

# A Portrait of the Economics of Education, 1960–1997

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The process of exponential growth has reached the stage where any  
history of our profession must, in part, be statistical.  
—Michael Lovell, “The Production of Economic  
Literature—An Interpretation”

The economics of education is genuinely economics.  
—Mary Bowman, “The Human Investment  
Revolution in Economic Thought”

The emergence of the economics of education as an autonomous field of study is usually associated with Theodore Schultz’s presidential address to the annual meeting of the American Economic Association (AEA) in 1960.<sup>1</sup> In his address, reinforced later by other publications (such as *The*

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1. Reference should also be made to the work of Jacob Mincer (1958). His 1958 article on human capital investment followed his doctoral dissertation on personal income distribution, presented the year before at Columbia University.

*Economic Value of Education* in 1963), Schultz promoted the importance of educational benefits and of an economic approach to the analysis of education. As a result, during the sixties, a large amount of work was produced aiming at the classification and quantification of the economic benefits and costs of education. This literature usually reflected the conviction that expenditures on education had an important effect on the economic performance of individuals and of society. Therefore, governments were called upon to reinforce their financial effort in education.

In spite of a promising beginning, from the sixties until recent times the economics of education has sometimes faced skepticism from academic and political audiences, with its prestige and scope being seriously challenged. In response, research in this field has attempted to deepen knowledge about the economic value of education and has expanded to address other issues such as educational finance and the estimation of educational production and cost functions. This process of consolidation is indicated by the sustained number of publications on the economics of education and by the frequent inclusion of the economics of education in economics curricula.

The emergence and consolidation of the economics of education will be documented through an analysis of five major economics journals—the *American Economic Review* (*AER*), the *Journal of Political Economy* (*JPE*), the *Quarterly Journal of Economics* (*QJE*), the *Economic Journal* (*ECJ*), and the *Journal of Economic Literature* (*JEL*)—from the sixties until the mid-nineties.

### **The Economics of Education and the Rise of Human Capital Theory**

Some authors claim that the economics of education is a rather old branch of economics. Maureen Woodhall (1987), for example, cites authors such as Adam Smith and Johann von Thünen. On the other hand, writers such as Mark Blaug (1970, 7) associate the field closely with human capital theory, arguing that “ten years ago there was hardly such a subject as the economics of education.” In spite of these differences, there is consensus that the field took off in the sixties, following the development of human capital theory.

The attempts to define the economics of education reflect the importance of human capital theory.<sup>2</sup> The economics of education has been defined as the study of the allocation of resources to different types of training and schooling (Cohn 1979, 2). Blaug (1970) distinguished two main themes: the economic value of education (mainly associated with human capital theory), and the economic aspects of educational systems. Elchanan Cohn's popular textbook (1979) considered five major themes: the economic value of education, the allocation of resources in education, teachers' salaries, the financing of education, and educational planning.

For both Blaug and Cohn it is clear that the major concern involves the economic value of education and therefore human capital theory. Cohn, for example, allocates six chapters to the economic value of education, and one to each of the other four themes. In summary, the economics of education as a separate field within economics became closely associated with human capital theory.

Throughout the sixties we find evidence of increasing attention to this new perspective. One of the most important examples was Schultz's presidential address to the American Economic Association, mentioned above. Schultz (1961a) stressed the role of human capital in the promotion of individual and social economic development. Another important example was the *Journal of Political Economy's* October 1962 supplemental issue, "Investment in Human Beings," edited by Schultz and based on a 1961 conference. Authors included Gary Becker, Jacob Mincer, Burton Weisbrod, and Edward Denison.

In 1964 Gary Becker published his monograph *Human Capital*, which some consider his magnum opus. Indeed this work, with three editions thus far (1964, 1975, and 1994), became a standard reference in all works treating education from an economic perspective. The early seventies saw a burgeoning of textbooks in the economics of education (for a complete list, see Blaug 1976a).

The increasing importance of these issues in the second half of the sixties was visible in the meetings of the American Economic Association. In 1965, the AEA had a session on the economics of

2. Consider that the 1987 *The New Palgrave: A Dictionary of Economics* does not have an entry devoted to the economics of education; rather, the reader is directed to the entry on human capital.

education<sup>3</sup> and a session on labor economics and the importance of knowledge. The 1969 AEA meeting had a session on the economics of education, with papers mainly dealing with higher education.<sup>4</sup>

In Europe attention to these subjects came later. In the forefront was Mark Blaug. In 1965 he published his famous article, “The Rate of Return on Investment in Education in Great Britain,” which was “a defense of the investment approach to human resource development” (205). Blaug applies this approach to the British case, attempting to refute most of the existing criticisms of the investment perspective on education and the subsequent calculus of rates of return.<sup>5</sup>

About this time, Blaug also published his readings on the economics of education (1970) and his annotated bibliography of the same name (published in 1964, extended in 1966 and 1976). The former facilitated in the diffusion of some important papers.<sup>6</sup> His annotated bibliography documented the increasing attention to the economics of education as a field of research. In spite of all this, human capital theory and the economics of education remained much less visible in Britain and the rest of Europe.

Although this economic perspective on education seemed promising for a growing audience, some researchers expressed reservations. An example was the resistance to the use of the expression *human capital*, which led some authors to use the expression *human wealth*. This happened even among some authors who supported human capital theory’s basic proposals (e.g., Blinder and Weiss 1976). Even Schultz himself sometimes used this expression (Schultz 1959).

3. Three papers were presented at the session on the economics of education: Gary Becker and Barry Chiswick’s on the link between education and income distribution, Eugene Smolensky’s on the effectiveness of education in the promotion of disadvantaged groups, and one on the measurement of the quality of schooling by Finis Welch.

4. The papers presented at this session focused on the supply and demand of higher education (by R. Rodner and L. S. Miller), on the distributional effects of higher education (by Lee Hansen), and on resource allocation in higher education (by Joseph Kershaw and Alex Mood).

5. A lot of Blaug’s argumentation was based on research by American scholars and aimed to show that there was a strong correlation between educational attainment and future earnings. Moreover, Blaug has in mind John Vaizey, who considered that such a correlation was much weaker than the one between ability (and intrinsic capacities of the individuals) and future earnings (Blaug 1965, 217).

6. Among them were Schultz’s presidential address, excerpts of Gary Becker’s *Human Capital*, Burton Weisbrod’s article on the external effects of education, and Lee Hansen’s article on the rates of return to schooling in the United States.

An instructive example of these criticisms is Harry Shaffer's comment on Schultz's address. He criticizes Schultz on three main points: the importance of motivations other than economic ones in the demand for education, the mixture of consumption and investment elements, and uselessness of human capital theory for policy purposes (Shaffer 1961). Schultz replied that although economic motives are not the only ones to take into consideration, they are not weak or absent. He admitted that benefits other than the economic ones were also relevant for policy purposes (Schultz 1961b, 1037–39).

Growing acceptance in academic and publishing circles is illustrated by the classification indexes used by the *AEA* and the *JEL*.<sup>7</sup> The classification scheme claimed a distinction between human capital (production side) and the economics of education (consumption side). The former category (human capital) received mainly those works dealing with the labor market, the earnings profile, and training. The latter category included most of the research on schooling, educational production, and the benefits and costs of education.<sup>8</sup>

### The Favorable Context of the Sixties

Most of the themes treated by Schultz and the other authors were not entirely new. Indeed, various economists from the classical era on had reflected on the benefits of education for economic growth. The interest in human capital theory and the economics of education led scholars of the sixties to search for the roots of this economic approach to education in the works of the pioneers of economic analysis.<sup>9</sup> One set of debates concerned Alfred Marshall's approach to human capital (cf. Kiker 1966

7. In 1968 the report of the Committee on Classification of the AEA, led by Richard Leftwich, proposed a new system of classification that included the economics of education as a subject. It was placed in the same group as the economics of health, the economics of poverty, social security, and general welfare programs, all in turn included in the group of terms under welfare economics. At the end of the sixties, the *Journal of Economic Literature* (until 1968 the *Journal of Economic Abstracts*) included human capital theory and the economics of education (consumption side) in its index of economic subjects. In 1970, the AEA's classification of themes included human capital under the group heading "Manpower, Labor, and Population."

8. This corresponds to the idea that the human capital theory spread its influence along various fields of economic analysis (Blaug 1970, 7), which is observable either in the articles published or in the listing of doctoral theses presented by the *AER*.

9. Accordingly, B. F. Kiker published, in the October 1966 issue of the *JPE*, an article titled "The Historical Roots of the Concept of Human Capital," later expanded into the book *Human Capital in Retrospect* (1968).

and Blandy 1967). However, the typical view among economists prior to the 1960s seemed to be that the demand for postcompulsory education was a demand for a consumption good (Blaug 1976b, 829).

The authors of the sixties tried to use economic concepts to develop a theory of investment of human capital with a methodology for assessing its rate of return. Hence, “it was not until the work of Gary Becker, T. W. Schultz and their colleagues that the analytical possibilities of this approach began to be realized” (Faber 1973, 1322). But what accounted for the fast and successful development of the economics of education as a field of study in the sixties? That can only be fully understood by considering the theoretical, methodological, institutional, and political frameworks in which it emerged.

A first important element was the momentum in the field of economic growth following World War II (see, for example, Rostow 1990, chap. 15). Moreover, the efforts to clarify the sources of economic growth created a space of convergence between economic growth and human capital theorists. In fact, and from its beginnings, human capital theory suggested an important link between investment in education and economic growth. The early works of human capital theorists contain numerous references to the work of Edward Denison and growth accounting research. Denison tried to identify the contribution of different productive factors to economic growth in the United States and later in other Western countries. His work suggested that the quality of the factors was more important than their quantity. In the case of labor, education represented a major source of improving its quality, hence of improving a nation’s potential for growth (Denison 1966). Denison’s perspective was often used by researchers on the economics of education and by human capital theorists. This was the case with Schultz, who frequently mentioned Denison’s work (see Schultz 1963, 45).<sup>10</sup>

The convergence between economic growth theory and human capital was also visible in the field of development economics. Accordingly, the early phase of development studies gave an important role to human capital in the promotion of growth—“a necessary if not a sufficient condition of economic development” (Arndt 1987, 52). Furthermore, W. Arthur Lewis, one of the most important pioneers in this subject,

10. Schultz restated his position thirty years later by stating that “advances in knowledge are a decisive factor in economic progress” (1993, 15).

emphasized the critical function of education in the development process (Lewis 1955).

The methodological context was also favorable to the emergence of the economic approach to educational issues. It was the time of Milton Friedman's positive economics,<sup>11</sup> according to which economic theory should progress through the empirical testing of theoretical predictions. This would then allow a consensus "on a correct (and widely accepted) economic policy" (Friedman 1953, 6–7). This inspired what could be considered a *loose* approach to realistic assumptions, that is, simpler approaches toward economics that, nevertheless, would be compensated by an increased predictive power. It also promoted the development of an empirical drift in economics (Friedman 1953, 8–17; O'Brien 1991). The straightforward hypotheses implied by human capital theory, and the empirical testing of those hypotheses, appeared to be consistent with this approach to the development of economic theory.

In addition, certain disciplinary conditions were also important in the development of the economics of education, namely the role of the Chicago Department of Economics, as both an internationally recognized collection of economic researchers and a major training center for aspiring Ph.D. economists. In fact, some consider the emergence of the economics of education and human capital theory to be a result of the efforts of the Chicago school.<sup>12</sup> Becker had been trained at Chicago and would soon return there from Columbia, and Schultz had a prominent role in departmental leadership. Hence, human capital theory had at Chicago in the mid-sixties important academic support for its diffusion.

The political context presented also some interesting features that promoted the emergence of human capital theory and the economics of education. On the one hand, the spread of the Keynesian gospel paved the way for higher expenditures, including expenditures on education. In fact, the government was supposed to play, in the Keynesian framework (and based on a skepticism toward market mechanisms), a more visible role in economic management (Skidelsky 1988). In the case of education, the increase in public expenditures seemed to be not only socially popular but also economically meaningful (Svennilson 1966).

11. On the relevance of Friedman's essay and its persistence see, among others, Stewart 1991 and Blaug 1980.

12. "The modern vintage of the human capital theory was conceived and developed largely but not extensively by the Chicago School, starting around the turn of the decade of the 1950s, under the intellectual inspiration of Theodore W. Schultz" (Sahota 1978, 11).

Accordingly, human capital theory attempted to define new criteria for social investment. Resources would be allocated to levels of education and to years of schooling so as to equalize the marginal, “social” rate of return on educational investment. This equalized yield on educational investment would not fall below the yield on alternative private investments (Blaug 1976b). However, at that time there were already some doubts about the viability of defining economic criteria to allocate funds to education (Vaizey 1966).

On the other hand, some international institutions, in particular the World Bank and the Organisation for Economic Cooperation and Development (OECD), rapidly absorbed the human capital mindset. In the OECD’s case, there were both political and theory-development implications. A political example was the Washington conference (16–20 October 1961) on economic growth policies and educational investment. Among its main conclusions was that *investment* in education was a condition for economic growth (as important as that traditionally ascribed to capital goods). The beneficial character of education, socially and privately speaking, justified increasing levels of public funding. Several participants at this conference already referred to the expression *human capital* and espoused an investment approach to education (OECD 1962).<sup>13</sup>

As for theory-development activities at the OECD, an important event in the dissemination of the human capital approach was the study group on the economics of education created within the OECD. This study group, which was responsible for organizing relevant conferences in this field, worked mainly between 1962 and 1965 (Papadopoulos 1994, 39–43). Among the conferences were ones on the financing of education (September 1964) and the social objectives in educational planning (March 1965) (Papadopoulos 1994, 38).

Indeed, since World War II, but especially in the 1960s, education has increasingly benefited from a favorable attitude from government. During the 1960s governments viewed education as a major instrument for improving and equalizing social opportunities. There was a strong

13. Theodore Schultz was aware of the importance of this conference (1963, vii) and referred to it in what can be considered the first textbook exclusively devoted to the subject, *The Economic Value of Education*, which appeared in 1963. This book was quite important, for it aimed to bring “economic analysis to bear on education” (1963, 1), treating in a systematic way, among other things, the costs of education and the economic value of education.

belief that education could be a powerful force to promote social mobility. This led to what has been called the social paradigm of education (Neave 1989, 214). Accordingly, policies intending to increase access to education were promoted in most Western European countries, as well as in other OECD countries.

### **The Difficult Seventies and Human Capital Theory under Fire**

After a promising beginning, the human capital approach was seriously challenged in the seventies by the appearance of alternative theories. The most important criticisms came from advocates of the so-called screening theories. An extreme version of the screening hypothesis asserts that education merely identifies students with particular attributes, acquired either at birth or by virtue of family background, but does not produce or improve those attributes. Therefore, education and training would not increase the productivity of individuals, but only sort them according to their innate capacities.<sup>14</sup> Education had private benefits but not social ones. As a result, the arguments in favor of public support of education were seriously weakened. Less extreme versions of the screening hypothesis were also proposed. According to some authors, differences in earnings among individuals should not be viewed solely as the result of differences in educational attainment (Taubman and Wales 1973, 29).<sup>15</sup> These criticisms created difficulties for the human-capital research program, because human capital theory tended to take tastes and abilities as given and emphasized the role of present and future earnings as determinants of the education decision (Blaug 1976b, 830).

The seventies were also characterized, in the case of labor economics and the role of education, by the emergence of some critical views, including so-called segmented labor market theories. The supporters of these theories argued that educational and training programs had not benefited poorer classes. They pointed to both the difficulties in

14. Moreover, the more extreme versions of the screening hypothesis implied that there was little reward to an uncompleted degree or certificate (cf. Blaug 1993, 29).

15. Paul Taubman and Terence Wales (1973) showed that, holding education constant, several sociodemographic and background variables were statistically significant determinants of earnings. Two years later, Joseph Stiglitz (1975) argued that education's role as a screening device in a world of imperfect information led to overinvestment in education, which would be both inefficient and inequitable.

translating increased schooling resources into increased educational achievement (e.g., the Coleman report of 1967) and the weak effect of schooling on the promotion of social mobility and in the reduction of income inequalities (Cain 1976).

These theorists also tended to see education as a screening device, because of the evidence of discrimination against minorities (Cain 1976). In an article published in the *Economic Journal*, Nicholas Bosanquet and Peter Doeringer (1973) tested for the existence of a dual labor market in Great Britain. The inclusion in the analysis of variables such as race and sex led to lower returns to education for racial minorities and women. However, in broad terms, their results were consistent with human capital theory (Bosanquet and Doeringer 1973, 421).

Another important challenge to human capital theory came with the problem of surplus schooling and overeducation.<sup>16</sup> This problem emerged during the seventies in the American labor market, when the number of college graduates arriving in the labor market increased at a faster rate than the market could absorb them, leading to lower wages and higher unemployment rates for graduates. Accordingly, the characteristics of a job would determine the returns to one's educational attainments, and schooling would not be rewarded similarly in all occupations. Additional schooling beyond that required for the job was not always rewarded either (Rumberger 1987).

These criticisms of human capital theory were perhaps given additional credibility by the economic context of the late seventies. The sluggish growth rates of the mid-seventies throughout the Western world called into question the inevitability of economic growth and the efficacy of education as a way of promoting that growth. Screening theory provided a theoretical basis for challenging the link between human capital and economic growth, for it held that the only contribution of education to economic growth was that of providing a selection device for employers (Blaug 1976b, 846).

One of the most contentious debates surrounded the concepts of the rates of return to education and externalities. The consideration of education as an investment led to attempts to estimate the yield of that

16. Surplus schooling was defined as workers with educational attainment in excess of that required, while overeducation (a relative concept) referred to workers with educational attainment greater than one standard deviation above the mean for their specific occupation (Verdugo and Verdugo 1989).

investment.<sup>17</sup> This yield, or rate of return to education, was held by human capital theorists to explain people's behavior in seeking educations of different levels and types and could be used as a guide in allocating public resources to education. (Psacharopoulos 1994, 1325). Rate-of-return estimates and calculations were used extensively in discussions of allocative efficiency by considering alternative investments within and outside education.<sup>18</sup>

The rate-of-return estimates were extremely important from an academic perspective, and also from a political one. As far as scholars were concerned, the rate of return was the key parameter of the human capital model of the demand of education. Moreover, the fact that estimation of the rate of return involved the application of some of the best-known instruments in the empirical economists' toolbox (such as the regression approach or the cost-benefit analysis) made it a popular area of research for scholars interested in assessing the individual and social economic impact of education (although it reduced its acceptance in other dis-

17. Indeed, the calculations of the rates of return to investment in schooling have proved to be the bread-and-butter of the human-capital research program (Blaug 1976b, 840; see also Psacharopoulos 1973, 1981, 1985, and 1994). Estimates of the rates of return can be attained by two basic methods: the "full" or "elaborate" method and the "earnings function" method. The adoption of a method depends largely on data availability (Psacharopoulos 1994, 1325). The elaborate method amounts to working with detailed age-earnings profiles by level of education and finding the discount rate that equates a stream of education benefits to a stream of educational costs at a given point in time. The annual stream of benefits is typically measured by (1) the earnings advantage of graduates of the educational level for which the rate of return is calculated and (2) the earnings of a control group of graduates with a lower educational level. The stream of costs consists of the foregone earnings of the individual while in school in a private rate-of-return calculation, augmented by the true resource costs of schooling in a social rate-of-return calculation (Psacharopoulos 1994, 1325). The basic earnings function method was primarily developed by Jacob Mincer and involves the fitting of a semi-log ordinary least squares regression using the natural logarithm of earnings as the dependent variable, and years of schooling and potential years of labor market experience and its square as the independent variables. The coefficient on years of schooling can be interpreted as the average private rate of return to one additional year of education, regardless of the educational level to which this year of schooling refers. An extended version of this method (using dummy variables) allows the estimation of the returns to education at different levels or even to different types of curricula (1325).

18. Key findings of this research were as follows: social and private returns decline over time and by level of the country's per capita income; returns to female education are higher than those for males; different types of curricula yield different returns; there are large variations in returns to higher education; returns change with the employment sector (Psacharopoulos 1994, 1327). Another significant finding was the persistent variance in terms of the private rates of return to successive years of schooling within each cohort (Blaug 1976b, 840-41).

ciplinary contexts). From a political perspective, the estimated rate of return to education provided a straightforward, easily understood, and politically effective way of presenting information on the effectiveness and appropriateness of public expenditures on education.

In spite of the vast amount of work devoted to estimating rates of return, several formal and substantive criticisms were raised.<sup>19</sup>

At the end of the seventies, after vivid debates on the virtues and shortcomings of human capital theory, the result was ambiguous. On the one hand, the theoretical controversy had focused academic and political attention on the economic role of education. On the other hand, the doubts raised by this debate were not yet convincingly answered. Human capital theory had lost its initial impetus, and the process of recognition within the discipline became, during this decade, more complicated than in the late sixties.

Also during the seventies there was a clear retrenchment in social and political support for governmental expenditures, including educational expenditures. The growth of unemployment promoted an increasing skepticism about educational achievements and their economic benefits. The focus of discussions of school finance issues was moving to efficiency and accountability rather than equity and social mobility. In fact, already in the seventies some governments (e.g., the U.S. government) started to reduce investment in education (decreasing funds per student), mainly due to two reasons: disbelief that education could promote economic growth and the necessity of sharing restricted resources with other competing purposes.

19. One of the main criticisms was the deficient amount of attention paid to nonpecuniary returns (either private or social). Another was the inaccuracy of most cost estimates (Leslie and Brinkman 1986, 224) due to difficulties in the computation of the costs (Hough 1994, 93–95). Yet another criticism was that most of the studies provided were cross-sectional and not longitudinal, giving a somewhat static picture. Moreover, calculations of returns were based on past and current situations, and nothing could be taken for granted in terms of future earnings (Hough 1994, 97–99). There was the problem that individuals chose not just schooling but a certain type of schooling, and few studies have attempted (and even fewer have succeeded) to calculate rates of return by type of educational institution (Blaug 1976b, 841). According to differences in the rates of return between academic subjects, some have considered that there was an overstatement of the importance of the rates of return to training and education. The evidence that some shortages of trained personnel (with promising foreseeable returns) seemed to be scarcely satisfied suggested that these rates of return had less impact than expected on individual decisions (Lindsay 1971, 1213–14). Finally, several authors pointed out the lack of consideration of quality factors in calculations of the rates of return.

### Reformulations in the Eighties

Human capital theory started the eighties with its academic and political support seriously weakened. The model's seeming inability to provide a solid answer to most questions raised during the controversies of the seventies led to a loss of academic and political credibility. As a result, and following the criticisms and doubts raised by the alternative theories, human capital theorists developed reformulations of some of the model's early propositions. These reformulations, though moving toward a more complex picture of the economic role of education, did not challenge the central elements of that theory—that education was a profitable investment both in private and in social terms, and that individual decisions about how much education to pursue were made on a cost-benefit basis.

One of the most important areas of research in this period of reformulation was that of educational quality: how it should be measured and the link between it and expenditures on education. These studies often focused on educational levels other than the postsecondary level.<sup>20</sup> Their most distinctive character was the claim that efforts should not exclusively aim at increasing resources ascribed to the system (e.g., teachers, equipment), since the quality and effectiveness of resources also mattered (Hanushek 1986).<sup>21</sup> The quality of resources and the efficiency with which they were allocated received increasing attention, as educational expenditures and wealth grew (Solmon 1985). In addition, returns to education appeared to be significantly related to some measures of school quality (Card and Krueger 1992, 14).

The attention given to quality issues reinforced a previous trend toward more caution about the funding of education. An interesting focus was the trade-off between efficiency and equity in funding. This issue, already important during the seventies,<sup>22</sup> attracted even more attention in

20. Some good examples are Behrman and Taubman 1989, Solmon 1985, Hanushek 1986, and Card and Krueger 1992.

21. An interesting finding to emerge was that educational quality was important in the reduction of inequalities in personal income distribution, namely in the case of some ethnic minorities. Indeed, some studies reported that quality of education had to be taken into consideration in the assessment of the impact of education on labor market performance and lifetime earnings of ethnic minority cohorts (Smith and Welch 1989).

22. The importance of this issue during the 1970s was visible in the workshop organized at the University of Chicago (June 1971) that was the main source of articles published in the May/June 1972 supplemental issue of the *JPE* titled *Investment in Education: The*

the eighties.<sup>23</sup> A central theme in the discussion was that tuition should be seen as a price, education as a service, and students and their families as clients. This perspective, already discussed in the *JPE* supplement of 1972 (see, for instance, Schultz 1972), gained increased relevance during the eighties. Furthermore, explorations of this theme flourished during the nineties, with the so-called market approaches to education.<sup>24</sup>

The analysis of funding issues was closely related to the crucial issues of equity and social mobility. The mid-seventies displayed a less confident view of the role of education in the promotion of a more equitable income distribution. This crisis of confidence was strengthened by the emergence of critical views of human capital theory and by disappointing results from analyses of income and wealth effects of education for some disadvantaged groups. Other controversial discussions involved the mechanisms of funding education and their consequences. In fact, some researchers had been arguing since the early seventies that the method used to finance systems of state-supported higher education could lead the net distributional effect of those systems to be regressive (cf. Hansen 1970).

Therefore, with respect to equity questions, the late seventies and most of the eighties were a *reflux* period, displaying a more skeptical and complex attitude. Intensive debate tended to give more importance to noneducational factors and their interaction with educational achievement in the future distribution of income and wealth. The importance of external factors tended to be stressed in the case of unequal access.<sup>25</sup>

In terms of the policy attitude there was also an increasing emphasis on quality (not only or necessarily more money or more quantity) and on evaluation systems (see, e.g., World Bank 1994), an emphasis that goes hand in hand with the *accountability* procedures that have pervaded

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*Equity-Efficiency Quandary*. In the same year, this supplement was also published as a book by the University of Chicago Press.

23. See, for example, the collective volume edited by Walter McMahon and Terry Geske and published in 1982, suggestively titled *Financing Education: Overcoming Inefficiency and Inequity*.

24. See the collective volume edited by Elchanan Cohn in 1997 titled *Market Approaches to Education*, which contains various articles published in journals from 1984 to 1997 on the economic rationale for government intervention in education and the performance of public versus private schools.

25. Some authors have, nevertheless, clarified that even equal access does not mean equal opportunities, since family environment and family resources make a substantial difference in children's opportunities (Behrman, Pollak, and Taubman 1989, 399).

public services since the 1980s. Thus, the belief that education was important to economic growth was no longer enough to justify public support for higher education. Educational institutions needed to find (quantitative) ways of proving their economic relevance to increasingly skeptical political decision-makers.

### **The Renewed Trust of the Nineties in Education's Economic Potential**

The turn from the late eighties to the nineties was characterized by an increase in confidence in the fundamental utility of the human capital model. Although it was an important challenge, the screening hypothesis ultimately proved less resilient than the human capital model in that it failed to produce a truly alternative, empirically confirmed theory of the demand for education (Blaug 1976b, 1981).<sup>26</sup> Moreover, the screening hypothesis never really questioned the private benefits of education. It implicitly assumed the investment perspective on education (as the human capital theory), rather than the presixties dominant consumption perspective on education (Lazear 1977, 569–71).

The sorting models developed since the eighties also illustrate this capacity for resistance on the part of human capital theory. These models represented a compromise between the human capital and the screening theories, allowing for a productivity effect due to educational investment and some filtering behavior of educational institutions. In fact, higher productivity was modeled as a joint result of acquired and innate capacities, and education had both a sorting and a learning effect on individuals (Weiss 1983, 1995).

Thus, the human-capital research program has moved steadily away from some of its early naive formulations. The criticisms of the screening theorists tended to show that the relationships between education and income were more complex than any single model had demonstrated (Kodde and Ritzen 1988). The result was the emergence of a picture of the economic value of schooling somewhat more skeptical toward the belief that education makes workers more productive and that employers pay them more because they are more productive (Blaug

26. Richard Freeman (1986, 362) summarized the situation as follows: "The general tone of the findings is supportive of the human capital view. Screening/signalling effects are undoubtedly part of the world, but no empirical study has found them to be a major factor in the demand of education."

1993, 31). These reformulations did not, however, affect the theoretical nucleus of the human capital approach.

This skepticism toward the economic value of education is also manifested in the debate on the issue of externalities and the nonpecuniary benefits associated with education, a debate that was ongoing throughout the period analyzed.<sup>27</sup> More recent empirical research has tried to overcome the main criticisms (the subjective nature of the externality concept and ignorance about their real magnitude). Moreover, they aimed to substantiate the existence and relevance of the nonpecuniary benefits,<sup>28</sup> arguing that, although these benefits were not greatly visible in rates-of-return calculations, their importance should not be underestimated.<sup>29</sup> (For a review of this empirical research on externalities of education, see Haveman and Wolfe 1984 and Wolfe and Zuvekas 1997.) However, and in spite of these efforts, several academics remained skeptical on the issue of externalities and nonpecuniary benefits.<sup>30</sup>

Following the general path of the field, the nineties were also characterized by a recovery of the interest in the equity effects of education, although not to the level of the late sixties and early seventies.

The resurgence of the credibility of human capital theory was also visible in research on the determinants of labor market outcomes.<sup>31</sup> In spite of the criticisms of the human capital approach developed since the mid-seventies, the existence of a link between schooling and earnings

27. Blaug (1976b) pointed out the subjective and qualitative judgments associated, in the education framework, with issues of externalities. Most of the skepticism involved higher levels of education: "There is a kind of cyclical pattern in their beliefs. In the 1960s, the standard view was that these externalities were large in relation to the private benefits of higher education. Later, they were supposed to be negligibly small. . . . the pendulum may now be swinging in favor of higher education" (De Meulemeester and Rochat 1995, 352).

28. This followed Schultz's initial claim (1963) for the need to inquire about the social benefits and their magnitude, one of the best documented being the one existing between education and good health (cf. Kenkel 1991, 287).

29. According to one of the leading scholars in the field, "If people are willing to invest in their education, in spite of low private returns, they must be deriving some value other than monetary" (Psacharopoulos 1994, 1334).

30. This critical stance is obviously more evident in skeptics of the human capital approach: "I am not convinced that the externalities are very important, as contrasted with elementary and secondary education where externalities are undoubtedly consequential. It is somewhat hard for me to visualize what these externalities consist of" (Arrow 1993, 8).

31. This evolution can be illustrated by the assessment that one leading labor economist, Sherwin Rosen, made of the impact of the human capital approach on labor economics. The tone of his writings in the nineties was clearly more benevolent (almost hagiographic in some respects) than that of his writings in the seventies (cf. Rosen 1977, 1992).

continued to be regarded by economists as a robust empirical result and an article of faith.<sup>32</sup> The persistence of a fundamental belief in this link was due mainly to the fact that further research tended to see the empirical evidence of overeducation as the product of a certain historical context, not of a permanent relationship between education and the labor market.<sup>33</sup> In any case, the nineties saw an outpouring of new empirical research on the education/earnings link. This was driven in part by the availability of richer data on individual labor market outcomes, but also perhaps by the more complex picture of the relationship between educational achievement and labor market performance that emerged from attempts to reformulate the human capital model.<sup>34</sup>

The nineties also saw a renewed interest in models of economic growth, in particular those that center on human capital accumulation.<sup>35</sup> The recently fashionable endogenous growth models, for example, gave education and human capital accumulation a place of prominence.<sup>36</sup> The

32. As stated recently in a reevaluation of the link between social mobility and higher education, "While no longer a guarantee for job security or for a guaranteed salary, the link (between educational attainment and employment) still persists" (Nowotny 1995, 75).

33. Nevertheless, the education-earnings relationship is regarded by some authors as more complex than the standard human capital model would suggest. For example, it seems to vary widely across occupational groups (Rumberger 1987). Although the alternative theories failed to produce conclusive empirical support, their criticisms led human capital theorists to reexamine their theory by considering previously omitted variables (Cain 1976) and by enlarging their perspective (which was too concentrated on the educational component) (Sahota 1978, 12).

34. See, for example, the policy forum on the economics of youth training published in the *ECJ* (September 1993), which treated the cases of Britain, Germany, and the United States. Other examples can be found in the notes from the annual meetings of the AEA during the nineties, published as a supplement of the *AER* (see especially the one published in 1993). There were sessions on women and labor market conditions and on the importance of race, age, and sex in employability and income conditions (see also the February 1992 issue of the *QJE*).

35. Although these models of economic growth with emphasis on human capital were already being discussed in the second half of the eighties (cf. Solow 1991).

36. According to most of the endogenous growth theorists, "The engine of growth is human capital" (Ehrlich 1990, S4). This was confirmed by most of the authors who participated in the conference on development (May 1988) that originated the supplemental issue of the *JPE* published in October 1990. The work of authors like Paul Romer, Robert Barro, and Sérgio Rebelo gave again an increasing economic importance to human capital. Accordingly, the *ECJ* published a policy forum in May 1992 on the determinants of economic growth. The *AER* had already published in 1987 what has become one of the classic articles on economic growth, Paul Romer's "New Theories of Economic Growth" (presented at the 1986 meeting of the AEA), as well as articles from a session on the new growth theory (presented at the 1989 meeting of the AEA).

developments of both the Lucas approach (inspired by the work of Gary Becker) and the Nelson-Phelps approach (assuming complementarity of education and R and D activities) converged in their emphasis on the positive effect of educational attainment. This positive effect was visible in the productivity of workers, with an important growth enhancing effect (Aghion and Howitt 1998, chap.10).

These recent theories of economic growth also gave a prominent role to the public authorities and public expenditures, in that public investment in human capital could play an important role in the promotion of intergenerational social mobility, in the avoidance of low-development traps, and in enhancing the mobility of workers, all of which would have positive long-run effects in terms of growth (Aghion and Howitt 1998, chap. 10). Therefore, Schultz could recently reaffirm his view that it was the acquired abilities of people—their education, work experience, skills, and health—that explained most of modern economic progress.<sup>37</sup>

### **The Economics of Education in Economics Journals (1969–1996)**

The analysis of the process of emergence and consolidation of the economics of education will now be complemented with a review of the five economics journals indicated in the introduction.<sup>38</sup> These were chosen since they have been consistently considered as some of the core journals in economic theory.<sup>39</sup> As described above, the emergence of the

37. “It is ‘human capital,’ not space, cropland, energy or other physical properties of the earth, that is decisive in improving the income and welfare of people in the modernizing economy” (Schultz 1993, 18).

38. The period of analysis was restricted to 1969–96, first because it was only by the end of the sixties that this field of research became distinct, and second because the database used in this analysis (taken from the *Econlit* database) starts in 1969. Due to space constraints, only a summarized view of the results will be presented. More detailed data are available from the author, upon request.

39. In spite of an observed decline in the quantitative importance of the top economics journals over the period 1965–90, their relevance to economics continues. This is supported by factors such as the persistence of inequality among the importance of economics journals, evident in the fact that the inequality in the distribution of citations (and of importance) remained almost constant from 1970 to 1990 (Laband and Piette 1994, 656–57). Some decrease in the relevance of the core journals in economics is possibly related to the increasing importance and influence of a number of specialized journals. Indeed, the success of some may reflect the advantages of specialization (Laband and Piette 1994, 657). This indicates that the information provided by the analysis of these five journals should be, in a future work, complemented by an analysis of other journals, namely those that specialize in the field. Among them, special

**Table 1** Articles on the economics of education and on the human capital theory

Period	Economics of Education			Human Capital Theory		
	Total Number of Articles	Articles per Year	Percentage of Total Articles	Total Number of Articles	Articles per Year	Percentage of Total Articles
1969–70	16	8	1.9	13	6.5	1.5
1971–80	72	7.2	1.6	166	16.6	3.7
1981–90	34	3.4	1.0	57	5.7	1.6
1991–96	51	8.5	2.4	127	21.2	6.0

Source: *Econlit* database.

economics of education as a separate field of economic analysis is explicitly linked with the development of human capital theory. Therefore, the analysis looks at not only those articles focusing on the economics of education, but also at those focusing on human capital issues.

The evidence provided by the publishing activity of the major economics journals (table 1) mostly confirms the evolution described above for both the economics of education and human capital theory. The early phase (late sixties and early seventies) was a rather favorable period for the diffusion of this field of study and this theoretical approach, both of which achieved an important visibility in those journals, either in absolute or in relative terms. Most of the comments that follow below apply to the economics of education and human capital theory.

The total number of articles increased from the late sixties to the seventies, decreased in the eighties, then significantly increased in the nineties. This pattern generally holds for the average number of articles per year and the relative weight of both subjects.

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reference should be made to the *Economics of Education Review* (founded in 1981) and the *Journal of Human Resources* (founded in 1966). One additional element in the perception of the consolidation process of the scope of this field of study is provided by the structure of the main textbooks on the subject. This can be a further source of valuable information about the evolution of the economics of education as a field of study. The emphasis on different areas of interest within this subject changed visibly, reflecting not only the interests and progress of research, but also the changing social and political context. However, in this paper, I decided to concentrate on the core journals.

When comparing the two fields of research, the quantitative importance of human capital theory is frequently higher than that of the economics of education. The human capital field exhibited a more dynamic pattern during the seventies than did the economics of education. The late seventies and the eighties were periods of retrenchment, due to the difficulties faced by human capital theory (inevitably affecting the economics of education). If in the seventies the theoretical debate, led by the alternative theories, promoted visibility, in the eighties doubts about human capital theory reduced academic attention to issues relating to education, among economic circles. However, the economics of education seems to have suffered less from a loss of interest during the eighties. The enlargement of its scope to other themes such as the efficiency of educational expenditures may have prevented a larger decrease. Again, the events of the nineties had a more visible effect on human capital theory than on the economics of education. The reformulations and the complexity introduced into the analysis of economic effects of education since the mid-eighties strengthened the credibility of both the human capital theory (hereafter, HCT) and the economics of education, as reflected in the generally greater attention given to them in these journals in the early nineties.

An analysis of a larger pool of journals complements that of the leading economics journals. In this case we will use the index of economic articles published in current journals (as published in each edition of the *JEL*).

Starting with low values (even when taken together), the importance of both the economics of education and HCT rose rapidly, almost doubling in importance in the articles published in economics journals (table 2). However, this was followed by a steady decrease during the second half of the seventies. The eighties followed this trend and can be characterized as a period of reflux (with a combined value of around 1 percent in some years). The nineties saw a renewed attention to both issues, with values similar to those obtained in the earliest period.

In general we cannot consider the values obtained as high, since the aggregated value is always under 2 percent. Thus, the number of articles devoted to both issues seems to be higher in the case of the main journals (previously analyzed) than in the larger group of journals.

The importance of the economics of education seems to be closer to that achieved by the HCT articles, with the latter presenting a less stable picture (with even wider variations in the annual values). More

**Table 2** Relative importance of human capital theory and the economics of education in the index of economics journals

Period	Human Capital Theory	Economics of Education
1970–75	0.77	0.73
1976–80	0.63	0.69
1981–85	0.45	0.52
1986–90	0.41	0.65
1991–96	0.82	0.60

Source: *Journal of Economic Literature*. Values correspond to the ratio between the number of pages devoted to the topics and the total number of pages devoted to all economic subjects covered by the economics journals considered by the *JEL*, and for each period.

specifically, HCT seemed to be more affected by the reflux trend that characterized the eighties, as well as by the increased attention given to the economic effects of education during the nineties. Moreover, HCT finished with its higher values, doubling the score of the preceding period.<sup>40</sup> The economics of education seemed to resist better the difficulties subsequent to the emergence of critical views on the HCT. This capacity of resistance was probably related to its capacity of broadening/diversifying its focus to issues like funding, quality, and efficiency.<sup>41</sup>

### Main Themes in the Publication Activity of the Core Journals

The publication activity in the field of the economics of education and HCT, during the period 1969–96, can be analyzed in terms of nine themes, considered the most relevant among the economics of education.

The quantitative analysis (as shown in table 3) of the evolution of the articles published in major journals supports roughly the evolution previously described. Accordingly, the themes reflecting a more positive approach toward the economic role of education and its benefits saw their visibility decrease in the late seventies, after a promising beginning (table 3). The reduced visibility continued through the eighties but

40. Regarding the analysis of this result, bear in mind the changes in the classification index used by the *JEL*.

41. This change was also visible in the main textbooks on the subject. Those published in the nineties tended to emphasize financial, efficiency, and effectiveness issues rather than HCT and cost-benefit analysis, which textbooks in the seventies stressed.

**Table 3** Articles in the economics of education and human capital theory, by theme (core economics journals)

Main Themes	Economics of Education				Human Capital Theory			
	1969–70	1971–80	1980–90	1991–96	1969–70	1971–80	1981–90	1991–96
Economic growth and development	1	4	3	18	4	10	3	27
Benefits, costs, and rates of return	1	5	—	5	1	15	2	11
Finance, efficiency	5	20	8	8	—	4	3	1
Screening, alternative theories	—	5	—	2	—	19	3	1
Labor markets	—	2	1	5	—	23	8	43
Human capital	—	12	10	4	4	48	22	32
Equity, minorities, and income distribution	3	7	3	3	—	30	13	16
Quality, special programs	—	—	4	4	1	4	3	1
Others	2	3	5	2	2	5	1	—

Note: The category human capital includes all the articles on the core of human capital theory: that individuals demand (invest) in education and training because they expect this will enhance their future earnings; earnings will be higher since with more education and training individuals will become more productive; being more productive, and under the assumption that the factors are paid at the marginal level, the revenue of those people who are more productive will be higher.

reversed itself during the nineties. The themes that suggest a positive economic role for education are as follows: economic growth and development; benefits of education and externalities; equity, minorities, and income distribution; and labor market issues. The alternative theories were mostly present, as expected, during the seventies, and quite absent after that time. Quality issues appeared only later. The financial issues gained increased relevance in the seventies, probably due to factors external to academia (such as problems with weak economic growth and restricted public funding). Although the financial issues lost some of their previous importance during the following decades, they still remained among the more relevant themes in the economics of education.

The results obtained by the classification of the articles published on HCT in major journals roughly endorse the comments made regarding

the economics of education. The improved visibility of the seventies was a joint effect of the diffusion of the HCT and of its alternative theories, being a good period for both. Hence, the theoretical discussion had a positive short-term effect on the disciplinary visibility of HCT (and the economics of education). This was also a good period for issues such as economic growth, the labor market, equity, and externalities related to education. On the contrary, the eighties were characterized by a reflux in the attention given to all these issues. Again, rising doubts about HCT lessened interest in both it and the economics of education. In some cases there were important reductions in the number of articles (mainly those on economic growth and externalities, but also those on screening theories). The nineties were also characterized by increased attention. Special mention should be made of economic growth, labor market issues, and externalities.

#### **Some Methodological Aspects of the Articles in the Core Journals**

Finally, in table 4 the articles published on the economics of education in four of the five main journals are classified according to whether their main emphasis is empirical or theoretical.<sup>42</sup> Two main groups were considered. The first group included the articles of a pure theoretical type or those that developed a simulation approach (also on a theoretical basis). The second contained those of the empirical type, either using new data or data already presented in other published applications/articles. New data includes not only surveys developed by the authors, but also those applications (for the first time) to official statistics or data.<sup>43</sup>

As expected there were more papers of the empirical type. These represented half of the papers devoted to the economics of education in four of the main economics journals (and even when ignoring those articles that presented known data). The category of theoretical papers showed an increase in the nineties, namely in the highly formalized articles. This reflected the more generalized trend, among economics, of privileging papers with a higher degree of mathematical complexity. Interestingly,

42. Due to its idiosyncracies, the *JEL* was excluded from this analysis, since its articles survey recent literature or report on the state of the art, rather than present original research, as is typical of other journal articles.

43. This classification was inspired by one used in an article by Daniel Hamermesh, which partially drew from a classical note from Wassily Leontief (Hamermesh 1996).

**Table 4** Classification of journal articles in the economics of education

Period	Purely Theoretical	Adopt a Simulation Approach	Empirical, Using New Data	Empirical, Articles Using Data in Already Published	Total
1969–70	1 (0.10)	—	7 (0.70)	2 (0.20)	10 (1.0)
1971–75	14 (0.46)	2 (0.07)	12 (0.40)	2 (0.07)	30 (1.0)
1976–80	3 (0.20)	1 (0.07)	7 (0.46)	4 (0.27)	15 (1.0)
1981–85	5 (0.36)	—	7 (0.50)	2 (0.14)	14 (1.0)
1986–90	3 (0.20)	—	9 (0.60)	3 (0.20)	15 (1.0)
1991–96	17 (0.38)	—	22 (0.49)	6 (0.27)	45 (1.0)
Total	43 (0.33)	3 (0.02)	64 (0.50)	19 (0.15)	129 (1.0)

this was also observable in an applied field such as the economics of education. The third category in terms of the number of papers—empirical articles using data already used by other researchers—also seemed to have more importance in the later years.

The material conditions that allowed an easier application of mathematical models to statistical data can help to explain the growth of empirical papers that use previously analyzed data. In fact, most of the papers presented in the second category were mere applications of statistical and econometric techniques to available data and did not involve the development or use of new data.

### **The Emergence and Consolidation of the Economics of Education: An Attempt at an Epilogue**

Since the early sixties, the economics of education and HCT have gained increased prominence in the economic profession. However, the economic approach to thinking about education did not raise enthusiastic reactions from other social scientists, who, in most cases, remained quite skeptical toward it. Instead, this field of economics tended to consolidate by developing links almost exclusively with other fields inside economics. The strongest links were developed with labor economics and with the theory of economic growth. The empirical techniques employed were those that had already been introduced in other fields of economics, including cost-benefit analysis and regression analysis of

both cross-sectional and panel data. Hence, the economics of education consolidated as a field of study by enhancing its economic side.<sup>44</sup>

Early research on the economics of education that tended to place emphasis on the benefits of education soon came to be regarded rather skeptically by others in the field. This was visible in the case of the alleged ability of education to promote equity. Serious doubts were also raised about the effectiveness of education in the promotion of social mobility. Increasing financial pressures faced by governments led to an increased emphasis on research into the quality of education and on efficiency in the allocation of resources to education; less attention was given to questions of access to and the social role of education.

Another interesting aspect of this field of study is its impact on policy circles. The sixties and the early seventies can be characterized by a rapid absorption of the main arguments of HCT into policy discussions, providing some theoretical basis for increased public expenditures on higher education. However, the alternative theories, although they ultimately did not replace the human capital model as the basic conceptual framework employed by economists in thinking about education, did succeed in creating a sense of skepticism about the social and economic benefits of education.<sup>45</sup> This effect, enhanced by increased financial restrictions on public expenditures, created, in subsequent years, a more difficult context for educational expenditures. Moreover, this skepticism remained in spite of the resurgent academic interest in HCT in the late eighties and nineties.

The picture of this field of study that emerges from the analysis of the five core journals at the end of the period is rather different from that of the early days. The optimism of the early phase (the sixties), in which the link between education and economic benefits seemed to be clear and straightforward, was gradually weakened during the following years.<sup>46</sup>

44. The analysis of the main textbooks published on the subject, since the seventies, indicates the increasing role of commonly used economic techniques in the consolidation of this field of study (not only the more generalized econometric practices, but also others borrowed from operational research).

45. The most successful of the alternative theories were the screening ones, probably due to the fact that these competed for the same audience and had a similar approach to economic theory as the HCT (i.e., both human capital and screening theories navigate in neoclassical waters).

46. Arthur Goldberger (1979), who considers it almost impossible to disentangle the genetic and environmental factors affecting human capabilities, impressively discusses this complexity in an insightful paper.

Furthermore, the vivid debates of more than three and a half decades produced a more complex view of the role of education in the promotion of private and social economic progress. However, despite the criticisms and doubts raised through the last three decades, the basic proposition that education and training make individuals more productive (thus, they may expect higher earnings, due to this higher productivity) has persisted and today seems to be as widely accepted as ever by academics, politicians, and the general public.

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