Indicators of Education Systems

ESTIMATING ECONOMIC AND SOCIAL RETURNS TO LEARNING:
SESSION 3 OF THE FOURTH INES GENERAL ASSEMBLY

ISSUES FOR DISCUSSION

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ISSUES FOR DISCUSSION

Reviewing the background

1. Education and learning contribute to a variety of economic, social and personal outcomes. Since the 1960s, there has been a growing use of the term “human capital” as a shorthand to describe the key attributes, skills and knowledge possessed by individuals which contribute to these outcomes. Much of the analysis of human capital to date has focused on the measurable benefits of initial education to employment, income and productivity of individuals. However, there has been some dissatisfaction with standard human capital analysis to the extent that it lacks conceptual clarity in terms of definitions and measurement, and also focuses too narrowly on initial education and individual labour market benefits deriving from such skills. This has been to the detriment of other sources of human capital including informal learning and continuing training.

2. Alongside the focus on labour market and other economic benefits of learning, some progress has been made in the identification and measurement of various social benefits such as improved health, social participation, other aspects of individual welfare and social cohesion. While it has been difficult to quantify these benefits and other “spillover” effects (e.g. the positive impact of greater learning and skills on the productivity and well-being of others), there is reason to believe that much of the benefit deriving from learning is “social” in nature and this is an important aspect in making a case for strengthening the quality of learning at all levels and in different contexts. Some key dimensions of the total impact of human capital are identified in Table 1, below.

<table>
<thead>
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<th></th>
<th>Direct/Private</th>
<th>Indirect/Social</th>
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<tbody>
<tr>
<td></td>
<td>(directly captured by individuals with higher levels of human capital)</td>
<td>(aggregation of human capital across individuals, organisations and communities)</td>
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<tr>
<td>Monetary (sometimes referred to as economic)</td>
<td>Enhanced economic productivity of individuals</td>
<td>Enhanced economic output reflecting the effects on organisations, firms and societies (including interactions between different agents and spill-over effects)</td>
</tr>
<tr>
<td>Non-monetary</td>
<td>Improved health and other aspects of individual well-being</td>
<td>Social cohesion and well-being including the effect of spillovers</td>
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3. Earlier doubts concerning the capacity of education to contribute to genuine increases in productivity, as opposed to “sorting” effects, have tended to give way in recent years to a more positive outlook on the investment role of education (Temple, 2000). However, some degree of “qualifications inflation” and “sorting” cannot be excluded. Any consideration of an “over-education” hypothesis needs to be balanced against a consideration of demand for skills and the ways in which different types of skills and knowledge are matched with the demands of the labour market and society.

4. Human capital is extremely heterogeneous and cannot be represented adequately by single indices such as years of schooling, aggregate test scores or qualifications obtained in initial schooling. Much learning takes place before, during and after schooling in a wide variety of contexts including the home, local community and workplace. While it may not be possible to measure all of this at present, the less formal and less measurable aspects of human capital, including the effects of culture, social norms and values, may be extremely important in terms of economic and social outcomes.

5. Some empirical evidence on the extent and impact of human capital has been presented in OECD (1998). It shows considerable variation across OECD countries in levels of investment in human capital as well as in the distribution of human capital across different groups and age-cohorts. It also suggests significant returns to investment in human capital comparable with returns on other forms of investment in physical capital. A review by Temple (Temple, 2000) of the more recent literature confirms a generally positive impact of human capital on growth in GDP, but stops short of being able to measure the relative impacts of education at different levels of education (e.g. upper secondary contrasted with tertiary), in different sectors (e.g. early childhood, initial education, adult learning), by different types of programmes or fields of study or in terms of the quality of initial education or learning (identifying the macro-level impact of higher test scores in Mathematics and Science).

What we would like to know

6. An analysis of the impact of learning on various types of outcomes needs to take account of: i) the context in which learning takes place including the role of social capital - defined as the norms and networks facilitating collective action; and ii) the ways in which families, schools and communities generate higher levels of social capital including skills and civic habits of trust and social engagement. Hence, there is a potentially important complementary relationship between human and social capital in which both support each other in bringing about higher economic productivity and greater social well-being. Session 4 will address the sources of human capital, and by necessity, the role of social capital in helping to produce human capital. In Session 3, it is proposed to focus on social capital:

- as a joint agent with human capital in bringing about economic and social development;
- as a partial product of human capital to the extent that learning fosters skills, values, norms of behaviour and networks facilitating collective action.

7. A number of key relationships are described in Figure 1. The diagram shows various types of inputs to the creation of human well-being. On the input side, health plays a key role in mediating some of the effects of both social and human capital on well-being. Human and social capital are closely related to each other. They are also highly heterogeneous, implying that the distribution, type and context in which these forms of “capital” are used is vital for economic and social outcomes described in the lower half of the diagram.

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1 The view that education acts mainly as a screening or sorting device that enables employers to allocate individuals to high-status or high-productivity occupations.
8. On the output side in Figure 1, there are three layers of human well-being. Economic well-being is part of total human well-being, while GDP is part of economic well-being. Economic well-being encapsulates flows of consumption and income, changes in natural, physical and human capital stocks and changes in the distribution of economic opportunities reflecting societal preferences. Other aspects of human well-being such as personal freedom, happiness and absence of social conflict and crime are less economic in nature, although these may have direct economic consequences. Finally, gross domestic product, the flow of output in the current period, is a component of economic well-being. However, not all aspects of GDP are contained within human or economic well-being, namely those parts of domestic production that represent “social regrettables” (for example, spending or production related to pollution, increased security or litigation).

Figure 1 Some key inter-relationships between human capital, social capital and human well-being

9. From a policy perspective, it would be highly desirable to quantify as much as possible some of the key inter-relationships in Figure 1. Some of the impact of human capital on well-being and GDP is indirect via other channels including the flexibility and efficacy of social arrangements and improved health. Consequently, measuring the impact of human capital on various social outcomes (which are broader than, and not to be confused with, social capital) is a key challenge for policy analysis. In particular, it would be desirable to identify:

- the impact on wider areas of human and social well-being, as well as the impact on GDP itself;
- some of the key inter-relationships between human and social capital and their impact on health;
the impact of different types of human capital on economic and human well-being - for example, by level, field of study, type of skill and extent of informal or work-based learning.

10. Better estimates of these impacts would go some of the way towards answering questions such as the following:

- How much of an impact has learning and education on economic growth in OECD countries?
- How does the impact of human capital on economic well-being compare with its impact on wider areas of social concern including, for example, possible reductions in levels of crime and social dysfunction and improved health and well-being of individuals and communities?
- To what extent is the economic and social impact of human capital mediated through social capital - the norms and networks which potentially facilitate co-ordination, co-operation and lower economic transaction costs?
- How can returns to education and learning be increased by investing in better quality education, smaller classes, more parental support, stronger social capital etc. (see Issues Paper for session 4).

Where we stand

11. To date, progress in the INES project has been confined to the measurement of labour market outcomes such as increased earnings and higher employment levels which are imputed to more initial education. Network B in INES has undertaken this work using data sources such as the Labour Force Survey to compare earnings for different groups distinguished by level of initial education, age, gender and labour market status. The results on earnings have been combined with estimates of the private and public costs of education at different levels (drawing on data from the INES Technical Group) to derive partial estimates of the economic return to initial education. On the benefit side are income before and after taxes and social transfers; on the cost side are forgone income during study, tuition fees and other costs of education. The results have been reported in *Education at a Glance*² (OECD, 1998).

12. The approach described in the preceding paragraph has been useful in bringing together some measures of costs and benefits in an international comparative context; there is a clear potential for further refinement of the approach using different scenarios and methods. For example, it may be possible to test the impact of different starting ages for education, different study course lengths and different types of second-chance education and continuing education over the course of the life-cycle on the incentives of individuals to invest. The major drawback with this approach is that it does not account for all types of social impacts as well as the "spillover" effects once it is necessary to aggregate up from individuals to societies and account for the impact of one person’s education or learning on the income or benefits of other individuals. A further drawback is that it uses data on average income and costs from household surveys without controlling for other factors that impact on income (such as, for example, institutional and legal factors as well as post-school learning)³.

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² Indicator F8, page 360 (English version).
³ However, many recent micro-based analysis of earnings do attempt to control for innate ability and the impact of other factors.
13. Apart from measuring the impact of human capital on economic and social outcomes, INES has been instrumental in developing time-series data on both educational attainment and educational finance since the 1980s. There are, however, a number of significant problems in relation to key areas:

- It is difficult to obtain comparable data on educational attainment of the adult population over a sufficiently long period of time;
- There is a relatively poor coverage of private expenditure on human capital (by firms and households);

14. In general, there is strong reliance on partial, micro-level data on both the input and output sides without sufficient data on the processes by which inputs such as teaching, home background, social capital, inter alia, are turned into not only effective learning outcomes, but macro-level outcomes such as increased economic well-being and higher social cohesion.

15. Recent work has been undertaken to advance the analysis of human capital by linking it to social capital. Following a number of recent expert meetings, CERI is in the process of producing a report on human and social capital which will serve as a background document for the OECD Education Ministers meeting in April 2001. Also, important work has recently been undertaken in the at OECD leading to the report on “Knowledge Management in the Learning Society” discussing, among other things, a framework in which indicators of knowledge production and use can be developed. These efforts can provide a useful analytical and conceptual framework and context from which work in INES can draw.

16. It is probably wise to aim for modest progress on a limited number of fronts while paying attention to the urgent needs of policy-makers and others for comparative international information on the wider economic and social impacts of learning. Modesty is called for because any undertaking to estimate the wider impact of learning is necessarily constrained by: i) the availability and costliness of suitable data; and ii) the difficulty of accounting for, and controlling for, the joint effect of many factors closely associated with education in the determination of particular outcomes. Bearing in mind the limitations of data and resources, it may be wise to focus on some of the following areas as a first step:

- **Educational attainment** - the problem here is that basic data on the attainment of the adult population are missing from before 1990 for most countries and even the available data since 1990 are not comparable in a significant number of cases. This is obviously unsatisfactory since analysis requires long time series. In a major effort to estimate attainment back to 1960 from existing international sources including INES data, De la Fuente and Domenech (2000) have shown that better-quality attainment time-series data do yield significant effects of human capital on economic growth across OECD countries, thus countering scepticism about the measured impact of education on economic growth;

- **Cross-curricular skills** - where schools can contribute in an important way to skills, competences and attributes favourable to teamwork, co-operation and civic engagement (PISA as well as a link to the IEA Civics Study could be considered here) - linkage of these skills to social outcomes is important;

- **Adult literacy and lifeskills** - where important differences exist across countries in the quality of initial education and where measures of initial education are not necessarily a strong proxy for human capital in the adult population - it may be possible to link such skills to important dimensions of social and economic outcomes for individuals in the lifecycle;
− *Equality and community/school level impacts* - it has been argued by Willms (2000) and others that the evidence from TIMSS, IALS and other surveys of literacy or skills shows that societies and communities are more or less successful in raising overall learning standards (and indirectly economic prosperity and cohesion) to the degree to which they succeed in assisting the socially less advantaged;

− *Incentives of individuals to invest in learning over the lifecycle* - limited progress is possible using different cost/benefit scenarios and assumptions concerning duration of study, forgone income and even personal or direct consumption benefits (refer to paragraph 11 above). This work could be related to comparisons of public subsidy and could raise pertinent questions about public policy priority in terms of funding, subsidisation and targeting of resources to overcome “market under-investment failures”, if such exist.

17. The inter-relationship between equality, overall standards and home/school/community effects noted in the preceding paragraph, is important for realising the overall impact of learning. If social capital is unequally distributed by social group, as seems likely to be the case, then schools and types of educational programmes that are highly differentiated along social or ethnic lines may increase rather than decrease the initial human capital gap between different groups. The overall effect may be to maintain social exclusion and the existence of large numbers of low-achieving students and adults.

18. The establishment of PISA and an international option for a longitudinal follow-up survey offers a possibility of tracking individual students over time and relating not only their individual and family circumstances to subsequent progress and outcomes but also the interaction between the schools and communities (including geographical) from which they come and various outcomes. Through a longitudinal survey, the foundations are potentially being laid for an analysis of the link between student learning outcomes and other types of “downstream” social and economic consequences. These impacts may throw light on the important micro-level linkages and underpinnings for macro-level outcomes. In the area of adult life skills and competence, consideration may be given to linked surveys which combine information about individuals, firms and households. However, all of the efforts in the area of longitudinal or linked-survey work imply significant costs and no immediate pay-back.

**Issues for discussion**

19. A number of general questions and issues can be identified for consideration by the General Assembly as follows:

− In what ways can an understanding be opened up of the “black boxes” (markets, communities, organisations and firms) in which learning and skills are turned into positive social and economic outcomes? Could INES play a more co-ordinating role at the international level between researchers, national statistical offices and public organisations with an interest in human capital investment?

− Much of the work on the social benefits of education is based on large household or panel surveys using a wide range of variables on social outcomes and demographic and social characteristics of individual respondents - how can this work be better integrated with the existing work of INES?

− In keeping with a framework of lifelong learning, should more emphasis be paid to collecting and using data on investment by individual adult and organisations in learning and the relationships between such investment and various types of outcomes?
What progress can be made in identifying better measures for social capital in the background questionnaires for PISA and the nascent Adult Literacy and Lifeskills Survey? What types of downstream analysis is envisaged and are the links with the relevant research and policy communities sufficiently strong?

References


