



Linking vocational education and training research, policy and practice: a personal view

Introduction

Efforts to forecast future training needs date back at least 50 years. During this period, various models have been tried and have failed more often than they have succeeded. This article is divided into three parts: lessons from experience of forecasting training needs; recent research findings on the economics of training; and a discussion of possible training paths for an enlarged Europe. In closing, the article also briefly discusses links between formal school and training systems and the labour market. A list of references to academic literature on training is also provided.

The historical perspective

The post-World War II era was characterised by intensive economic planning activity. Developed and developing countries aimed to increase investment in physical capital to ensure economic growth rates. The methodological link between investment and economic growth was the so-called 'capital-output' ratio, a coefficient denoting the necessary amount of capital per unit of output. In the early 1960s the concept of the physical capital-output ratio was extended to include 'qualified' or 'high-level manpower', as it was known at the time. This was the necessary amount of scientists, engineers and the like needed to produce a unit of output in the various economic sectors (Table 1).

This manpower forecasting approach culminated in the Organisation for Economic Cooperation and Development's (OECD) Mediterranean Project, a major exercise in several countries attempting to predict, over future decades, the necessary skills for achieving economic growth targets (Parnes, 1962; OECD, 1965). The International Labour Of-

fice (ILO) and the World Bank used the manpower forecasting model extensively to advise countries on the skills needed for economic development and to design education projects to provide the necessary qualified labour (Psacharopoulos, 1991).

While nearly every education and labour ministry across the world had a unit engaged in manpower forecasting, two parallel developments were taking place. The Post Mortem of Manpower Forecasting project (POMF) carried out at the Higher Education Research Unit at the London School of Economics (LSE), under Professor Mark Blaug was set up to evaluate the accuracy of manpower forecasting. Comparing the many mature manpower forecasts to the actual situation, POMF gave the *coup de grâce* to manpower forecasting (Ahmad and Blaug, 1973). It revealed forecasting errors of thousands of percentage points, even for such occupations as teachers. The second development was the emergence of the field of human capital, and the economics of education in particular, originating from T.W. Schultz (1961) at the University of Chicago and Gary Becker (1964) at Columbia University, and followed up by Mark Blaug (1970) and others at the LSE and the University of Dijon in France. The core of human capital theory applies cost-benefit analysis to education and training. Early empirical applications showed that, for many countries, primary education was the priority, rather than high level manpower typically dictated by the application of manpower forecasting (Psacharopoulos, 1994).

There are many reasons for the two models yielding diametrically opposite recommendations regarding educational policy. The main one is that manpower forecasting does not

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After the failures of manpower planning, research shows that investment in primary and general secondary education yields greater returns than investment in more costly vocational/higher education. To be more effective, investment in vocational education should be more influenced by the individual with greater private sector provision. Macroeconomic policy is the key to reducing unemployment and, it can be argued, the EU has adopted the policy of lifelong education without sufficient reference to research in the field.



Typical manpower supply and demand table **Table 1**
Training needs in country X

Occupation	1988 Manpower stock (supply)	2003 Manpower requirements (demand)	1988-2003 Training needs (demand minus supply)
Electrical engineer	10 000	12 000	2 000
Mechanical engineer	15 000	18 000	3 000
Foreman	20 000	24 000	4 000
Supervisor	15 000	16 000	1 000
Skilled worker	50 000	60 000	10 000
Middle-level technician	30 000	35 000	5 000
Etc.

Social returns to education by level and curriculum type **Table 2**

Educational level/type	Rate of return (%)
Primary	18,9
Secondary	13,1
- General	15,5
- Vocational	10,6
Higher	10,8

Source: Psacharopoulos and Patrinos (2004), and Psacharopoulos (1994).

Note: Figures are world averages.

take into account the relative costs of providing different levels of qualified manpower. Moreover, the benefits side of manpower forecasting is in terms of the number of heads of people, rather than the relative productivity of each head. In addition, manpower forecasting does not take into account substitution possibilities between different kinds of skill, let alone substitution between capital and labour. Most of all, manpower forecasting is a static model, completely disregarding dynamic changes in the economy which are the driving force of economic growth.

Largely because of the findings of the POMF project and similar accumulated evidence, by the late 1980s the World Bank and ILO had stopped using the manpower forecasting model to recommend education and training policies to given countries. As a result, the lending profile of the World Bank changed to promote primary education, at the expense of university education and, especially, secondary vocational education (World Bank, 1991).

Economics of training: recent research findings

To a non-economist, the lessons of the above history may seem strange. Every country needs doctors, teachers, plumbers, carpenters, priests and artists. (The last two occupations were actually included in the Mediterranean Regional Project). What is wrong with

attempting to forecast their numbers so that universities produce the right amount of doctors and vocational schools the right amount of carpenters? The problem with such forecasting is that there is plenty of research evidence showing that universities and vocational schools ought not to be a priority in several countries (Psacharopoulos, 1987). Figures in Table 2, from the human capital literature, show that the size of the economic rate of return on investment in education is inversely related to the level of education. Primary education should, therefore, be a priority in countries where the coverage at this level is not universal; this should be followed by secondary education and then university. It is interesting to note that application of the manpower forecasting model would give the exact opposite recommendation.

Within levels of education, general secondary education is more profitable than vocational education. The reason is that, whereas general and vocational secondary school graduates have more or less equal earnings after graduation, the vocational track of secondary schools costs about twice as much as the general track (Psacharopoulos and Loxley, 1985). This finding led the World Bank to change its lending profile as recently as 1991 away from secondary vocational schools, an activity in which the institution had been engaged almost exclusively since its inception (World Bank, 1991).

Beyond the formal school system, a very robust research finding is that retraining programmes for the unemployed are ineffective (Heckman et al, 1999). The costs of such programmes grossly exceed the benefits, as measured by the length of time needed for a graduate of such a programme to find a job, and by the earnings differential of those who graduate from the programme relative to those who do not. Recent research has also shown employers want to hire workers with very general, rather than specific, skills (Table 3), because they are easier to train relative to other workers. General skills, as identified by Murnane and Levy (1996) make workers easily trainable for occupations unforeseen by the manpower forecaster.

A related research finding concerns the importance of institutions. Unemployment might not result from lack of skills, but may just reflect the high cost of hiring labour. It is generally accepted that the role of the state is to



maintain a healthy macroeconomic environment conducive to growth. However, the state can act as an inhibitor, rather than a catalyst for employment promotion, by increasing the cost to firms of hiring labour. In some countries, employee labour costs are twice workers' wages, the non-wage labour costs in effect being a tax on employment (Table 4). In addition, strict employment protection legislation against dismissal can also act as a disincentive to recruitment.

Where possible, state financing of vocational education and training should be separated from the delivery of training services that could be provided more efficiently by the private sector (Figure 1). Giving candidate trainees vouchers will enable them to buy the kind of training they feel they need in the vocational training institution of their choice best fitted to their interests. To ensure transparency and quality in the training market, as well as support informed decision-making by training 'consumers', it may be necessary for private sector training providers to be licensed or approved. However, in these circumstances, the principal assurance of quality is competition. Since private training schools depend on the revenue collected as fees paid by the students, good ones flourish, and bad ones close down. The indirect flow of funds can also have significant redistributive power if a higher value of training voucher is given to poorer trainees.

Quality is an issue that is increasingly emphasised, in contrast to the days of manpower forecasting which deals only with the number of trained workers needed to achieve production targets. There are two ways of measuring the quality of training. One is the input method, measuring the amount of resources spent per trainee. However, a high level of spending may indicate inefficiency, rather than higher quality (Hanushek, 1981). Consequently, emphasis has shifted to the output method, measuring quality by the time needed to find a job after training, and the earnings of trainees compared to a control group of non-trainees.

In evaluating the quality of training, control groups are extremely important but often completely disregarded by many practitioners. There are two methods of establishing a control group. The first is to include in the employment outcome regression a host of independent variables to take account of the differences in trainees and non-trainees. The

Worker characteristics sought by employers **Table 3**

Basic reading ability	Ability to work in groups
Basic arithmetic ability	Ability to communicate
Basic problem solving ability	Basic computing ability
Source: Based on Murnane and Levy (1996)	

Labour protection measures **Table 4**

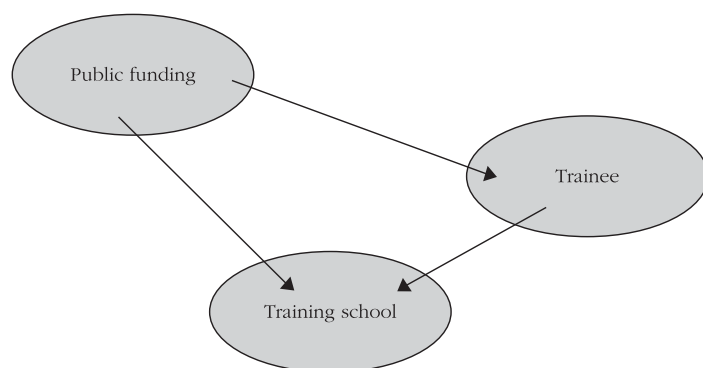
Country	Wage share in labour cost (%)	Strictness of protection against dismissal (index)
Germany	55	10
Spain	55	15
Ireland	71	3
United Kingdom	71	2
Source: OECD (1997), Tables 25 and 31.		

second is by random assignment of a group of potential trainees to the course that is under evaluation. Although random assignment is difficult to achieve in practice (how do you refuse to put someone on a particular programme when his/her neighbour has a place?), it remains the most valid construction of a control group (Heckman and Hotz, 1989; Ashenfelter and Card, 1985; Ashenfelter, 1986, Ashenfelter and Lohde, 1997).

Training paths for an enlarged Europe

There is a large gap between Europe and the United States in analytical work on training issues, and human capital in general (Psacharopoulos, 1999, 2000). Scanning the list of references in European literature on training produces mainly descriptive material. There are few references to James Heckman, Nobel Prize winner for his work on the selectivity problem of how to establish a proper control group for evaluating training. Nor is there adequate reference to the work of Nobel Laureate Gary Becker, who conceptualised the difference between general and specific training, and the implications of this distinction regarding the distribution of the training costs between the worker and the employer. This is, perhaps, symptomatic of the mutual failure of economists and educationalists in training policy and practice to talk and listen to each other sufficiently. Economists may sometimes appear to overlook institutional and cultural factors, while those in training policy and practice are not always familiar with the work of economists in this field.

As a result, the EU has embraced the concept of lifelong learning, but without analysing

**Direct versus. indirect funding****Figure 1**

the duration of training, who will provide it and, above all, who will finance it.

Education systems and the labour market

Under the EU treaty, each Member State is responsible for its own education and training policy. However, the EU has missed the opportunity to document in a rigorous way the true training gaps in its Member States. It might be thought that general education is well developed in Europe, so what is at stake is specialised training. Yet several literacy studies, including the International Adult Literacy Survey (IALS, 2003) and the PISA (OECD, 2004) study have found a surprising degree of functional illiteracy in some countries (OECD, 1998). In the UK, for example, one out of five adults could not locate a plumber in their city's yellow pages (Moser, 1999). A European research project, 'Low skills: a problem for Europe' (European Commission, TSER) also found a substantial number of people in the European labour market with low levels of educational attainment.

The key to the unemployment problem should be sought in providing a macroeconomic environment conducive to growth. This means monetary and fiscal policies to lower the cost of labour and remove barriers to competition. Schools should ensure

students are literate and numerate before they are channelled into welding or carpentry. Schools should teach communication and social skills rather than courses leading to specific occupations. Specialised training could be provided in dedicated vocational schools, away from education ministries. Incentives should be also given to firms for providing training on the job.

Where large pockets of functional illiteracy exist, priority should be given to adult literacy programmes, rather than specialised vocational training. However, such literacy may be usefully combined with the teaching of other vocational skills. Functionally illiterate adults often require incentives and motivation to learn. Developing a vocational skill can often provide intrinsic motivation (a realisation that comes from within the student) to improve literacy and numeracy, as the student perceives their importance for the skill area studied. Learning a vocational skill can often lead to improvement in literacy and numeracy that has not been achieved in an academic classroom setting.

Conclusions

Where possible, the financing of education by the state should be separated from the delivery of training services that could be provided more efficiently by private firms. Training programme schemes should be evaluated. Competition should be given greater scope to regulate the quality of private-sector-provided training. Government training programmes should be evaluated rigorously by establishing control groups, as outlined above and subjecting the employment outcomes to cost-benefit analysis.

Given the speed with which the EU addresses education and training issues, and the recent enlargement of its membership, it is not sure that training issues will receive the analytical rigour they deserve in the near future.



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Key words

Illiteracy,
general/specific skills,
manpower forecasting,
human capital,
educational policy,
financing of education.