556	1.59	12.56
Iron and steel foundries	1.70	2.18	.444	.787	1.50	4.44
Nonferrous foundries	1.79	2.28	.406	.615	1.46	3.50
Fabricated structural products	1.86	2.16	.397	.575	1.72	5.27
Metal stamping	1.70	2.20	.451	.588	1.60	2.65
Fabricated wire	1.52	2.13	.431	.616	1.69	2.80
Metalworking machinery	2.15	2.31	.523	.744	1.68	[e]
General industry machinery	1.82	2.11	.471	.669	1.75	5.16
Electric generating machinery	1.65	2.11	.421	.590	1.87	3.56
Appliances	1.48	2.07	.440	.535	2.10	2.22
Automotive electric equipment	1.64	2.13	.329	.600	1.69	4.90

[a] Wages per production worker man-hour.

[b] Ratio of assets, excluding other investments, to total compiled receipts for corporations submitting balance sheets to the IRS.

[c] Earnings are for establishments with less than 50 employees; capital-receipts ratios are for firms with assets under $250,000.

[d] Earnings are for establishments with over 500 employees; capital-receipts ratios are for firms with assets over $5 million.

[e] Difference in wage rates of large and small plants not considered significant.

[f] Not comparable to 1947 industry with same title.

SOURCE: *Census of Manufactures, 1947* and *1954*; and *Statistics of Income Source Book*, for 1947 and 1954. The method of computation is described in footnote 20.