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addition, sampling fluctuations are so great, especially when comparisons are made for individual states, that they may have concealed real differences. At the same time, in conjunction with other parts of our analysis, the comparisons give important confirmatory evidence of the general reliability of our data on income.

CHAPTER 3

Incomes in the Professions and in Other Pursuits

THE INCOMES that individuals receive from professional practice fluctuate widely from year to year, and the differences among individuals in any one year are even more striking. Of the 1,500 physicians in our 1935 sample, 3 had incomes above $40,000 in 1934, and 261 had incomes below $500—25 of them suffering losses. Of the 1,100 dentists, 4 had incomes above $16,000 in 1934, and 6 suffered losses. This wide variability of income characterizes not only professions but also other pursuits. Frequency distributions of income by size are very similar for the different professions, and are well illustrated by the sample distribution in Chart 1. Considerable skewness, wide variability, and great peakedness—these are the hallmarks of distributions of income from independent professional practice.

1 THE PLAN OF THE STUDY

General observation and previous studies suggest numerous factors responsible for variability of income. We know that

the income a professional man receives in a year depends on the state of the nation's business, the profession and type of practice he engages in, the organization and location of his practice, the number of years he has been in practice, his

CHART 1

Frequency Histogram of Net Incomes of Dentists, 1934

Frequency per
$500 of income

Net income (thousands of dollars)
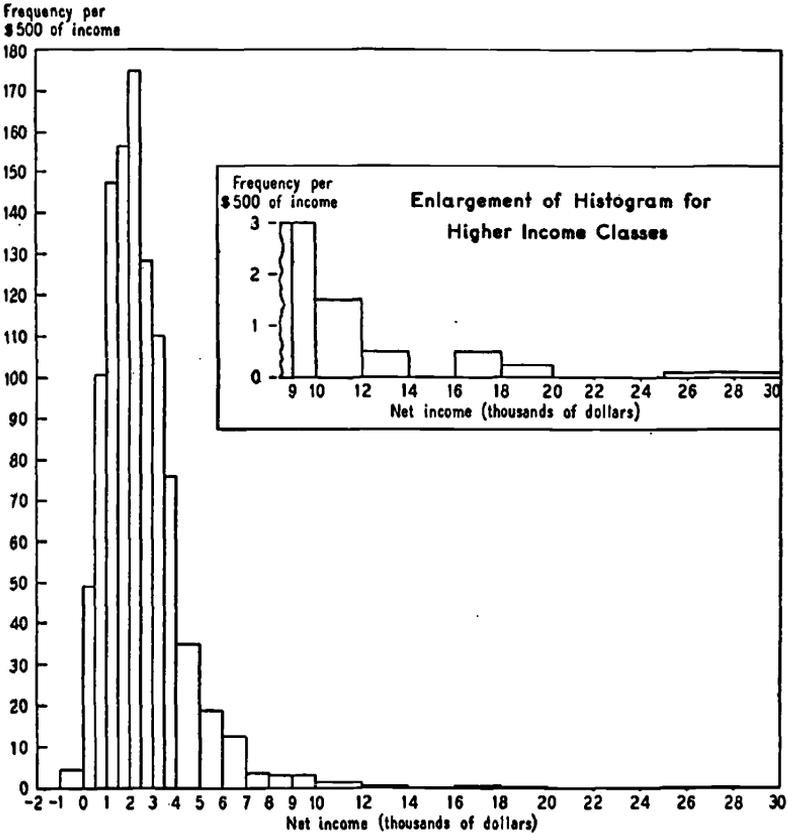
training, ability, personality, reputation, character, and general good fortune. But it is not enough merely to name factors making for variability of income. To be useful, the catalog must be quantitative as well as qualitative; the importance of the different factors and the direction and magnitude of their

influence must be measured. For many of the factors listed, even measurement is little more than taxonomy. If we find that a New York physician tends to earn more than a lawyer in Tulsa, Oklahoma, we have progressed only a short way. Why does this difference exist? Why has the ceaseless attempt of countless individuals to better their economic status not eradicated it?

The first step in the search for improved economic status is the choice of an occupation. An individual decides—or his family or conditions beyond his control decide for him—whether to train for a profession, and, if so, which profession. This choice, in which economic factors presumably play an important role, is not irrevocable but to give up a profession for which one has been trained entails heavy sacrifice. As a rule, the original choice more or less sets the boundaries of the individual's future strivings. What effect the choice will have on the income he can count on receiving depends on the character of the market for his chosen profession—the number of competitors and the circumstances that will induce new ones to enter the profession and old ones to leave, institutional factors governing entry, and the demand for the services of men in the profession. The character of the market and, in consequence, the incomes received, vary from profession to profession. In this chapter we analyze differences between the professions as a whole and all other pursuits; in the next, differences among the five professions for which we have detailed data.

The second step is to decide where to practise. An individual may be completely free to settle where he will, or external circumstances may leave little latitude. But he can move more easily than he can change his profession. The effect upon income of the choice of location depends on how much mobility there is, the nonpecuniary advantages and disadvantages attached to the location chosen, the economic fortunes of the selected community, and the like. The relation of location to income is considered in Chapter 5.

Having completed his training and decided where to prac-

tise, an individual is embarked on his professional career. In its course, he may become a salaried employee or practise independently, specialize or engage in general practice, become a member of a firm or practise alone. He will surely accumulate experience and acquire a reputation—good, bad, or indifferent. His training, innate skill and ability, personality, social connections, and the like will all contribute to shaping his career and determining his income. Some of these determinants of professional status are considered in Chapter 6, but the paucity of data severely limits the number of which account can be taken.

A professional man's income seldom remains the same from one year to the next. His relative status in the profession changes as his professional career gradually unfolds and as random events impinge upon him. In addition, the ups and downs in the economic fortunes of the economy leave their mark on the incomes of professional men. The stability of professional status over time is considered in Chapter 7; changes in the economic fortunes of the professional groups, in Chapter 8. This, in general, is the plan of the present study.

Throughout, we shall be interested in the income distribution as a whole. For want, however, of any simple method of describing it compactly yet completely, we concentrate on the two most important aspects of the distribution—the level of income, and the variability of income about the level.

As a measure of the level of income we use principally the arithmetic mean and occasionally the median—the value that divides into two equal groups an array of persons by size of income. Some of the reasons for our choice of the arithmetic mean, other than its statistical convenience, center about its peculiar relevance to one aspect of the choice of profession by prospective practitioners (see Ch. 4). In addition, the arithmetic mean is, by definition, the income each person would receive if the total income of the professional group were divided equally; it is therefore a convenient base for studying inequality in the distribution of income. It should be borne in mind that the same arithmetic mean can be obtained

from different distributions of income. But this is true of any summary measure and is, of course, the reason an analysis of other characteristics of the frequency distribution is essential.

As measures of absolute variability, i.e., variability measured in dollars, we use the interquartile difference and the standard deviation. As measures of relative variability, i.e., variability measured in percentages of the level of income, we use the interquartile difference divided by the median, the ratio of the third quartile to the first quartile, the coefficient of variation, and the Lorenz curve.[1] We use several measures because of the difficulty of attaching a precise and exact meaning to the concepts 'variability' and 'inequality'.[2] Reliance on a single measure might well lead to erroneous conclusions.

[1] The interquartile difference is the absolute difference between the third and the first quartile. The third quartile is the lowest income of the 25 per cent having the highest incomes; the first quartile, the lowest income of the 75 per cent having the highest incomes; the median is the lowest income of the 50 per cent having the highest incomes. In obtaining the standard deviation, each observation is expressed as a deviation from the arithmetic mean; these deviations are then squared and their sum divided by the number of observations; the square root of the resultant quotient is the standard deviation. The coefficient of variation is the ratio of the standard deviation to the mean. The Lorenz curve is explained below. The other measures are self-explanatory.

[2] See especially D. B. Yntema, 'Measures of the Inequality in the Personal Distribution of Wealth or Income', *Journal of the American Statistical Association*, Dec. 1933, pp. 423–33. This article summarizes material included in an unpublished University of Michigan doctoral thesis entitled *Measurement of Inequality in the Personal Distribution of Wealth or Income*.

The previously noted similarity in the general shape of income distributions suggests that a single simple mathematical formula might adequately represent all. The availability of such a formula would make it unnecessary to limit analysis to selected aspects of the distributions since the computed formulae would describe them compactly and completely. This procedure is not, however, practicable. Despite the great similarity among income distributions, none of the many attempts to discover a formula that describes them adequately has yet met with success.

The most celebrated is the attempt by Vilfredo Pareto, who suggested the curve that bears his name and less widely known variations of it. The Pareto curve gives a reasonably good fit solely for the higher income groups, and its adequacy even for these has been seriously disputed. Moreover, it cannot cope with negative incomes. F. R. Macaulay, who has made an exhaustive investigation of its validity, concludes not only that "Pareto's Law is quite inadequate as a mathematical generalization" but also that "it seems unlikely that any

2 STATISTICAL EVIDENCE ON DIFFERENCES IN INCOME

a Level of income

The data on the level of income in the professions and in other pursuits summarized in Tables 7 and 8, though not entirely satisfactory for our purposes, leave no doubt that incomes are considerably higher in the professions than in other pursuits as a whole, whether the comparison is made for independent professional men alone or for independent and salaried professional men. Table 7 presents estimates of the average income from employment of all gainfully occupied workers and of the average income in three of the five professions covered by our detailed data. The average income of dentists, though less than that of any of the other four professional groups, is more than three times the average for all pursuits. The average income from independent practice in the five professions

useful mathematical law describing the entire distribution can ever be formulated". See Wesley C. Mitchell, W. I. King, F. R. Macaulay, O. W. Knauth, *Income in the United States* (National Bureau of Economic Research, 1922), II, 393. H. T. Davis has recently suggested a formula that may be considered a generalization of Pareto's; but it seems no more applicable to distributions including negative incomes and so far as we know, no exhaustive test of its empirical validity has been made. See 'The Significance of the Curve of Income', *Report of the Fourth Annual Research Conference on Economics and Statistics* (Cowles Commission for Research in Economics, 1938), pp. 119–22.

The logarithmic normal curve is perhaps the closest approximation to the desired formula yet discovered, since it often fits the data rather well. However, it occasionally gives a poor fit; the small deviations from it when it does fit reasonably well do not seem randomly distributed; and it also is unable to represent negative incomes. A slight modification of the logarithmic normal curve suggested by R. Gibrat, *Les Inégalités Economiques* (Paris, 1931), makes it possible to include negative incomes, but only at the expense of obtaining poorer fits to the data. Gibrat suggests that the logarithm of the differences between the actual observations and an origin not necessarily zero will be normally distributed. The use of a negative origin would make it possible to include negative incomes. In actually fitting the curve, however, Gibrat ordinarily obtains the best fit by using a positive origin, thus increasing the difficulty. An additional weakness of Gibrat's formula is that there is as yet no analytical method for fitting it—Gibrat himself uses a graphical method—and hence no accurate technique for testing statistically the adequacy of the fit.

combined is probably four times the average earnings in all other pursuits.

Table 8 presents estimates for salaried professional workers as well as for independent practitioners, and for subgroups of the other pursuits. The professional groups are comprehensive; they include not only the five professions our sample data cover but also all other professions.[3] These estimates confirm the conclusion inferred from Table 7 about the difference be-

TABLE 7

Average Earnings

Certified Public Accountants, Physicians, Dentists, and All Gainfully Occupied Persons

	ARITHMETIC MEAN	
	1929–34	1929–36
	(dollars)	
Income from independent professional practice		
Certified public accountants	5,311	5,180
Physicians	4,081	4,031
Dentists	3,081	
Employee compensation plus entrepreneurial withdrawals per gainfully occupied person	991	976

Professions, Table 11; estimates of employee compensation plus entrepreneurial withdrawals by Simon Kuznets, *National Income and Its Composition, 1919–1938* (National Bureau of Economic Research, 1941), Table 68; number of gainfully occupied persons in the United States by Daniel Carson, *Labor Supply and Employment* (National Research Project, mimeo., Nov. 1939).

tween the incomes of independent professional men and all other workers: the arithmetic mean income of independent professional families is approximately four times that of all other families combined. Salaried professional families had a decidedly smaller mean income than independent professional families but a larger one than any other group except salaried business families. The professional group as a whole

[3] The estimates are for the 12 months from July 1935 through June 1936, were prepared by the National Resources Committee, and are based on data obtained from approximately 300,000 families through personal interviews and from federal income tax returns. *Consumer Incomes in the United States* (National Resources Committee, 1938).

had an average income some 30 per cent larger than that of the closest comparable group, business families, and 140 per cent larger than that of all other families combined. The medians, though somewhat closer together, tell essentially the same story as the arithmetic means.

TABLE 8

Average Income of Nonrelief Families in Seven Occupational Groups

National Resources Committee Estimates, 1935–1936

		INCOME PER FAMILY	
OCCUPATIONAL GROUP [1]	NO. OF FAMILIES	Arith. mean	Median
		(dollars)	
Farming [2]	6,166,600	1,259	965
Wage earning	9,459,300	1,289	1,175
Clerical	3,626,200	1,901	1,710
Business			
All	3,485,300	3,079	
Salaried	1,112,600	4,212	2,485
Independent	2,372,700	2,547	1,515
Professional			
All	1,330,100	4,022	
Salaried	989,200	3,087	2,100
Independent	340,900	6,734	3,540
Total, excl. professional	22,737,400	1,653	
Total	24,067,500	1,784	

Consumer Incomes in the United States (National Resources Committee, 1938), Table 9. Excludes all families receiving direct or work relief (however little) at any time during the year. Estimates relate approximately to the 12 months, July 1935 through June 1936.

[1] Families are classified according to the major source of family earnings.
[2] Includes all families living on farms in rural areas. Excludes village and city families with major earnings from farming.

Strictly speaking, these differences in family income bear only indirectly on the differences in individual earnings with which we are primarily concerned. (1) Family income, as defined by the National Resources Committee, includes not only earnings but also income from property and other sources; it includes the income not only of the principal earner but also

of all other persons in the family. The omission of income
from sources other than earnings would probably narrow the
differential between professional and other families since in-
come from property is likely to constitute a larger proportion
of the total income of professional than of other families. Omis-
sion of the earnings of supplementary earners would probably
have the opposite effect, since supplementary earners are likely
to be more common among nonprofessional families (except
salaried business families). It seems unlikely, however, that
the omission of these types of income would substantially
alter the differentials between professional and other fami-
lies.[4] (2) The estimates in Table 8 are for families who did
not receive relief at any time during the year covered. The
exclusion of relief families has the advantage from our point
of view of diminishing the importance of sources of income
other than earnings. On the other hand, many of the excluded
families received only a small part of their total income from
relief; and a sizable part of relief payments were in the form
of work relief, which it might be desirable to include. The
inclusion of families receiving relief would affect the profes-
sional group less than most of the other groups and hence
would widen the differentials. (3) The estimates are for fami-
lies of two or more; single individuals are excluded. The effect
that the inclusion of single individuals would have on the
income differentials depends in large part on how the profes-
sional group is defined. If trained nurses were considered pro-
fessional workers, the differentials might well be narrowed
since private nurses, predominantly single individuals, would
constitute about a sixth of all independent professional work-
ers and probably receive considerably smaller incomes than

[4] This statement is based on an examination of the figures from the Study of
Consumer Purchases—the major source on which the National Resources Com-
mittee estimates are based—for separate communities. Although data on indi-
vidual earnings were obtained in the Study of Consumer Purchases, national
estimates similar to those in Table 8 have not been prepared. See bulletins of
U. S. Bureau of Labor Statistics and U. S. Bureau of Home Economics summar-
izing the results of the Study of Consumer Purchases.

most other professional workers. On the other hand, if trained nurses were not considered professional workers, the inclusion of single individuals would almost certainly widen the differentials, since professional workers so defined tend to be older than other workers and hence are more likely to be married; and single individuals probably receive lower average incomes than older married persons. (4) Since the family is the income unit, the family as a whole must be classified by occupation. This was done by assigning each family to the occupational group from which the largest amount of family earnings was derived. Consequently, some professional workers are included in families classified in other occupational groups because other family members (or the same individual) received larger earnings from the other occupation. Conversely, professional families include some gainfully occupied workers who are not professional workers. It is doubtful, however, that much heterogeneity arises from this source.

This listing of the deficiencies of the National Resources Committee estimates for our purpose does not tell us their combined effect on income differentials: some tend to narrow the differentials, others to widen them. However, the differentials are sufficiently large to lead us to believe that removal of the deficiencies would not seriously alter our conclusion that independent professional men receive average earnings 250 to 350 per cent larger than the average earnings of all other workers, and that the professional group as a whole— including both independent and salaried professional men— receives average earnings 100 to 200 per cent larger than the average earnings of all other workers.

b Variability of annual income

Data on variability of income in the professions and other pursuits are even less adequate than data on income level. Major reliance must be placed on one of the sources used in the preceding section—the distributions of income for 1935–36 prepared by the National Resources Committee and presented

CHART 2

**National Resources Committee Distributions of Income, 1935-1936
Nonrelief Families in Five Occupational Groups**

Percentage of
net income

Percentage of families
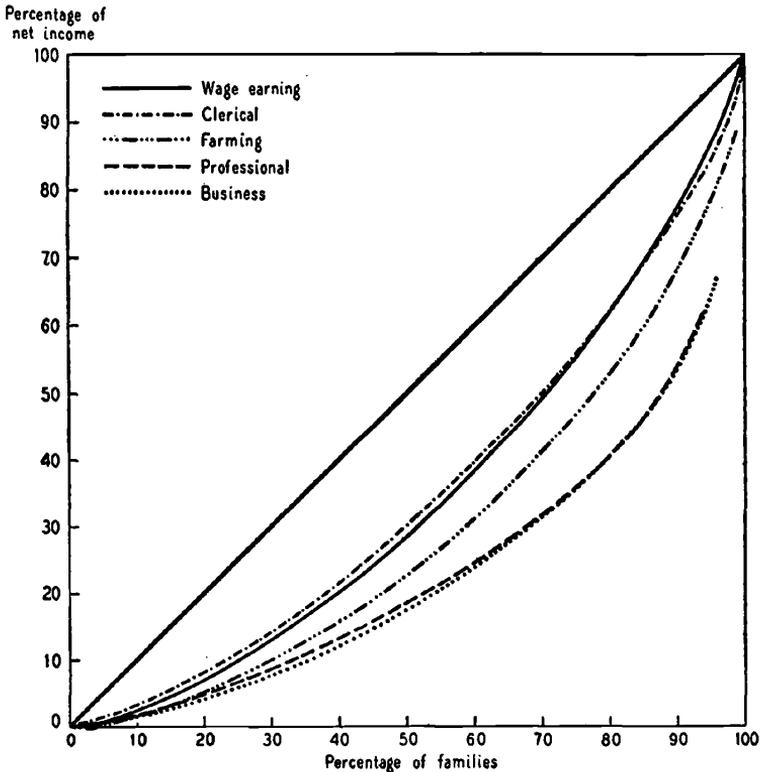
in the form of Lorenz curves in Charts 2 and 3.[5] According to
Chart 2, professional families display about the same relative
variability of income as business families but greater variabil-

[5] The Lorenz curve is a useful device for depicting graphically the degree of
relative variability or inequality of income. Along the horizontal axis is meas-
ured the percentage of individuals, arrayed in order of the size of their incomes
(from small to large). Along the vertical axis is measured the percentage of
the total income received. The various points on a Lorenz curve indicate the
proportion of the total income received by the 1 per cent, 2 per cent, etc., of
individuals with the lowest incomes. If each individual received the same
income, the percentage of income would be the same as the percentage of
individuals, and the Lorenz curve would be a straight line. The straight diago-

CHART 3

National Resources Committee Distributions of Income, 1935–1936
Nonrelief Business and Professional Families

Percentage of
net income

Percentage of families
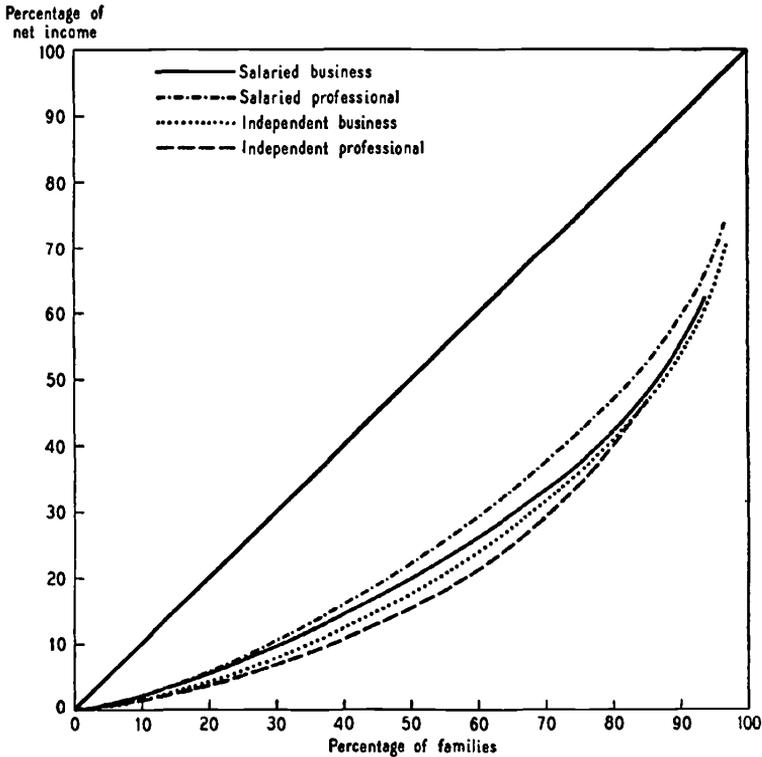
ity than farming, wage earning. and clerical families. According to Chart 3, which presents incomplete Lorenz curves for

subdivisions of the business and professional groups, relative variability of income is greater for the independent than for the salaried groups. For the income classes for which data are available, independent professional families display greater

CHART 4

National Resources Committee Distributions of Income, 1935–1936

All Nonrelief Families, All Families, and All Families and

Single Individuals

Percentage of
net income
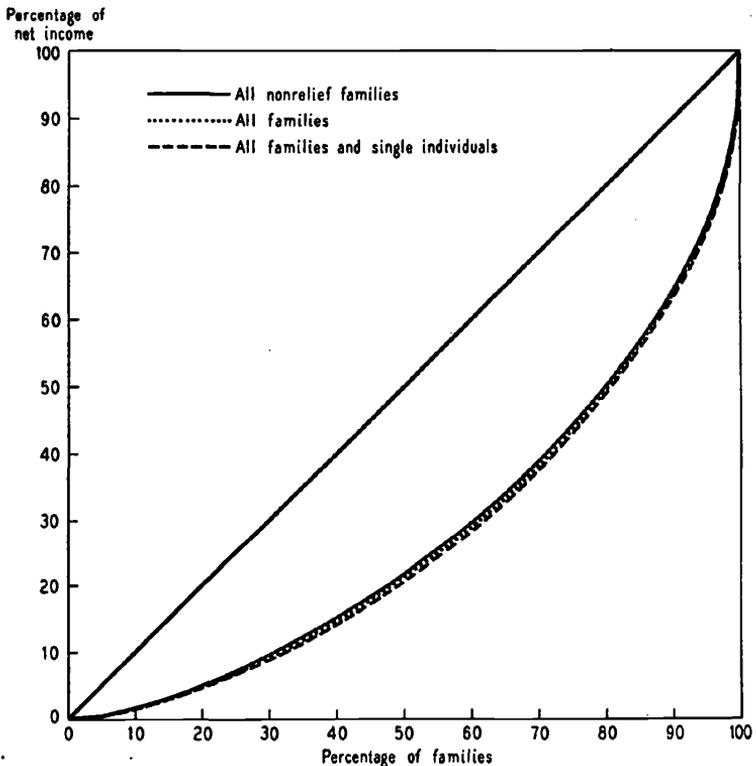
variability than families of independent businessmen. However, it appears from the chart that, for the income classes for which data are not available, independent professional families may display less variability than the independent and salaried business families and possibly even the salaried pro-

fessional families, i.e., it appears that the missing segment of
the Lorenz curve may intersect the Lorenz curves for the other
groups.

These differences in the variability of family income cannot
be interpreted as necessarily reflecting corresponding differ-
ences in the variability of individual earnings. From this point
of view, the National Resources Committee distributions of
income are subject to the deficiencies listed in the preceding
section in discussing the estimates of average income: they are
for nonrelief families of two or more, for family income from
all sources, and for groups classified by 'family occupation'.

Some indication of the effect of excluding relief families and
single individuals is given by Chart 4 which presents Lorenz
curves based on the National Resources Committee distribu-
tions for (1) all nonrelief families of two or more, (2) all fami-
lies of two or more, relief and nonrelief, (3) all families and
single individuals. The curve for nonrelief families shows
somewhat less variability than the curve for all families, and
the latter than the curve for families and single individuals.
However, the differences are exceedingly small. The negligi-
ble effect that the inclusion of single individuals and families
receiving relief would have on the Lorenz curve for all occu-
pational groups combined does not, by itself, justify the as-
sumption that their inclusion would alter equally little the
Lorenz curves for the separate occupational groups. But, to-
gether with several other considerations, it does establish a
presumption that the relation among the Lorenz curves would
not be significantly altered.[6]

The fact that the National Resources Committee distribu-

6 These considerations are: (1) The differences among the five Lorenz curves
in Chart 2, or even among the four in Chart 3, are very much greater than
among the three curves in Chart 4. To alter significantly the relations among
the occupational groups, inclusion of relief families and single individuals would
have to change the Lorenz curve for a specific occupational group by many
times the amount it changes the curve for all occupational groups combined—
an unlikely result. (2) Both single individuals and relief families probably con-
stitute a greater proportion of the wage earning and clerical groups than of
the business and professional groups, since earners in the latter not only

tions are for family income from all sources is more trouble-some than the exclusion of relief families and single individ-uals. Some indication of the possible difference between a dis-tribution of total family income and a distribution of earn-ings is given by the two Lorenz curves in Chart 5. The one for 1935–36 incomes of nonrelief independent professional fami-lies has already been presented in Chart 3. The other is based on a distribution of 1933 income from independent profes-sional practice obtained by combining the distributions for physicians, dentists, lawyers, and certified public accountants from our 1935 samples. (These are plotted separately in Lorenz curve form in Chart 10.) [7]

The difference between the two Lorenz curves, though fairly large, is not unreasonable. The Lorenz curve for families is at first above but thereafter considerably below the Lorenz curve for individuals, i.e., the families who fare worst tend to have incomes closer to the average for the group as a whole than the individuals who fare worst, but the families who fare best

receive higher incomes but also tend to be older. (As noted in the preceding section, this statement would have to be qualified if private nurses were con-sidered independent professional workers.) And these are the groups whose Lorenz curves differ most from the Lorenz curve for the professional families. (3) Finally, since all Lorenz curves would presumably be altered in the same direction, only differential effects could change their relative position.

[7] The sample distributions of income were expressed in percentage form, mul-tiplied by the total number of independent practitioners in each profession in 1930 as estimated in Table 1, and summed, income class by income class. The total income in each income class was estimated separately for each pro-fession and then summed, income class by income class.

The National Resources Committee distribution includes all professions; that based on our data includes only physicians, dentists, lawyers, and certified public accountants. According to Table 1, there were approximately 300,000 independent practitioners in these four professions in 1930. The total number of independent professional practitioners in 1930 may be estimated as slightly less than 600,000, of whom over 100,000 were private nurses (based on figures used in Simon Kuznets' estimates of national income). The National Resources Committee sets the total number of nonrelief independent professional families of two or more in 1935–36 at 340,900 (*Consumer Incomes in the United States*, p. 26). These four professions therefore include at least half of all independent professional practitioners, and probably an even larger proportion of the inde-pendent professional practitioners who are members of families of two or more.

CHART 5

National Resources Committee Distribution of Income for Nonrelief
Independent Professional Families, 1935 – 1936, and Distribution
of Income from Independent Practice for Four Professions
Combined, 1933

Percentage of
net income

———— Four professions, 1933
- - - - - - Independent professional families, 1935-36

Percentage of families or individuals
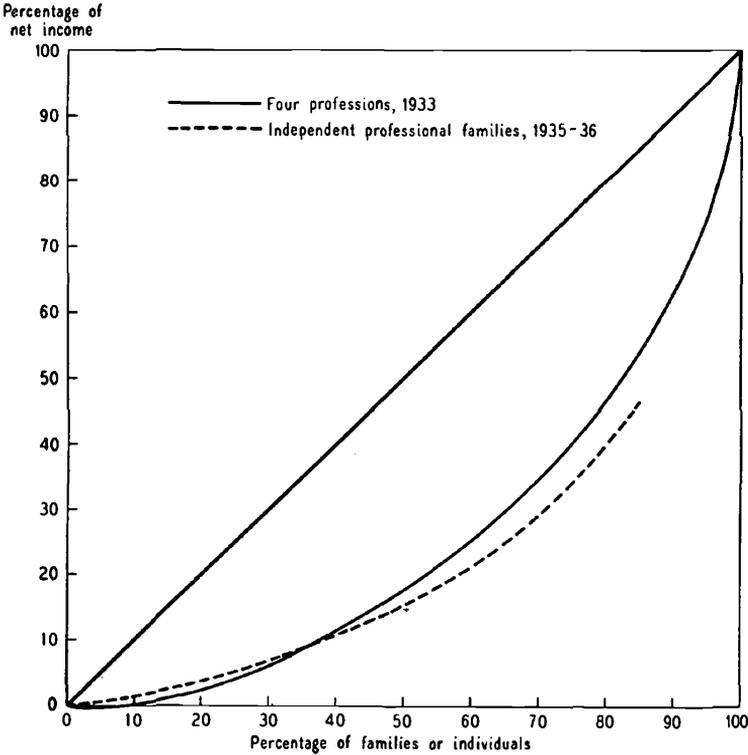
tend to have incomes further above the average for the group
than the individuals who fare best. Presumably, both the low-
est and the highest professional incomes tend to be received
by individuals who are members of families with other sources
of income. At one extreme, a low professional income may rep-
resent returns from an independent practice that is merely a
part-time activity or that is conducted by a supplementary
earner; at the other extreme, a high professional income may

have made possible additional income from property, or con-
versely, the status implied by large income from other sources
may have made possible the high professional income.[8]

A distribution of individual earnings might be expected to
differ from a distribution of family income in the same way,
but not necessarily to the same extent, for other occupational
groups as for independent professional workers. The differ-
ence would probably be less for wage earning and clerical
workers than for business and professional workers since the
former presumably receive less of their income from sources
other than earnings. If this presumption is correct, converting
the distributions of family income in Chart 2 into distribu-
tions of individual earnings would lessen the divergence be-
tween (a) the wage earning and clerical groups, and (b) the
business and professional groups; however, the divergence be-
tween the distributions of family income for the two sets of
occupations is so large compared to the divergence between
the two curves in Chart 5 that it would almost certainly not
be eliminated entirely. What effect the conversion would
have on the relations among the Lorenz curves in Chart 3 for
the four business and professional groups is much less clear.
We have little basis for judging which groups are most de-
pendent on income from sources other than the earnings of
the principal earner, and the differences among the Lorenz
curves for the four groups are of about the same order of
magnitude as the differences between the two curves in Chart
5, so that the possibility that the conversion would alter the
relations among them cannot be ruled out.

One final bit of evidence on the difference between the
variability of income from independent professional practice

8 An analogous result was obtained in the Australian Census of Wealth and
Income for 1915. The average wealth of individuals was found to be higher for
the two lowest income classes than for the intermediate income classes. There-
after the average wealth increased steadily with income. The explanation
given was that the intermediate income classes derived their income predomi-
nantly from earnings. See G. H. Knibbs, *Private Wealth of Australia and its
Growth* (Commonwealth of Australia, Commonwealth Bureau of Census and
Statistics, 1918), pp. 30, 31, 49.

CHART 6

Distribution of Income for All Individuals in the United States,
1918, and Distribution of Income from Independent Practice
for Four Professions Combined, 1933

Percentage of
net income
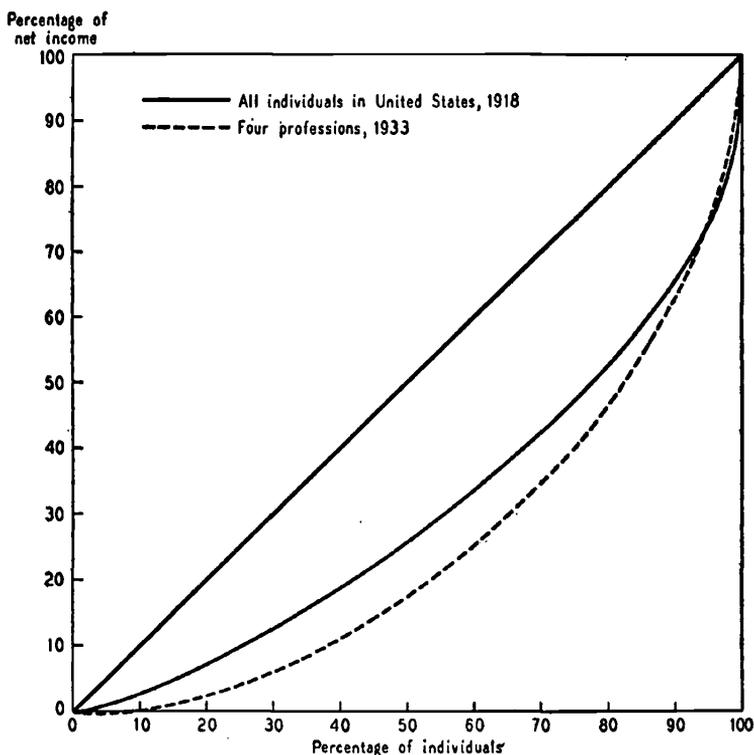
and from other pursuits is presented in Chart 6 which com-
pares the 1933 distribution of professional income of physi-
cians, dentists, lawyers, and certified public accountants
(repeated from Chart 5) with the 1918 distribution of total
income of all individual income recipients prepared by the
National Bureau of Economic Research.[9] For our purpose,
the National Bureau distribution has one advantage over the
National Resources Committee distribution for families and

[9] Mitchell, King, Macaulay, and Knauth, *Income in the United States*, I, 134.

single individuals: it is based on individual rather than family
income. This advantage is, however, more than counterbal-
anced by the fact that it is for 1918. The Lorenz curves for our
professions change little from year to year; but this hardly
justifies the assumption that the distribution of the income
of all individuals changed little between 1918 and 1933.

The distribution of professional income displays much
greater variability than the 1918 distribution throughout most
of the range. Indeed, the difference between the two distribu-
tions is much greater than the difference between the former
and the National Resources Committee distribution for fami-
lies and single individuals. Whether the explanation is that
the National Bureau distribution is for 1918 and the National
Resources Committee distribution for 1935–36, or that the
National Bureau distribution is for individual income, it is
impossible to say.

The evidence presented in this section is both too meagre
and subject to too many qualifications to justify a definitive
conclusion about the relative variability of earnings from pro-
fessional practice and from other pursuits. We have been
forced to work with concepts of income that are inappropriate
for this purpose, and with the extremely broad occupational
classification used by the National Resources Committee. The
relative variability of income is greater for independent pro-
fessional men than for any of the other six broad occupa-
tional groups, but there undoubtedly are narrower occupa-
tional groups that display even greater variability. Despite
these qualifications and limitations, the evidence presented,
while certainly insufficient to demonstrate that the incomes of
independent professional men are more variable than those of
any other occupational group, does seem to warrant the conclu-
sion that earnings from independent professional practice dis-
play greater relative variability than earnings from all pursuits
combined and probably than earnings from most other pur-
suits taken separately. A similar but more equivocal conclu-
sion is probably justified about the earnings of all professional
workers, salaried and independent.

3 FACTORS MAKING FOR DIFFERENCES IN INCOME

It is clear from the evidence of the preceding section that the 3 million persons engaged in professional work are on the whole a fortunate group. Their earnings, though less equally distributed than those of nonprofessional workers, are between two and three times as large.

In small part this difference between the countrywide averages is illusory, reflecting differences in the location and age of the two groups of workers. Professional workers tend to be concentrated in the larger communities in which average incomes are relatively high. According to the National Resources Committee estimates for nonrelief families, over 40 per cent of professional families, but less than 30 per cent of other families, live in cities with populations over 100,000. Nonrelief families living in cities of this size received an average income in 1935–36 that was 56 per cent larger than that of nonrelief families living in small communities.[10] A rough estimate suggests that if other workers were distributed by size of community as professional workers are, their average income would be raised slightly less than 7 per cent.[11] Hence, professional workers apparently receive an average income be-

[10] *Consumer Incomes in the United States*, pp. 23, 103.

[11] This estimate is based on the National Resources Committee estimates of the average incomes of nonrelief families in six types of communities—communities with populations of 1,500,000 and over, 100,000–1,500,000, 25,000–100,000, 2,500–25,000, rural nonfarm communities, and farms. For the present purpose we combined the last two groups. The average incomes for the five groups were then weighted, first, by the percentage distribution of nonprofessional families, second, by the percentage distribution of professional families. The first set of weights yielded an average of $1,774; the second, of $1,891, or 6.6 per cent larger. The procedure is rough because the averages used relate solely to nonrelief families, to families rather than individuals, to total income from all sources rather than earnings alone, and to all families rather than nonprofessional families alone. The last defect is not, however, serious because professional families are few relatively to nonprofessional. In addition, we show in Chapter 5 that size of community differences in the average income of independent professional workers are roughly similar to the corresponding differences in the average income of all nonrelief families. Hence, the exclusion of the professional families would have little effect on the size of community differences in average income.

tween 85 and 180 per cent larger than that of nonprofessional workers living in communities of the same size.

It is more difficult to correct for the apparent concentration of professional workers in the younger age groups, which has presumably resulted from the rapid growth of professional activity in recent decades.[12] The corresponding period of the professional career includes both the early years of low earnings and the intermediate years of average or better than average earnings. It is therefore not clear whether correction for the concentration of professional workers in the younger age groups would raise or lower the differential between the earnings of professional and nonprofessional workers. The net effect would probably be small.

These purely statistical factors therefore explain only a small part of the observed difference between the average incomes of professional and nonprofessional workers. There remains a difference of some 85 to 180 per cent between the average incomes of professional and nonprofessional workers in the same community and in the labor market the same number of years. What factors account for this large difference? Why does it not lead young men to flock into the professions, thereby driving incomes in the professions down relatively to incomes in other pursuits?

One reason why this does not occur is that young men choosing their lifework take account of many factors other than expected earnings. They compare not monetary returns alone but, in Adam Smith's phrase, "the whole of the advantages and disadvantages" of different occupations. The larger average earnings in the professions are balanced against the costs of the additional training that must be acquired. And purely pecuniary considerations are supplemented by many others—the character of the work in different occupations, the responsibilities involved, the possibilities of rendering service, their social standing, the hardships and pleasures attached to the work, and so on.

12 Edwards, *Social-Economic Grouping of the Gainful Workers of the United States, 1930*, p. 26.

The most objective of these additional factors is the longer period of training required of a professional man and the attendant extra investment. In most other fields, a man is ready to pursue his occupation at an early age. The professional man, as we saw in Chapter 1, must undergo four to nine years of specialized training, at considerable expense and at the sacrifice of income that might otherwise have been earned. The professional man who goes into independent practice must in addition purchase capital equipment and in many cases provide for his maintenance during the initial years of practice.

In order that the "whole of the advantages and disadvantages" may be the same as in other pursuits, pecuniary returns in the professions would have to be sufficiently high—relatively to the level that would be considered adequate on other grounds—to hold out reasonable prospects of recouping this extra investment. "When any expensive machine is erected, the extraordinary work to be performed by it before it is worn out, it must be expected, will replace the capital laid out upon it, with at least the ordinary profits. A man educated at the expense of much labor and time to any of those employments which require extraordinary dexterity and skill, may be compared to one of those expensive machines. The work which he learns to perform, it must be expected, over and above the usual wages of common labor, will replace to him the whole expense of his education, with at least the ordinary profits of an equally valuable capital. It must do this, too, in a reasonable time, regard being had to the very uncertain duration of human life, in the same manner as to the more certain duration of the machine." [18]

The data available are so meagre and unsatisfactory that it is impossible to do more than make the roughest kind of guess about the percentage by which the average earnings of the professional worker would have to exceed the average earnings of the nonprofessional worker to compensate for the

[18] Adam Smith, *Wealth of Nations* (Everyman's Library; E. P. Dutton, 1910), I, 88–9.

extra capital investment required. Our guess is that the difference would not have to be more than 70 per cent and might be a good deal lower. Interestingly enough, almost half of the 70 per cent is accounted for by the postponement of income involved in the choice of a professional career. The assumptions leading to the upper estimate of 70 per cent are presented in detail in the Appendix to the next chapter (Sec. 1b). The more important are that the average period of training in the professions is 7 years, the specific costs of professional training (tuition fees, books, special equipment, etc.) are $500 per year, the life expectancy of professional workers is three years longer than that of nonprofessional workers, and the average income of nonprofessional workers is equal to that of unskilled laborers, or approximately $750 per year. If the average income of nonprofessional workers is assumed equal to that of skilled laborers, or $1,430 a year, the differential needed to make professional and nonprofessional pursuits equally attractive financially is reduced to 55 per cent.

On the basis of these figures, the actual difference between the incomes of professional and nonprofessional workers seems decidedly larger than the difference that would compensate for the extra capital investment required. The only other empirical study of this question of which we know, a study by J. R. Walsh, reaches essentially the same conclusion.[14] Walsh compares the present value of the life earnings of individuals with the cost of the special training they have had. The principal results are summarized in Table 9. The estimates of the present value of life earnings in columns 2, 4, and 6 are based on scattered studies for years between 1926 and 1929, and are admittedly subject to wide margins of error. They were computed by determining the median earnings for different numbers of years of experience, adjusting these figures to allow for deaths and for the percentage of persons employed at each age so as to get the total amounts actually earned by the survivors, discounting the individual amounts

14 'Capital Concept Applied to Man', *Quarterly Journal of Economics*, Feb. 1935.

at 4 per cent, and summing to obtain the present value of life earnings as of the middle of the first year of employment. The difference between the returns at a later and at an earlier stage of training were then compared with the corresponding difference in costs.

Columns 4 and 5, which compare the returns of training

TABLE 9

Comparison between Discounted and
Cost Values of Special Training

J. R. Walsh's Estimates

RANK OF EDUCATION	DISC. VALUE OVER ELEM. EDUC.	COST VALUE OF SAME	DISC. VALUE OVER H. S. EDUC.	COST VALUE OF SAME	DISC. VALUE OVER B.A.	COST VALUE OF SAME
(1)	(2)	(3)	(4)	(5)	(6)	(7)
			(dollars)			
			Men			
High school	7,142	5,000				
B.A.			35,009	6,398		
M.A.			36,041	9,848	1,032	3,450
Ph.D.			43,226	21,413	8,217	15,015
B.B.A. or B.C.S.			57,631	12,963	22,622	6,565
M.D.			37,690	22,143	2,681	15,745
LL.B.*			67,784	16,447	32,775	10,049
LL.B.*			83,386	16,447	48,377	10,049
Engineers *			42,101	13,000	7,092	6,602
Engineers *			49,003	13,000	13,994	6,602
			Women			
B.A.			9,030	6,398		
M.A.					4,631	2,950

Reproduced from 'Capital Concept Applied to Man', *Quarterly Journal of Economics*, Feb. 1935, Table V, with a few minor corrections.
* Two estimates based on different sources.

beyond high school with the corresponding costs, are of primary interest for an analysis of the professions as a whole. For every group the returns are considerably higher than the costs. Columns 6 and 7, which compare the returns of training beyond college with the corresponding costs, offer additional evidence on the adjustment among different levels of training. Even these comparisons show returns that exceed costs for 6 out of 9 groups. And for 1 of the 3 groups for which the

reverse is true, medicine (M.D.), the return computed by Walsh seems unduly low.[15]

Walsh's procedure is superior to ours in two important respects: first, it makes explicit allowance for differences among individuals in length of life; second, the income data purportedly are for individuals grouped by training rather than by the occupation they engage in.[16] Counterbalancing these advantages are a number of defects that make correct interpretation of the results difficult.[17] On balance, it appears that

[15] Walsh estimates the discounted value of median life earnings of M.D.'s as $70,327 (*ibid.*, p. 267). H. F. Clark, on the other hand, estimates the discounted value of median life earnings of physicians for 1920-29 as $106,000 on the basis of one body of data, and as $116,000 on the basis of a second. He also gives an estimate for 1920-36 of $98,000. See *Life Earnings in Selected Occupations in the United States* (Harper, 1937), p. 70. Both investigators use an interest rate of 4 per cent in discounting returns. Although the methods differ in other respects, the estimates for the other two occupations for which comparison is possible, law and engineering, give no reason to suppose that Clark's method has an upward bias relatively to Walsh's.

[16] The reason that this is an advantage is that individuals planning to become lawyers, for example, must take account of the possibility that after completion of training they will be unable to practise or that their training will stand them in better stead in other pursuits. Unfortunately, reliable data for groups classified by character of training are exceedingly rare. All the data in the preceding section on incomes in the professions and in other pursuits are for groups classified by present occupational attachment. It is difficult to judge the magnitude of the error introduced in this way. Some individuals engage in occupations other than those they prepare for because the other occupations offer greater returns (e.g., many with legal training); others because they find themselves unsuited to the occupation they initially chose. The former may well receive larger incomes than their fellow students; the latter probably receive smaller incomes, since training for a profession is ordinarily less valuable in other pursuits. Probably most people practise the professions they prepare for. If so, the net difference between classifying individuals by present occupation and by character of training cannot be large.

[17] There are four defects in Walsh's procedure. (1) Walsh's cost figures include not only special expenditures for education but also living expenses and foregone income, income that would have been earned during the time devoted to additional training. These two items clearly duplicate each other; moreover, neither should be included for the present purpose. The foregone income included in the costs, say, of a college education is automatically counted in the returns to those with only a high school education. When the latter is subtracted from the returns to those with a college education, allowance is implicitly made for foregone income. Hence, including it in the cost figure involves

correction of Walsh's figures for their defects would probably strengthen rather than weaken the conclusion suggested by Table 9; namely, that returns in the professions exceed returns in other pursuits by an amount considerably in excess of the extra costs involved, a conclusion independently supported by our earlier analysis.[18]

duplication. (See point (1) in Sec. 1a of the Appendix to the next chapter.) (2) The use of median earnings makes the estimates of returns too low. The actuarial nature of the problem clearly requires arithmetic mean earnings, which are usually considerably higher than median earnings. (3) The present value of returns and the accumulated costs refer to an age that differs from one level of training to the next since they are computed as of the middle of the first year of employment. To make the comparison valid they should refer to the same age for the different levels of training. The net effect of this defect is to inflate the difference between excess returns and excess costs at the later stages by accumulated interest on the difference between returns and costs at the earlier stage. The reason for this is that the difference between the present value of returns at the later and earlier stages is larger than it would be if the present values at both stages referred to the same age. The excess is equal to interest on the present value at the earlier stage for the intervening period. The difference between the costs at the later and earlier stages is affected in similar fashion. If the present value of returns equaled costs at the earlier stage, both sets of figures would be affected equally and the comparison between the excess returns and excess costs would be entirely valid. In fact, however, returns uniformly exceed costs at the earlier stages. (4) No allowance is made for differences among the groups in their distribution by location.

[18] The first two defects listed in the preceding footnote tend to make the estimated costs too high and the estimated returns too low and thus tend to lessen the spread between returns and costs. The third and fourth defects have the opposite effect. Rough estimates of the influence of the third defect suggest that it does not affect the results seriously; correction for it would make the cost value in column 7 of Table 9 for the first group of engineers exceed the discount value in column 6, but would not alter the direction of the difference between returns and costs for any of the other comparisons. The second defect is considerably more important. Use of mean instead of median earnings would probably add between $5,000 and $20,000 to the figures in columns 4 and 6 and might well make the estimated returns of training beyond college greater than the corresponding costs for all groups. This estimate of the effect of using mean instead of median earnings is based on measures of the present value of both mean and median earnings given by Clark (op. cit.) for several occupations. According to these estimates, the present value of mean earnings exceeds that of median earnings by 10 to 20 per cent. Walsh's estimates of the present value of median earnings for groups with college training vary from $32,000 for women with a B.A. degree to $208,000 for one of the groups with an LL.B. degree.

Taking account of the extra costs as well as the extra returns of professional work weakens the pecuniary incentive to enter the professions, but apparently does not remove it. Extra costs can at most explain part of the difference between incomes of professional and nonprofessional workers. There must be other reasons why individuals do not flock into the professions in sufficient numbers to erase the rest of the difference.

It is hard to believe that one of these reasons is that a profession is considered a less desirable vocation than a nonprofessional pursuit. Professional men are everywhere held in high esteem and are ordinarily among the leaders of their communities. In addition, professional work is ordinarily regarded as more interesting than nonprofessional work, as socially more valuable, as giving greater play to individual aptitudes and initiative. These are necessarily qualitative judgments, and we could not easily test or prove them. Yet the balance seems so clear that we have no hesitation in discarding this possible explanation of the excess of pecuniary returns over pecuniary costs.

If this judgment is correct, the difference between incomes in the professions and in other pursuits is larger than can be explained by the free choice of occupations by young men. There is nothing surprising about this finding. It is clear that young men are, in fact, not equally free to choose a professional or nonprofessional career. There are two major reasons why this is so. First, the professions require a different level of ability than other pursuits; second, the economic and social stratification of the population leaves only limited segments really free to enter the professions.

In some professions, such as medicine, dentistry, law, and certified public accountancy, the need for special ability has been explicitly recognized by society. The practice of these professions is open solely to persons licensed by the state, and a license is granted only after the demonstration of a certain level of competence. Persons who cannot meet these standards are excluded from the professions. Some, recognizing their lack of aptitude or having it pointed out to them by

their parents or teachers or friends, make no attempt to enter
the professions; others are weeded out by the colleges and
professional schools; still others, though as we saw in Chapter
1 relatively few, by the licensure examinations. In professions
not under state licensure the first two tendencies alone are
operative, but these are enough to assure that on the whole
persons who enter the professions have the special aptitudes
required in higher degree than those who either decide not
to enter the professions or are weeded out in the earlier stages.
Persons who enter the professions might therefore earn more
in other pursuits than persons who do not, though this would
clearly not be universal, since special aptitude for one pursuit
may not qualify a man for another. More important, earnings
in the professions depend not on the total number of persons
who would like to enter the professions, but on the number
who have sufficient ability to do so.

The second factor that limits the number who are free to
choose a professional career is the economic and social strati-
fication of the population. It is not enough that a young man
who wishes to enter the professions have sufficient ability; he
must also be able to command funds to pay the expenses of
training and to support himself during the training period.
Because of the peculiar character of the capital investment in
training, these funds cannot be obtained on the open market
as a purely 'business loan', and hence are not freely available
to all. "The worker sells his work, but he himself remains his
own property: those who bear the expenses of rearing and
educating him receive but very little of the price that is paid
for his services in later years." [19] Consequently investment in
training is not governed by the usual profit incentives. The
noneconomic values attached to a professional training might
well lead an individual to invest in himself, his children, or
his protégés even though he did not expect the added income
to repay the cost; on the other hand, no investor in search of
profit would invest in the education of strangers even though

19 Alfred Marshall, *Principles of Economics* (8th ed; London: Macmillan, 1930),
pp. 560-1.

he expected that the return to the latter would greatly exceed the cost. The fact that the returns from capital investment in training and education seldom accrue to the person making it means that there is no reason to expect such investment to be pushed to the 'margin', i.e., to the point at which the accumulated cost, including interest, would equal the present value of expected future returns.[20] If, relatively to the demand for professional services, there are few young men interested in entering the professions who can get the necessary funds, one would expect underinvestment; in the contrary case, overinvestment.

No hard and fast line divides occupations requiring a long period of specialized education from occupations requiring a short period. In Marshall's day the considerations set forth above may well have applied to all occupations requiring

[20] See Walsh, 'Capital Concept Applied to Man', pp. 276–7.

The argument may be put in a somewhat different fashion by using an analogy that at first blush may seem fantastic. Investment in professional training will not necessarily be pushed to the margin because earning power is seldom explicitly treated as an asset to be capitalized and sold to others by the issuance of 'stock'. An individual will rarely sell a fixed proportion of his future income to an investor (i.e., he will rarely sell 'stock' in himself), though he may borrow money, obligating himself to repay the principal and to pay interest at a rate that ordinarily cannot exceed a legally stipulated maximum (i.e., he may sell 'bonds'). Under such conditions, an investor who loaned money to a prospective professional man could at most get back his capital and the interest on it; he could never realize a 'capital gain'. But he could, and frequently would, suffer a 'capital loss', since, despite the average profitability of professional training, professional incomes differ greatly so that many individuals fare poorly and would be unable even to repay the principal. For this reason, it would be profitable for an investor to finance the professional training of individuals with no resources other than their expected future incomes only at a rate of interest that would be sufficiently high to provide for capital losses as well as for the usual interest charges. Such a rate of interest would probably exceed the expected return from investment in training even though the latter were well above the market rate of interest. On the other hand, if individuals sold 'stock' in themselves, i.e., obligated themselves to pay a fixed proportion of future earnings, investors could 'diversify' their holdings and balance capital appreciations against capital losses. The purchase of such 'stock' would be profitable so long as the expected return on investment in training exceeded the market rate of interest. Such investments would be similar to others involving a large element of risk, a type of investment usually financed by stocks rather than bonds.

special training; and in no small degree they do even to-day.[21] But the widespread extension of free secondary education and the raising of the minimum age at which children may leave school mean that no considerable voluntary investment is likely to be required prior to entrance to college. The need for capital investment thus seriously impedes entry only into occupations requiring a college education.[22]

[21] See A. G. B. Fisher, 'Education and Relative Wage Rates', *International Labour Review*, June 1932, pp. 742–64. A report by the Educational Policies Commission presents an impressive summary of evidence from a variety of studies on the role that the lack of funds plays in barring youths from high school and college. According to this report "large numbers of youths are prevented from continuing their education through high school and into college, because of lack of ability to meet expenditures required. Many of these youths have superior ability. Where these superior youths are given financial aid permitting them to continue their education, they make superior records." *Education and Economic Well-Being in American Democracy* (Educational Policies Commission, National Education Association of United States and American Association of School Administrators, 1940), p. 152.

[22] Walsh, in the article cited above, presents some estimates of the cost of special training, which include:

  "(1) Tuition, fees, and the like, paid to the school
  (2) Board and room
  (3) Equipment, such as books, and the like
  (4) Personal expenses: clothes, recreation, travel
  (5) Loss of that income which would, on the average, have been earned if the individual had not continued in school. From this amount was deducted the estimated average earnings of students during the school year and vacation periods.
  (6) Annual cumulative interest at 4 per cent on the sum of the above" (pp. 268–9).

On this basis the cost of a high school education is estimated as $5,000, while the additional costs of special training are estimated at amounts that range from about $6,400 for a bachelor's degree, $10,000 for a master's degree, and $13,000 for engineers to $22,000 for physicians.

As measures of the funds individuals would need in order to finance special training these estimates, especially the cost of a high school education, are obviously too large, since from this point of view foregone income, income that could have been earned, should be excluded. In addition, even personal costs incurred in connection with the part of the high school education that is had at an age below the minimum legal age for leaving school should be excluded; only those special costs incurred for a better education than would normally be provided should be counted, except so far as legal minima may not be strictly enforced.

Adjustment for these defects would considerably reduce the cost estimates

The professions bulk large in this group, though they do not exhaust it.

Entry into a profession is likely to depend not only on deliberate comparison of alternative occupations and the possession of adequate financial resources, but also on educational facilities, the connections that a young man can exploit when he begins his career, his awareness of available opportunities, and the like. These aspects of occupational determination are, in turn, likely to be related to a young man's social and national background, his geographic location, cultural environment, etc. These factors are far less important in the United States than in most countries, and far less important today than prior to the enormous development of higher educational opportunities supported by the state. The choice of occupation has probably never been so much restricted by social stratification in the United States, and it certainly is not today, as it was in England when, in 1848, John Stuart Mill was able to write: "So complete, indeed, has hitherto been the separation, so strongly marked the line of demarcation, between the different grades of labourers, as to be almost equivalent to an hereditary distinction of caste; each employment being chiefly recruited from the children of those already employed in it, or in employments of the same rank with it in social estimation, or from the

presented by Walsh—for a high school education, probably to a relatively small figure. For advanced degrees, however, formidable sums would be needed, even if a large allowance were made for costs that should not be included from this point of view. (The validity of Walsh's estimates for comparing extra returns in different occupations with the extra costs involved is considered above in footnote 17.)

The force of this argument is somewhat lessened by the growing possibility and tendency for students to 'work their way' through school and to receive aid in the form of scholarships. But it may be doubted that this tendency is as yet sufficiently important, at least for the professions, to negate the statements in the text. Moreover, children of poor parents are prevented from getting training not only by lack of funds but frequently also by the necessity of going to work as soon as possible to supplement the family income. The availability of scholarships or of opportunities for earning the expenses of education would not remove hindrances of the latter type, the importance of which is often underestimated.

children of persons who, if originally of a lower rank, have succeeded in raising themselves by their exertions. The liberal professions are mostly supplied by the sons of either the professional, or the idle classes: the more highly skilled manual employments are filled up from the sons of skilled artizans, or the class of tradesmen who rank with them: the lower classes of skilled employments are in a similar case; and unskilled labourers, with occasional exceptions, remain from father to son in their pristine condition." [23]

Despite the enormous decline in the importance of these factors, it is still true that they affect in no small measure the occupational opportunities open to a young man. For example, the child of a professional man is more likely to be cognizant of opportunities in the professions and better able to seize them than the child of an unskilled laborer, even though the professional man and the unskilled laborer have the same income and capital. The child of the professional man will have a background and associations that facilitate entry into the professions and make it seem natural; he will have contacts after he finishes his professional training that will ease his path.

The inference from this analysis is that professional workers constitute a 'noncompeting' group. The number and hence the incomes of professional workers are determined less by the relative attractiveness of professional and nonprofessional work than by the number of young men in the community who can finance their training, are cognizant of opportunities, and have the necessary ability, background, and connections. Our data suggest that this group is sufficiently small to lead to underinvestment in professional training, i.e., that in the absence of financial and social limitations on entry, incomes in the professions would exceed incomes in other pursuits by less than they do now. The limitations of the data and the speculative character of our analysis necessarily make this conclusion tentative. Moreover, the conclusion relates solely to

[23] *Principles of Political Economy* (Ashley ed; Longmans, Green, 1909), p. 393.

voluntary investment by prospective practitioners themselves, their parents, or their direct benefactors. No allowance has been made for the investment by society in institutions of higher education and in professional schools. From the broad social standpoint of the efficient utilization of resources, investment of the latter type should also be taken into account.

At present, the limitations on the number of persons in a position to enter the professions must be considered the basic reason for the difference between extra returns and extra costs; more basic even than the difference in ability needed. A sizable number, perhaps a majority, of all young men are unable to enter the professions because they cannot make the necessary capital investment or for other reasons. If these hindrances were removed, the reservoir of persons unable to enter the professions could surely furnish many persons as able as those who now embark on professional careers. A higher level of ability among those who enter the professions may help to explain the current levels of remuneration; it could not maintain them if the other hindrances to entry were removed. At the same time, the higher level of specialized abilities among those who enter the professions and the insistence upon high qualifications for prospective professional men might well mean that, even if all other hindrances to entry were removed, earnings in the professions would still exceed earnings in other pursuits by more than enough to cover the extra pecuniary costs.