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Spending On Education In An Era Of Economic Stress: An Optimist's View

GEORGE PSACHAROPOULOS

WHEN THE ECONOMIC OUTLOOK is as bleak as at present, one has additional reasons for scrutinizing the rationale for *all* kinds of public spending. During a period of economic stagnation, however, education becomes especially vulnerable to budgetary cuts. In my opinion, there exists one main reason for the relatively weaker position of education vis-à-vis other sectors (such as transport and industry) when claims on state resources are made: whereas the costs of education are, more or less, fully explicit and visible, the benefits schools return to society are mostly elusive and intangible. Therefore, one understandably wonders what is the economic value of the "product" of education and how it compares in cost-benefit terms with that of other sectors in the economy.

But there exists another reason why education is often found at the bottom of the hierarchy of public spending. There is a kind of pessimism regarding the effectiveness of the social role of education in general that started in the early seventies and still echoes in some quarters. "Neither family background, cognitive skill, educational attainment, nor occupational status explains much of the variation in men's incomes."[1] This was the famous conclusion of Jencks' book which has been largely interpreted as: "education does not matter."

The economic recession came exactly when the education-does-not-matter slogan was widely debated in academic journals and daily newspapers, and further tipped the scale against spending on schools.

In this paper I advance an optimistic view regarding educational spending in general, and particularly during an economic recession. This view is backed by recent official United States government statistics. But before the data are presented, a foundation is laid in terms of concepts.

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1. C. Jencks et al., *Inequality: A Reassessment of the Effect of Family and Schooling in America* (New York: Basic Books, 1972), p. 226.

[160]

On Concepts

Any economic evaluation has two sides: the cost side and the benefit side. Although the assessment of educational costs is easier than the corresponding assessment of benefits, it is not entirely true that the costs of education are fully visible and explicit.

Typically, conventional educational cost accounting roughly misses 80 percent of the true economic cost of education. The reason is school accountants (and government statisticians alike) do not make a distinction between the *direct* and *indirect* costs of education. It is the direct cost that is usually recorded, namely payments for teachers, librarians, buildings, maintenance, and the like. The indirect cost takes the form of forgone production while the pupil or the student is in school.

The size of this invisible or hidden component of educational costs is a function of at least three factors: (1) the level of advancement of the society (absolute earnings at any level of schooling are higher in industrialized relative to agrarian countries), (2) the level of schooling studied (young children have virtually zero opportunity cost by staying in school),[2] (3) the state of the economy. It is the third factor that is of interest in this paper since *in a period of economic recession, employment opportunities of young people are limited, hence the indirect cost of schooling is lower relative to a period of economic boom.*

This conceptual distinction alone between the direct and indirect costs of schooling leads to the conclusion that although in recent years school costs *appear* to be "high" (even abstracting from inflation), the *true* cost of schooling must in fact be lower relative to a previous period of economic boom. The relationship between the true social cost of schooling and the level of economic activity is depicted in Figure 1.

In turning to the more elusive educational benefits, useful taxonomic procedure would be to classify the benefits into two broad categories: (a) the *somehow* quantifiable benefits and (b) the nonquantifiable benefits. "Somehow" is employed because the educational product is very different from an ordinary factory product such as a television set. If one is willing to pay $300 in order to buy a television set, the $300 must represent the benefit of owning a television. But how does one value school output?

The operational rule in the literature is to approximate the value

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2. However, this is not absolutely true in agrarian societies where even young children have an opportunity cost because of their participation in agricultural production.
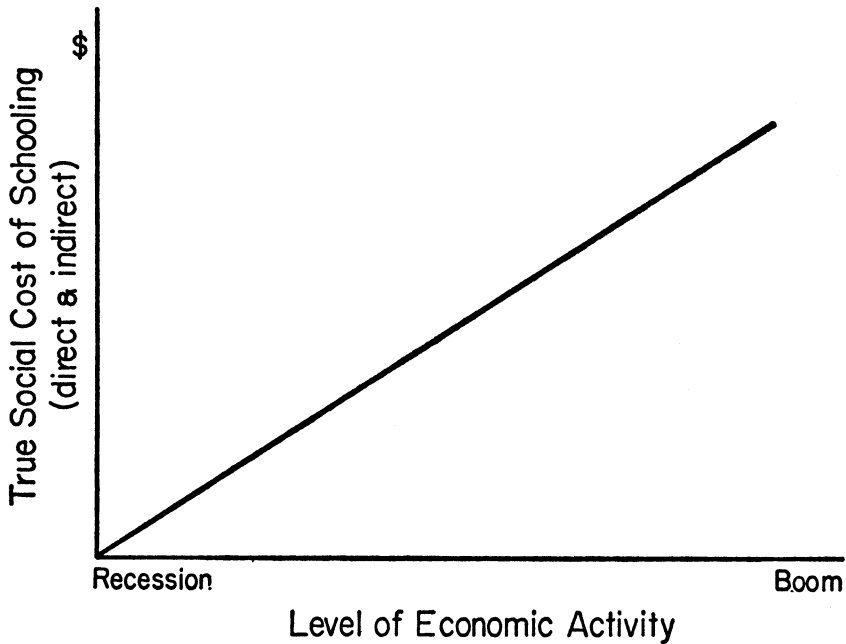
FIGURE 1
THE RELATIONSHIP BETWEEN THE COST OF SCHOOLING AND THE
LEVEL OF ECONOMIC ACTIVITY

of *extra* schooling to society by the *difference* in earnings between a
more educated and a less educated worker. For example, if a high
school graduate earns $17,000 and a college graduate earns $26,000,
it could be said that the $9,000 earnings advantage of the college
graduate *roughly* corresponds to the social valuation of a college
education. There are one thousand assumptions built into this ap-
proximation and this is not the place for either enumerating them
or elaborating on the usual objections one can raise.[3] The following
summary statement is simply made: the accumulated experience to
date has not shaken the essential validity of the stated approxima-
tion.

The analysis becomes more difficult, however, when examining
the nonquantifiable (even in a very approximate way) benefits side.
For example, how does one value the *consumption* benefits increased
education provides to the individual? Informed consumer choice
over a lifetime has a definite economic value. Yet researchers are at
a loss when evaluating it. Then there are the so-called *opportunity*
benefits, namely the fact that more education opens up a number of

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3. *See* George Psacharopoulos, "Conceptions and Misconceptions on Human Capital
Theory," *Contributions to Human Capital Theory*, ed. W. Clement (Berlin: Duncker
and Humblot, 1980).

alternative options to the individual. This is not only in terms of proceeding to the next level of education, but rather makes one more *flexible* to adapt to changing circumstances.

Theodore W. Schultz, the father of the investment in education school and recent Nobel prize winner, has expressed this in terms of the ability of the individual to deal with "disequilibrium situations."[4] Part of this economic value must have been captured by the quantifiable benefits side, that is, measured earnings. But a great part of it must have been diffused into different lifestyles, tastes, culture and general social behaviors which are impossible to measure in monetary terms.

One benefit of education which is growing in importance (but very difficult to quantify) is the fact that prolonged education of an individual facilitates on-the-job training. This is the *on-the-job-trainability* value of education, especially of a general education. Because the world is becoming more complex at an accelerating rate, one cannot expect the output of the school system to be formed for specific tasks. These tasks will change in the future following the rate of technological development. Thus, it will be the responsibility of the formal school system to develop the *general* capabilities of the individual so that the graduate will be able to acquire *specific skills* on the job.

ADDITIONAL DIMENSIONS OF BENEFITS

There exist further distinctions which contribute toward a better understanding of the elusive benefits from education. First, consider the *individual* versus *family*. Most operational benefit measures capture only what accrues to the individual recipient of education. However, a great deal of the educational benefits are diffused to other members of an individual's family. The example par excellence in this case is the fact that more educated mothers act as informal teachers regarding the education of their children. School achievement significantly correlates with family conditions and in particular with the education of the mother.

Second, one should mention the classic *private* versus *social* benefits distinction, that is, what society gets back from education must in fact be greater relative to any private operational measure. For example, if the private benefits of education are approximated by the after tax earnings of the individual, from society's point of view it is the before tax earnings that must be used, hence the social

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4. T. W. Schultz, "The Value of the Ability to Deal with Disequilibria," *The Journal of Economic Literature* (September 1975).

benefit is greater relative to the private benefit.[5] But beyond the difference due to taxes there exists the possibility that what someone is privately paid does not correspond to his real contribution to society. For example, a hospital doctor might be contributing to society $500,000 in terms of lives saved, yet his income might be only $50,000. In cases like this, the higher social benefits of education must remain a qualification.

A third distinction is between *direct* and *indirect* benefits of education. Most empirical evidence on this topic relates to the direct impact of education on earnings, such as arrow A in Figure 2. However, it has now been established in a large number of countries that the indirect link (B-C, via occupation) is more important than the direct link.[6] Namely, education helps the individual obtain a better job and, therefore, higher earnings.

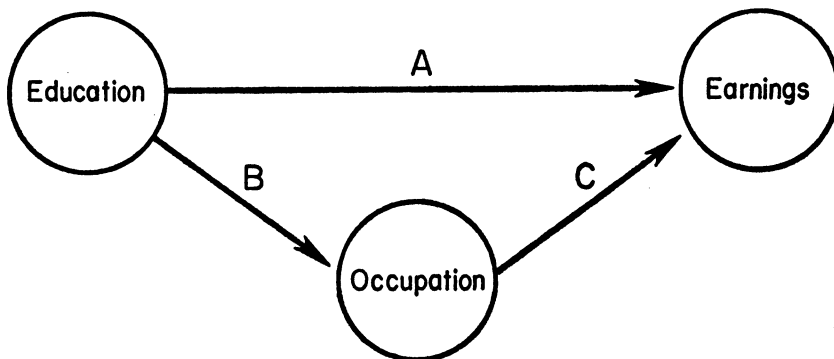

FIGURE 2

THE DIRECT (A) AND INDIRECT (B-C) LINK BETWEEN EDUCATION AND EARNINGS

A fourth distinction is between the *efficiency, employment* and *equity* benefits of education. Most of the preceding discussion concerned the efficiency effects of education (for example, higher earnings roughly means higher efficiency).[7] But if education somehow relates to employment, this might be a separate entry on the educational cost-benefit balance sheet. True, any efficiency consideration must take into account the employment effect (that is, if the graduate is unemployed this is tantamount to inefficiency). However, given the recent upsurge of unemployment in Western societies, one might

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5. The reason is that taxes are a transfer and thus it is immaterial as to who pays or receives them from the social efficiency point of view.

6. *See* G. Psacharopoulos and J. Tinbergen, "On the Explanation of Schooling, Occupation and Earnings," *De Economist* (November 1978).

7. It also addressed the *external* efficiency of educational institutions (i.e.. how well their output fits the world of work). An *internal* efficiency consideration would have been how well do schools combine their resources to turn out their output, but this is a matter outside the scope of this paper.

well single out the employment prospects of the graduate as a separate component of how schools contribute to social welfare. If more schooling means increased employment prospects, this must be included as an additional direct social benefit of education.

Education also relates to income distribution. To the extent schooling affects relative wages, this changes any statistical equity measure and also provides another entry to the balance sheet. In general, what is likely to happen is that when the number of educated persons increases, wage differentials narrow, hence income distribution becomes more equal (see Figure 3). This gives another positive entry regarding the social benefits of education.
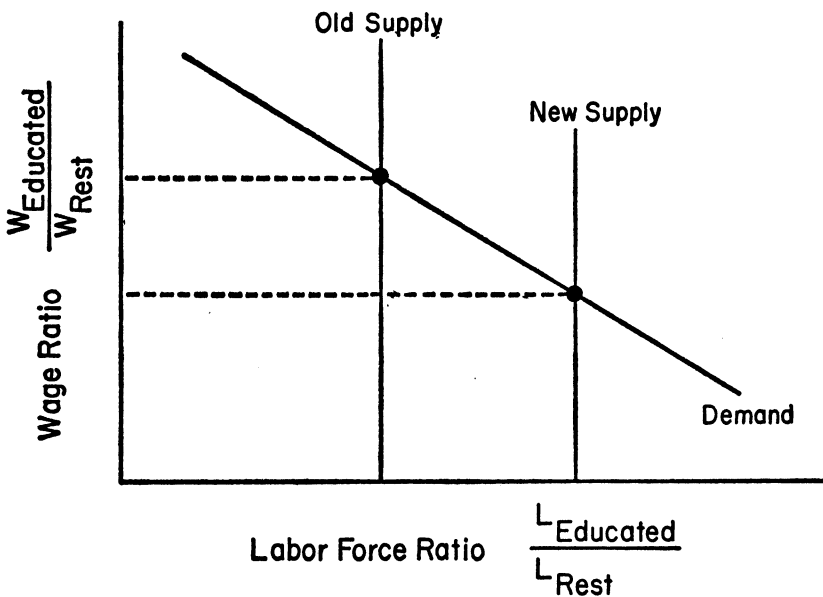

FIGURE 3
THE RELATIONSHIP BETWEEN EDUCATION AND INCOME DISTRIBUTION

An additional important distinction one can introduce when discussing the benefits of "education" is the level or kind of education under consideration. For this purpose it is useful to distinguish three levels (primary, secondary, and higher) and two kinds (general and vocational) of education because the distinctions in benefits (and also any resulting cost-benefit ratio) will differ as to where one is in the educational matrix.

For example, it has been established that whereas the provision of education at the lower levels is equitable, university expansion might be inequitable as it pushes the earnings of a group of the population (college graduates) away from the mean.[8] Also, it has

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8. *See* A. Marin and G. Psacharopoulos, "Schooling and Income Distribution," *The Review of Economics and Statistics* (August 1976).

been found that on cost-benefit grounds the lower level of education is more cost effective and that vocational education does not necessarily exhibit the higher returns because of the high associated cost.[9]

The Lifetime Dimension

What is perhaps the most important consideration one has to take into account when discussing the benefits of education in an era of economic stress has been reserved for the end of the section. This is the fact that while the cost of education is concentrated within, say four years, the benefits of education accrue for the remaining life of the individual. This timing asymmetry has the following implication regarding the evaluation of the returns to education. During an economic recession the indirect cost of schooling is low since all wages are depressed. However, a recession never lasts more than a few years, let alone over a lifetime. When the economy recovers, it is the long-run earnings differential that is applicable rather than the short run one during the recession. What this means in practice is that *investing in education during a recession is financially more attractive than investing during a period of "normal" economic activity.*

This is not as paradoxical as it sounds when Figure 4 is examined. This figure depicts the essential ingredients of a cost-benefit educational calculus, say investing in four years of college education. The rate of return to this "investment project" is arrived at by comparing the benefits (+ + + area) and costs (— — — area) of college education over high school. Note that in a recession period a part of the cost (shaded area) is not applicable, hence the profitability of this project is higher relative to a period of normal economic activity when the whole cost area would apply.[10] Also, note that "normal earnings" after the age of twenty-two for both kinds of graduates are *not* reduced on the assumption that the recession will not last forever. But even if the recession permanently depressed the absolute earnings of the two kinds of graduates by a differential proportion, the return to college graduation would still be higher. This can be shown by means of the most simple rate of return formula:[11]

9. *See* G. Psacharopoulos, *Returns to Education: An International Comparison* (San Francisco: Jossey-Bass, 1973).

10. For additional details on this kind of calculus and numerical estimates for a number of countries, *see* G. Psacharopoulos, "Investment in education and quality of opportunity," *Educational Need in the Public Economy,* eds. Kern Alexander and K. Forbis Jordan (Gainesville, Fla.: University of Florida Press, 1976).

11. For the assumptions necessary to arrive at this formula, *see* Psacharopoulos, *Returns to Education.*
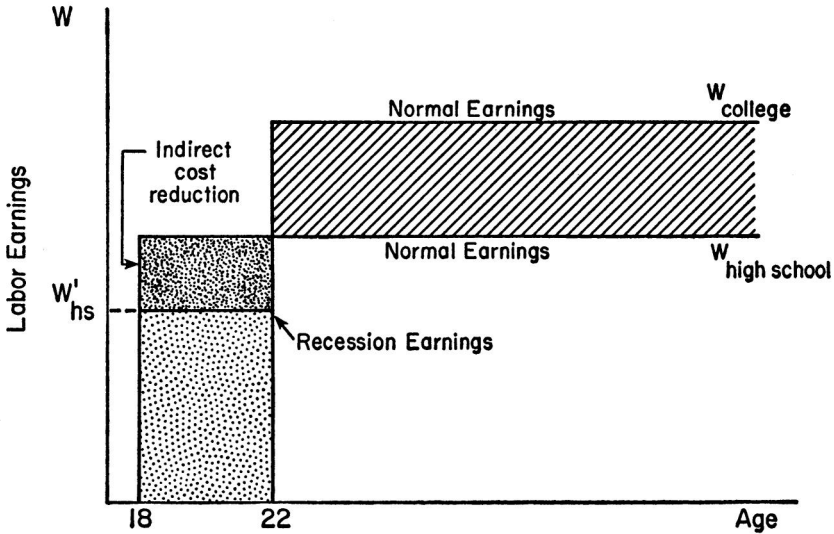
FIGURE 4
THE EFFECT OF A RECESSION ON THE EDUCATIONAL COST-BENEFIT CALCULUS

$$r_c = \frac{W_c - W_{hs}}{4\,W_{hs}} \qquad\qquad [1]$$

where
r_c is the rate of return to college education
W_{hs} is the earnings of high school graduates, and
W_c is the earnings of college graduates.

It is easy to see that if *all* earnings are depressed by the same proportion, say 10 percent, r_c will remain the same. However, if the earnings of high school graduates are depressed more relative to the earnings of college graduates (say, 15 percent and 10 percent, respectively) r_c will rise.

ON NUMBERS

Let us now see how the numbers fit the preceding conceptual framework. Table 1 shows evidence from the United States regarding the structure of earnings by educational level. This evidence comes from the Bureau of the Census Current Population Reports (Series P-60) and refers to year-round full-time male workers. Evidence of this kind is considered the cornerstone of the economics of education. For on the basis of it, one can at least approximate a great part of the benefits of education. These "benefits" are reflected in the successive increments of earnings as one moves up the educational ladder. The ascending sequence of earnings is very orderly, and this is exactly what one observes in practically every country in

TABLE 1
MEAN EARNINGS BY EDUCATIONAL LEVEL

| | Age Group | |
Educational Level	25-34	18+
Elementary		
Dropout	$ 9,210	$ 9,770
Graduate	10,296	11,836
High School		
Dropout	11,561	12,678
Graduate	13,852	14,600
College		
Dropout	14,606	16,207
Graduate, 4 years +	16,294	20,966
Graduate, 5 years +	19,460	25,650

Source: U.S. Bureau of the Census, Current Population Reports, *Consumer Income,* Series P-60, March 1979, Table 48, p. 195.
Note: Data refer to males of all races.

the world (although the earnings differentials might be more pronounced in some counties relative to others).[12]

The evidence in Table 1 refers to males as to avoid issues related to sex discrimination. Also, mean earnings are given for two age groups: workers aged eighteen plus and those aged twenty-five to thirty-four. The former column has been included to give the reader an idea of the overall average differences in earnings by educational level. The second narrower age band is the one focused on to standardize for the age (or experience) factor. There also exists theoretical reasons for concentrating on this particular age band which are beyond the scope of this paper.[13]

CURRENT EFFICIENCY MEASURES

The figures in Table 1 mean little unless they are translated into an efficiency measure, such as the rate of return discussed earlier. This can be computed from either the private or social point of view using formula [1]. Table 2 presents the resulting estimates for two completed levels of education (relative to the preceding level).[14]

12. *See* G. Psacharopoulos, *Earnings and Education in OECD Countries* (Paris: Organization for Economic Cooperation and Development, 1975).
13. This age group roughly corresponds to Mincer's "overtaking year of experience" at which one can evaluate the returns to education using flat age-earnings profiles. See J. Mincer, *Schooling, Experience and Earnings*, National Bureau of Economic Research, 1974.
14. Although the method of calculation is extremely crude, it is fairly accurate and sufficient to demonstrate the points discussed in this paper.

TABLE 2
RATES OF RETURN BY EDUCATIONAL LEVEL
(1977)

	Rate of Return	
Educational Level	Private	Social
High school completion versus elementary	8.6%	7.4%
College 4 years versus high school	4.4	3.6

Source: Based on Tables 1 and 8. College direct cost from National Center for Education Statistics, *The Condition of Education 1978*, p. 226.
Note: Social rates have been computed by adding a 4-year lump sum cost to the denominator of formula [1].

What the 8.6 percent figure means is the rate of interest realized by staying in high school for four years after elementary school. Similarly, 4.4 percent is the "yield" enjoyed by those who have "invested" in a four-year college education, the investment being their forgone earnings while attending college. Note that the "social" rates (second column of Table 2) are lower than the private rates because of the "direct" cost of schooling.

There are three points worth noting regarding the percentages in Table 2. First, the returns to high school education are nearly double the returns to college. This is another documentation of a fact observed here and again, and which has been interpreted as a law of diminishing returns applied to education (as well as to any other type of investment activity). Second, the absolute size of the returns is very similar to the monetary yield of other investments such as the bond or stock market. The relationship between the two rates means that, other things being equal, one should invest in high school education as this type of investment exhibits the highest returns. Third, the rates discussed are purely quantifiable, monetary returns. But if investment in education also yields unquantifiable and/or nonmonetary returns, the true profitability of investing in colleges or high schools must be well in excess of those shown in Table 2.

Based on the data in Table 1, the rate of return to high school completion versus high school dropout also was estimated. This was 9.9 percent, privately, or 8.6 percent, socially. What this means is that money spent to avoid high school wastage has an attractive rate of return.

EFFICIENCY OVER THE BUSINESS CYCLE

The way in which the economic depression of the 1970s has

affected the financial returns on investment in education is examined in Table 3. The evolution of the income ratios of high school-to-elementary and college-to-high school workers between 1968 and 1976 is given. The figures strikingly illustrate the fact that the relative income advantage of college graduates has diminished during the depression while that of high school graduates has been maintained (if not increased). This evidence points towards the asymmetry discussed in the previous section regarding the effect of the recession on earnings differentials by level of education. Clearly,

TABLE 3
INCOME RATIOS BY EDUCATIONAL LEVEL
(1968-1976)

Year	Educational Levels Compared	
	High school/elementary	College +/High school
1968	1.43	1.33
1969	1.40	1.35
1970	1.45	1.35
1971	1.50	1.32
1972	1.45	1.31
1973	1.48	1.22
1974	1.59	1.19
1975	1.51	1.21
1976	1.44	1.21

Source: Based on National Center For Education Statistics, *The Condition of Education, 1978*, p. 16.
Note: Refers to male year-round, full-time workers, aged 25-34.

the impact of the recession has not been neutral on earnings, those of college graduates having been affected more adversely relative to high school graduates.

    To assess the effects of the economic recession on investment in education, the income ratios shown in Table 3 are translated into rates of return.[15] This is shown in Table 4 where the dramatic fall of the college yield is compared with the rather steady yield to high school completion.[16]

    On the basis of the above evidence, this efficiency section is concluded with the following statement: investing in education

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    15. For the sake of simplicity only the private rates are shown. The social rates should be approximately one percentage point lower than the corresponding private rates.
    16. The reader should avoid the temptation to project the rates of return to 1977 on the basis of Table 2, as the two sets of figures have been compiled from different sources and might not absolutely match each other in terms of the definition of earnings.

TABLE 4
RATES OF RETURN TO HIGH SCHOOL AND COLLEGE
(1968-1976)

Year	High School (vs. elementary)	College + (vs. high school)
1968	10.8%	8.3%
1969	10.0	8.8
1970	11.3	8.8
1971	12.5	8.0
1972	11.3	7.8
1973	12.0	5.5
1974	14.8	4.8
1975	12.8	5.3
1976	11.0	5.3

Source: Based on Table 3.

continues to be financially attractive during a recession, especially at the high school level.

EMPLOYMENT

The mid-1970s have witnessed a sharp rise in unemployment, with youth most severely affected by limited employment prospects. But even within the "youth" (i.e., up to 24 years of age), the rate of unemployment is a declining function of age. For example, consider the following breakdown of the youth unemployment rate in 1976:[17]

aged 16-19 = 19.7 percent.
aged 20-24 = 11.9 percent.

What this means is that unemployment is concentrated early in life and therefore its presence cannot be used to invalidate the previously estimated efficiency measures that refer to a lifetime. It is true that unemployment means inefficiency. However, this inefficiency is relatively minor when one considers the length of the working life of the individual worker.

Next, what has the school system to do with unemployment? Table 5 gives some evidence in this respect. With the exception of one case (white college graduates) more education is associated with a lower probability of being unemployed. High school graduation (relative to dropping out) lowers the unemployment chances of whites by 50 percent. The improvement of the employment prospects of black college graduates is even more dramatic.

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17. *See* National Center For Education Statistics, *The Condition of Education 1978*, p. 14.

TABLE 5
YOUTH UNEMPLOYMENT RATES BY EDUCATIONAL LEVEL AND RACE
(1976)

Educational level		Whites	Blacks
High school	Dropouts	22.3	37.1
	Graduates	10.8	23.6
College	Dropouts	8.2	27.2
	Graduates	7.1	3.6

Source: National Center For Education Statistics, *The Condition of Education 1978*,
p. 14.
Note: "Youth" refers to individuals between 16-24 years of age.

The message from these data is that one can apply a kind of social engineering to affect the level of employment. Although the efficacy of this policy might be small, in no case can the existence of youth unemployment invalidate the returns to education.

INCOME DISTRIBUTION

The empirical relationship between educational provision and income distribution is a highly debated subject in the economic literature.[18] There exist many methodological routes along which one can proceed. Two such routes are, first, the extent to which education affects the size of personal incomes and hence the dispersion of income in the population as a whole, and second, the way education influences the earnings differential between specific population groups. The inherent difficulty of any assessment in this respect is the lag time involved between educational provision and its impact on earnings in the labor market.

Following the first route, (i.e., the individual data approach) the evidence comes from two disciplines that have tended to merge recently: economics and sociology. Economists work with the tool of "earnings generating functions" of the type

$$\text{Earnings} = f(\text{schooling, other personal characteristics}). \quad [2]$$

Then taking variances of both sides of [2] it is possible to arrive at a statement of how much schooling is responsible for the variance of earnings. Sociologists work with more complete models purporting to explain "success in life," where such success might be defined in terms of occupational status rather than earnings.

18. For example, *see* B. Chiswick, *Income Inequality*, National Bureau of Economic Research, 1974.

Empirically, there are two divergent views following the earnings functions route. According to a sociologist's view, education does not have an appreciable effect on income distribution since, in addition with occupation, ability, and family background, it explains only one fifth of the variance in earnings.[19] According to an economist's view, however, human capital investments alone (i.e., schooling and on-the-job training) explain as much as one half of the variance of personal incomes in the United States.[20] For reasons that are beyond the scope of this paper, I tend to subscribe to the latter view of the world rather than the former.[21] Education does have an impact on income distribution, although admittedly this impact might take some time to work out and also it might be smaller when compared to other policy measures such as direct taxation and subsidization.

Following the second route (i.e., the grouped data approach), it is easier (although in a much more crude way) to see the potential impact of education on income distribution and also realize some of the complexities involved. Consider the evidence given in Table 6.

TABLE 6
INCOME ADVANTAGE OF TWO GROUPS OF WORKERS
(1969 AND 1974)

| | Income Advantage of the Higher Group | |
Worker Groups Compared	1969	1974
High School/Elementary	40%	59%
College/High School	35	19

Source: Table 3.

The figures show that, during the period under consideration, the relative income position of high school graduates has improved, whereas the income position of college graduates has fallen dramatically. Since college graduates belong to the highest pay group in our society, the interpretation one could give to these numbers is that income distribution must have improved. This is because the earnings gap between the highest paid and the rest has been narrowed.

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19. Jencks, et al., *Inequality: A Reassessment of the Effect of Family and Schooling in America.*
20. Mincer, *Schooling, Experience and Earnings.*
21. *See* G. Psacharopoulos, "Family Background, Education and Achievement," *British Journal of Sociology* (September 1977).

SOCIAL DEMAND

Regardless of efficiency, employment, or equity considerations, one could bring into the analysis another factor that adds to the "benefits" side of education. This is the satisfaction of "social demand," that is, the provision of education on its own right to those who want to enroll in different schools. Table 7 is very telling in this respect. An intergenerational aspect is indicated, namely education feeding itself from one generation to the next. The point is that, in the formulation of educational policy, one cannot disregard the family's wish for a certain educational attainment of its offsprings. Also, "more education today" means "more social demand

TABLE 7
COLLEGE PLANS OF HIGH SCHOOL SENIORS BY FATHER'S EDUCATION
(1975)

Father's Education		Percent Planning to Attend College
Elementary	8 years —	31.6%
High School	1-3 years	36.9
	4 years	45.3
College	1-3 years	61.8
	4 years +	77.5

Source: National Center For Education Statistics, *The Condition of Education 1978*, p. 108.

for education tomorrow." Thus, if education at any point in time is associated with the string of benefits discussed in this paper, it also will have intergenerational benefits by means of the links shown in Table 7.

CONCLUDING COMMENT

In this paper, a series of definite educational benefits have been documented and their approximate empirical size indicated. In terms of quantifiable monetary efficiency, high school graduation was at the top of the list, especially in a period of economic stagnation. How well does current school finance square with this? The answer, with reference to Table 8, is, not very well.

Whereas real per pupil expenditure in public elementary and secondary schools rose dramatically in the decades before the economic depression of the 1970s, it stagnated thereafter. This can be

interpreted as a kind of myopia of policy makers advocating cuts in an area where the benefits are mostly long term and elusive.

TABLE 8

PER PUPIL EXPENDITURE IN PUBLIC ELEMENTARY AND SECONDARY SCHOOLS
(1930-1977)

Year	Current Expenditure (in constant 1976 $)
1930	$ 298
1940	370
1950	518
1960	749
1970	1,268
1972	1,412
1974	1,519
1976	1,597
1977	1,578

Source: National Center For Education Statistics, *The Condition of Education 1978*, p. 72.