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Externalities in Education

Walter McMahon

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Externalities in Education

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Abstract

The external benefits of education are those benefits above and beyond the private benefits realized by the student and his family. They include such hard-to-measure but observable values as the role of education in preserving functioning democratic institutions and their attendant freedoms, the role of mathematical literacy in improving the functioning and adaptation to technical change of markets, and the effects on the neighborhood when children have better education.

This is a survey of recent research that seeks to measure and value both external benefits and costs of education based on shadow pricing techniques. It excludes the private earnings and consumption benefits, as well as those related to equity, which are considered separately.

This paper, limited therefore to purely efficiency considerations, finds considerable evidence for the relation of education to lower crime rates and lower penal system costs. Other evidence cited develops the relation of education to reduced poverty status and to better health, and hence to lower welfare and Medicaid costs. There are some external costs of education (e.g., past draft riots, and smarter criminals), often offset by external benefits (e.g., lower crime rates). But much remains to be done in measuring the value of the net benefit spillovers to the workplace, the neighborhood, and the society.

Externalities in Education

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The external benefits of education are those benefits to society that are above and beyond the private benefits realized by the individual decision maker, i.e., the student and his family. That is, they are above and beyond both the private monetary benefits in the form of increased earnings due to education, and the private non-monetary consumption benefits, both of which are captured by the decision maker and taken into account by him or her as the decision is made.

External benefits to others include for example those satisfactions of living in a society with functioning democratic institutions and their related freedoms, lower crime rates, more books, more newspapers, and more literature. The economy and the markets on which it depends function better when there is mathematical literacy, adaptability, and understanding. The increased earnings from education generate not only private benefits but also social benefits in the form of public goods paid for by these increased earnings, and also savings in public welfare costs. As a final illustration research discoveries which depend on an educational base benefit persons other than the researcher, including future generations, in very substantial ways.

The survey of research on the external benefits and external costs of education which follows distinguishes these from the private monetary benefits of education and from the private (non-monetary) consumption benefits of education, both of which are covered in separate articles under these topics. It also will not cover the spillover effects of education, even though spillovers are one type of externality,

because they are covered in a separate entry that focuses on geographical spillovers between political-decision-making jurisdictions. There are some external costs of education (e.g., smarter criminals), that are included in this survey, but they are frequently offset (e.g., smarter criminals, but much lower crime rates), and hence relatively less important.

I. Research on Externalities in Education

There has been a remarkable amount of new research that seeks to measure specific types of external benefits of education. Much needs to be done however before more comprehensive measures of the value of these external benefits is available. It is a huge task, making use of shadow pricing and techniques for imputation that seek to estimate both the direct effects (e.g., better health) and then imputing the value of the benefits and/or the savings in costs (e.g., reduced Medicaid costs), going beyond the taxonomy that has characterized the earlier stages of inquiry. It is the observation of external benefits, however, including observation by the reader, and not necessarily their measurement, that is crucial from an epistemological point of view to establish their existence.

But measurement does help. It does require, first, that great care be used to avoid double counting. What appears to be an external benefit may sometimes be a private benefit for the student or his family. Purely distributional effects also must be eliminated--if some non-students gain at the expense of others, the net social benefits may be negligible.

A second caution when it comes to measurement is that the worst errors appear to be errors of omission. Some writers merely ignore external benefits. If their existence is admitted, and they are appraised to be positive and substantial, it then follows on purely efficiency grounds that there must be public tax support for education and/or other market corrections if economic efficiency within the system is to be attained. That is, unaided private decision makers who cannot capture external benefits will cause the quantity and quality of education produced to be too small, and Pareto optimality will not be attained.

The basic voting model which allows voters to observe these external benefits and to respond by voting public support to secure them was developed by Howard R. Bowen (1943) who has continued to be a leader in the identification and analysis of external benefits in education (see Bowen, 1971, 1977, 1982). Weisbrod (1962, 1964) has also pioneered in this field. Recently there has been a vast amount of new research seeking to measure specific benefits, the main lines of which are surveyed below under the main headings of benefits to society as a whole, and benefits within the neighborhood and workplace. We omit the benefits of education per se to other family members because we regard the family as the basic decision unit, rather than the student, especially at younger ages. From this point of view they are not externalities, but private consumption benefits of education, and so are covered in a separate entry under that title. We also will not cover equity considerations. Equity is the other major basis for public support of both public and private education--e.g., the provision of greater

equality of educational opportunity for students coming from lower income families or students that are disadvantaged in other ways. Equity in educational finance is also discussed in a major separate article, and goes beyond purely efficiency considerations with which we are concerned here.

II. External Benefits to Society at Large From Education

(1) Necessary to Effective Democracy and Democratic Institutions.

Viewing education as the key to the preservation of democratic freedoms in government and other institutions, Thomas Jefferson felt that education should be the primary responsibility of the state, and sought to have governmental constitutions amended to that effect.

(2) Important to Efficient Markets and the Adaptation to Technical

Change. T. W. Schultz (1975, p. 843) refers to this as "the ability to deal successfully with economic disequilibria, which is enhanced by education, and...is one of the major benefits of education accruing to people in a modernizing economy." Some of these benefits of course are realized privately, but as markets function more honestly and respond to new technologies effectively others share in the benefits.

(3) Lower Crime Rates and Reduced Penal System Expense. Spiegleman (1968) presents evidence that juveniles involved with education are less prone to commit juvenile crime. Webb (1977) finds a limited educational background among adult inmates, estimating the cost to society of deficiencies in their education at \$19.8 billion (1982 dollars) annually. Ehrlich (1975) finds a strong positive relation between inequalities in schooling, relative density of the poverty end of the

family income distribution, and specific crimes against property. He stresses the inequalities in the distribution of schooling and training rather than their mean levels as related to the incidence of property and violent crimes. Finally, Phillips, Votey, and Maxwell (1972) show that labor market status, which is heavily influenced by education, is a sufficient factor to explain rising youth crime rates.

(4) Lower Welfare, Medicaid, Unemployment Compensation, and Public Health Costs. Garfinkle and Haveman (1977, p. 53) find a strong negative relation between education of the head of the household and poverty status, with its associated Welfare and Medicaid costs. The value of the external benefits of education have not been estimated however in relation to the specific reduced costs for aid to dependent children, public housing, or medicaid. With respect to the effect of education on better health, a strong connection has been extensively documented by Lefocowitz (1982), Lando (1975), Orcutt (1977), and Grossman (1982).

(5) Reduced Imperfections in Capital Markets. Students with little collateral have limited capacity to borrow from banks to finance their own education without governmental guarantees of student loans and some interest rate subsidy. This rationale was developed by Hartman (1973) and is widely accepted--even by Freeman (ibid., p. 322) who has argued vigorously that there is "overeducation," partly by discounting the value of all other external benefits (ibid., pp. 323-7). There are some private benefits to the students involved here, but also some benefits to others in the form of reduced tax costs for education.

(6) Public Service in Community and State Agencies. Every community and state has wide ranges of voluntary boards and commissions that benefit from the service of educated public spirited citizens. These include united fund campaigns, community development commissions, jury duty, family service agencies, hospital volunteers, community symphony boards, and many more. It seems most reasonable that many individuals display some altruism in their behavior, including charitable giving, as studied by Weisbrod (1982). Not all of this is purely self-serving, the services rendered and gifts in fact do benefit others. Stapelton (1976) finds that high school and college graduates are more likely to participate in these kinds of community service activities, as well as political activities. Political activities can be purely self-serving of special interests, and in this case are not external benefits. McMahon (1982) has found that students do not weigh community service possibilities significantly in making their educational investment decisions, suggesting that they do not view them as private benefits.

(7) Complementarities in Production: Non-Educational Benefits.

Primary schools provide baby-sitting services to working mothers as a by-product of their educational activities which Weisbrod (1962) has valued at \$5 billion per year re-expressed in 1982 dollars. Driver's education benefits not only the driver, but also others who gain from a lower accident rate. Poor children and farmers benefit from school lunch programs, and community groups like the Boy Scouts benefit from the low cost use of school facilities.

III. Neighborhood and Employment-Related Benefits

There has been less research on imputing a value for many of these:

- (1) Neighborhood children display more socially acceptable behavior norms and offer better peer-group experiences (Weisbrod, 1962).
- (2) School closings cause adverse neighborhood effects, on which there has been research in specific localities.
- (3) Leadership in charting new courses for society can have positive effects such as environmental improvements cited by Bowen (1977), as well as negative neighborhood effects such as the draft riots in the late 1960's cited by Goffman (1977).
- (4) In the workplace, Berg and Freedman (1977) argue that "overeducation" can lead to frustration in mundane tasks. Others more recently have suggested that as these tasks are "robotized," the worker can shift to tasks where education is more productive (e.g., programming the robots). Weisbrod (1962) suggests that there are also offsetting external benefits in the workplace in that the productivity, flexibility, and adaptability of each member of the group enhances the productivity of other members.

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Related Entries Cited:

Consumption Benefits of Education
Equity in Educational Finance
External Benefits of Research
Monetary Benefits of Education
Option Value of Education
Spillover Effects of Education

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