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Introduction

The positive relation between an individual's schooling and his subsequent earnings may be understood to reflect productivity-augmenting effects of education. This relation is by no means direct or simple. Schooling and education are not synonymous: the educational content of time spent at school ranges from superb to miserable. The absorption of learning and marketability of knowledge and of skills acquired through learning also differ a great deal among individuals, places, and times. Moreover, school is neither the only nor necessarily the most important training ground for shaping market productivities. Finally, nonpecuniary aspects of work, temporary and long-run deviations from equilibrium wage rates and differences in the amount of time spent in employment in the labor market create additional differences among individual earnings, particularly when these are observed over a relatively short period.

It is not surprising, therefore, that observed correlations between educational attainment, measured in years spent at school, and earnings of individuals, although positive are relatively weak. Still, when earnings are averaged over groups of individuals differing in schooling, clear and strong differentials emerge. The initial and simplest form of the human capital model elaborated in this study¹ is addressed to these schooling group differentials in earnings. The scope of the model is then enlarged to deal with earnings differentials among age groups within the various schooling groups. This is accomplished by relating earnings to training on the job and to other human capital investments that follow the schooling stage of the life cycle.² Finally, by admitting into the model individual variations

1. As expressed in equation (1.1), this model was presented in Mincer (1957 and 1958).

2. The conceptual framework for this part of the analysis originates in Becker's *Human Capital* (1964). Its empirical application to observed age-income profiles is shown in Mincer (1962b). The approach here is similar, though the focus is reversed.

in investments and productivity within schooling groups and after completion of schooling, some insights are obtained about the distribution of earnings *within* age-education groups and in the aggregate.

The basic objective of this study is to gain some understanding of the observed distributions and structures of earnings from information on the distribution of accumulated net investments in human capital among workers. The basic operational concept is the human capital earnings function, by which the two distributions—of earnings and of net investment in human capital—are related. The earnings function is fashioned in the theoretical analysis in Part I. It is the major tool of the empirical analysis in Part II. An individual's "earnings profile" reflects his lifetime acquisition of human capital, and the aggregate distribution of earnings is viewed simply as a distribution of individual earnings profiles.

Clearly, this work is an early and quite rudimentary attempt at a systematic analysis of personal income distribution. Rapidly progressing research in human capital and in various aspects of income distribution suggests that the foundations that emerge in this and related studies will be consolidated and built upon. The major limitation, at the present time, is the absence of adequate information on individual investments in human capital. The accumulations of net investments that can be ascribed to individuals do not add up to their total capital stock because "initial" capacities and investments provided in and by the home environment are excluded. Still, the inclusion in the earnings function of even crude measures of "post-school investments" in addition to schooling lends a great deal of scope to the analysis of income distribution.

Individuals differ not only in the quantities of their accumulated investments but also in the rates of return they receive. We have no individual information on such rates. Variation in rates of return is probably an important aspect of the distribution of earnings. I treat it as part of the residual variation in the analysis, which relates earnings to volumes of investment. Much of the residual variation, however, is due to unmeasured quantities of human capital. It is not legitimate, therefore, to describe residual variation as a variation in rates of return, and even less so as a measure of risk in human capital investment. The same ambiguity applies to one of the sources of variation in rates of return, namely, to ability: it is not clear to what

extent, if at all, various "ability" measures represent unobserved components of the human capital stock, or genuine efficiency parameters.

Other limitations of the study are self-imposed. These are spelled out in the appropriate context, and discussed as subjects for future research (see Chapter 8). The working model in the present study is stripped to bare essentials: the surprising scope of its empirical power is the major conclusion and promise to be drawn from it for further development.

Use of the human capital approach does not imply that alternative models of earnings distributions are invalid.³ In many respects, the various approaches are complementary rather than mutually exclusive. At any rate, the emphasis of the present study is not on the testing of competing hypotheses, though some attention is paid to that, but on a coherent interpretation of detailed empirical characteristics of earnings distributions. The usefulness of the human capital approach lies in the extent to which such a unified interpretation is possible.

The following is a brief guide through the contents of the study:

Part I is a theoretical analysis of the relation between human capital accumulation and earnings. In Chapter 1, this relation is analyzed at the individual level, leading to a formulation of the individual earnings profile. In Chapter 2, the analysis is extended to a cross section of individuals. The cross-sectional distribution of earnings is viewed as a distribution of earnings profiles of individuals who differ in accumulations of human capital acquired at school and in post-school work experience.

Part II is an empirical analysis of earnings of white, urban, non-student men⁴ observed in the 1/1,000 sample of the 1960 U.S. Census. Chapter 3 is an application of the "schooling model," in which human capital investments are restricted to schooling. This model is shown to be misleading, unless it is applied to a particular subset of workers, namely, those with somewhat less than a decade of continuous work experience. In Chapter 4, age and experience profiles of earnings and wage rates are distinguished and compared among

3. Some of them are surveyed in Reder (1969) and Mincer (1970).

4. For a corresponding human capital analysis of female earnings, see Mincer and Polachek (1974).

different schooling groups. Inferences about intergroup differences in investment behavior and in wages flow from the analysis of experience profiles.

Chapter 5 contains an empirical specification and application in regression form of a simple version of the human capital earnings function. This version includes only three independent variables: years of schooling, years of work experience, and weeks worked during the year. Estimates derived from this earnings function showed substantial explanatory power in a statistical and qualitative sense.

Chapter 6 contains a study of residuals from the regressions of Chapter 5. Patterns of observed variances and skewness parameters within schooling-experience groups are analyzed in the light of the human capital model.

In Chapter 7, the human capital analysis is contrasted with "random shock" models. Tests of discrimination are performed on Consumers Union panel data. Further, there is an analysis of the effects of intensive and extensive aggregation of data on earnings inequality, "intensive" referring to aggregation of personal into family income and "extensive" to wider coverage of population groups. At the level of detail in the current study, the empirical predictions of the human capital model are not substantially changed by such aggregations.

Chapter 8 contains a summary of major findings of the study, a discussion of their limitations, and an agenda for more comprehensive research.