

Costs and benefits of vocational education and training Contribution to economic growth, individual and social returns

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In:

Cedefop (ed)

Vocational education and training – the European research field Background report – Volume I

Luxembourg: Office for Official Publications of the European Communities, 1998

ISBN 92-828-3613-4

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Costs and Benefits of Vocational Training

Contribution to Economic Growth, Individual and Social Returns

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SUMMARY

In economic terms vocational education and training is always an investment in human capital. It only pays when the costs of the investment are at least covered by its return in the broadest sense (benefits). If the benefits of an investment in initial and continuing vocational education and training are greater than the costs, then an increase in prosperity will be the outcome for the individual and, under certain conditions, for the economy as a whole. Investments of this kind increase the GDP, promote economic development and increase tax revenues for the state.

Decisions by the individual to invest in vocational education training or by a company, state or a non profit institution to offer VET and/or pre-finance it are always taken in a situation of uncertainty. Erroneous decisions and mis-investments cannot therefore be ruled out. For the individual and the national economy, decisions of this kind should be taken as efficiently as possible and should avoid mistakes. This situation is a commonplace but political and sometimes even scientific discussions fail to notice this fact. People miss to see that decisions on investment in vocational education and training, their financing and subsidising are genuine "entrepreneurial" decisions taken on the basis of information which has the character of market knowledge, which cannot therefore be generalised. Furthermore, decisions of this kind are based on subjective, expected costs and returns which cannot be objectified nor be scientifically recorded - unless in the form of non decision-relevant ex-post consideration.

If this is true, the risk of an erroneous decision and of a wrong macroeconomic development in the formation of human resources in conjunction with given natural resources depends to a major degree on the institutional conditions under which those decisions are taken. Investments in vocational training tend to fail, the less the decision-makers know about the costs and returns (information deficit), the less they have incentives to inform themselves about the costs and benefits and the more institutional conditions allow those concerned to pass on the costs to other members of society, and to appropriate the pecuniary and other benefits themselves or, in the reverse situation, the more others are in a position to harvest the benefits without bearing the costs.

Typical weak points in European education systems are

- the lack of transparency in costs and performance of the various schools and universities (partly except private ones) as well as their initial and continuing training programmes,
- the lack of incentives and preconditions of schools and universities to provide information about costs, performance and expected returns.
- Furthermore, depending on the system, there is a lack of information concerning the transition from in-school education and training to an occupation,
- over-investment in occupational training with systematically (caused by institutions) excessive returns compared to costs and vice versa under-investment in occupational training with generally excessive costs (for instance in Germany),
- and a lack of incentives to estimate the returns on public qualification programmes and subsidies.

The typical consequences are mis-investments on a large scale, clear distortions between the different training levels and courses of VET: over-investment in school (upper secondary level) and university education compared with in-company initial and continuing training, long duration of study, trend towards over-investment in public qualification measures compared with private ones as well as over-investment in close-up instruction which is expensive but free for the individual compared with distance learning.

So far there are no prospective cost-benefit analyses of vocational education and training in a broader sense.

The numerous ex-post calculations of educational returns, of impacts on wages, income, employment, growth and innovation may be useful as instruments to measure the success of state subsidies and the financing of training investment. However, they cannot be directly used as a decision making basis for the subsidies to be given or financing to be granted. Furthermore, they do not enable us sufficiently to calculate future returns, wages, income, productivity and growth effects of VET investment or of certain educational courses. Talent, social origin, influences of practical vocational and other experience, the distribution of productivity and income returns to qualified work and real capital, particularly in the case of technical innovation or changes in work organisation, and the missing statistical basis in order to distinguish fictitious increases in productivity from real ones (for instance in the case of labour displacement, the demarcation of returns in terms of income which have to do with vocational training and returns which can solely be attributed to a formal certificate as the entry prerequisite for closed labour markets or monopoly pensions resulting from market power - all these are largely problems which have still to be tackled in a satisfactory manner. There are still grounds for believing that in European countries the main education expenditure on schools and universities has no positive effect on economic growth. However, the main weak point is: they are neither helpful for the individual as the investor or person wishing to undergo VET when choosing between the different VET alternatives, nor for the school or university supplier, when it comes to deciding on the contents and scale of training courses. In-company VET and the system of dual initial and continuing vocational training offer major advantages.

Furthermore, ex-post calculations of returns, growth and employment effects cannot help state bodies when it comes to substantiating subsidies or the financing of specific VET investments. They cannot explain what type of education and what scale is required by industry and public administration or which one helps to reduce the risk of unemployment, to promote innovation or to increase productivity.

Social returns or positive side effects of training investments are only partly to be expected. There may, however, be social costs and returns. VET does not in itself promote positive side effects, such as behaviour in line with the law nor does it promote health or "rational" consumer behaviour. On the other hand certain training contents in respect of specific situations and life phases may indeed have a positive moral effect by increasing resistance to criminal behaviour or by means of the formerly granted "school certificate" by at least preventing certain individuals from slipping into criminality or helping them to "cope with" a specific life phase ("depository function") during which an inclination to criminal behaviour is stronger. The reasons for criminality as a rule are not a lack of formal education but rather limited economic and social opportunities and deficits in the family. In the case of additional educational programmes, the respective available alternatives must therefore be weighed up such as the creation of additional jobs e.g. by means of deregulation, increased assistance and preventive measures in the case of dysfunctional families during childhood and adolescence or deterrents by means of more severe penalties.

Initial and continuing vocational training is organised from the angle of costs and benefits and therefore offers allocative advantages in the dual system. Companies do indeed consider, in parallel to the investment decision, their own initial and continuing training programmes and their pre-financing vis-a-vis other alternatives such as recruitment of already skilled workers. Only to a certain extent can they consider this as investment to the extent that fixed asset investments must be made for initial continuing and vocational training. The reporting of staff know how as assets is not admissible in terms of balance sheet law and has its own limits since the companies do not own the knowledge and skills of their staff. Within the framework of contracts, as a rule employment contracts, they simply have a claim to the supply of the know how in the form of qualified work i.e. in legal terms a contractual claim. At best they can ensure the use of qualified work by shaping the remuneration system and by imparting company-specific know how within the framework of in-company initial and continuing training and in this way reduce the desire of their workforce to work elsewhere.

Increasing decision-making efficiency and improving the cost-benefit ratio of VET depends to a major degree on the institutional framework. Since there is no definitive VET, which can be broken down into a number of training commodities and strands and combinations thereof, and since VET in itself does not have the desired effects on wages, income, employment, productivity and growth, it is very much a matter of creating the preconditions for "correct" and, if possible, high net returns through VET decisions or of improving them. This applies all the more so when it is to be assumed that new major challenges will be imposed on the VET system in future and that it will take on increasing importance compared with the human resources stock of an economy for the following reasons:

- globally available scientific and technical knowledge can only be used and applied in products and production process when the complementary factor to knowledge, work, is able to understand this knowledge, to process it, develop it on and use it practically;
- the life cycle of products and services and of production procedures has been considerably shortened and further reductions are to be expected;
- research and development, innovation, quality assurance, services tailored to the individual customers will be on the increase given the global conditions;
- human assets on a qualified and highly qualified level will become economically obsolete much more rapidly than before.

If these considerations apply, then the return on investment in VET depends very much on whether the requirements in respect of the various performance processes of industry and their changes by means of technical and organisational progress are recognised as early as possible and are incorporated into training decisions since more than ever today it is important that the talents and capabilities of the individual are correctly assessed and that they are being qualified for tasks and functions in industry in which they can do the best for themselves and other members of society. This demonstrates that today more than ever what are important is the quality of the VET system rather than the qualifications of the workforce. What will matter will be the creation of preconditions which reveal the true costs and benefits of VET in order to improve the decision-making bases for all those concerned (owners of human resources, state and companies as the providers of subsidies and funds, schools, universities and companies as the providers of VET, state supervisory bodies etc.).

Only when we succeed in more rapidly processing new theoretical and application-oriented knowledge thanks to the components of the education system, and therefore in offering initial and continuing training to suitable people in terms of standards and on the "right" scale in terms of the economy, will a highly developed economy such as western Europe be able to carve out a major locational advantage for itself in global competition. In order to be able to cope with the above-mentioned changes and global competition, which is not just economic competition but also takes in culture and science, the VET systems must improve their institutional properties in such a manner that costs and benefits become more transparent and information can flow more rapidly into resource-allocating decisions. Only in this way will we be able to guarantee growth and employment, prosperity, economic and cultural growth in the long term.

Hence attention should focus on improving the institutional conditions and decision-making bases and on regularities and theoretical links which could be guidelines for VET decisions.

One main aspect will be that the costs and services of vocational school and universities will have to be improved by means of public reporting. This could mean reporting, in addition to the commercial accounting every year, about staff and materials, pupil teacher relations, number of drop outs, number of repeats, hours missed, pupil absenteeism, number of graduates, number of transfers to higher schools and universities, the placement of graduates in the employment system, international contacts with data on exchanges of pupils and teachers, practical links and organisational forms of their implementation, in particular expert and non-expert services (e.g. bridge, adaptation, special courses for the learning impaired, looking after foreign pupils, diagnostic and psychological services) etc.

Furthermore, this implies independent schools and universities which are rewarded for their services and means a certain degree of risk having to be borne for the decisions taken by them since they have to compete with each other for trainees.

The State must see its primary function in shaping regulatory and competitive conditions and learn to differentiate between VET funding and VET subsidising. The State takes on VET financing on behalf of the investor (pupils, students, trainees undergoing initial or continuing training) and should therefore treat VET as a budgetary item and render VET calculable by means of cost-benefit aspects. VET subsidies are targeted interventions in the competitive education system in order to charge specific services or undertake corrections which from the angle of the competent state bodies must bring with them the promise of a return.

There are several regularities concerning the costs and benefits of VET.

Age dependence of VET returns: On average the returns on educational investment are greater for young people than they are for older people because (1) they have a longer phase of return ahead of them and (2) by means of early acquired education they have met the preconditions for the acquisition of additional knowledge and skills.

Qualification dependency of VET returns: Generally it can be said that the income of the less qualified (unskilled) workers has fallen increasingly behind that of the more qualified in the last few years (formation of a gap). Nevertheless it can be said that the price and hence the return for qualified work is subject to the relationship between supply and demand and that consequently the return depends on its scarcity on the labour market irrespective of the volume of the educational investment.

Monetary net returns are normally positive in ex-post calculations: Monetary income, which is attributed to educational investment, is normally higher in most return calculations than the costs attributed to it. This also applies in part to attempts to take into account talents, family and other social environment, work experience etc. However, income increases and net returns do not provide any information about the increase in productivity: One of the reasons is that the price effects cannot always be excluded and that with the given market power the link between productivity increasing VET investment and the returns on it becomes invisible.

Returns on VET investment generally show the expected course over the levels of the education system: They are the highest on the lower levels (primary sector) and decrease and in some cases are negative as people proceed through the other levels (secondary, tertiary sector) of the education system. Given the ban on child labour there are no alternative costs in the primary sector which means that with the same educational income the returns are far higher given their far lower costs.

For the individual the return on educational investment is higher in EU Member States than the return on state or public subsidised programmes: The reasons for this are the high subsidies which the states and municipalities give to the individual. This applies in particular to the tertiary education sector (polytechnics, universities), where the costs and state subsidies per study place including other allowances (acceptance of longer training times in respect of state or statutory pension, sickness and accident insurance, reductions when using public transport and other public institutions) are higher than in the primary and secondary sectors. If we assume that the imponderable effects are relatively low, this generally implies an over-investment of the state in university education.

Gender dependence of education returns: In the case of the income of less qualified women, the qualification dependency is greater than in the case of men. For them qualification is particularly rewarding or leads in the case of less well qualified women to a larger income loss. In most cases the returns for women are lower than for men. This can partly be attributed to the fact that a large proportion of women have part-time employment or have withdrawn from paid work because of maternity leave, bringing up their children, and looking after older family members. At the same time the growth in return for women is greater than for men as they increasingly invest in education (educational level).

Break up between individual rationality and overall economic efficiency: For the individual it is often better to select a strategy in order to obtain a better job by means of a formal training certificate in respect of competition even when this job could have been taken on without the formal qualification (inappropriate employment). In terms of the economy this is ineffective and a waste of resources, but it may be a rational behaviour in terms of the individual. To avoid an erroneous steering of this kind an improvement of the information basis is required both in respect of the decisions of the individual when it comes to investing in VET as well as in respect of the decisions of companies and state bodies financing training investment. A decentralised, competitive education system, whose performance units have the necessary power to take decisions in order to produce or to procure the necessary information when it comes to unclear expectations and implement these into decisions which shape the corresponding education processes, is an important precondition. Furthermore, the fiscal parity of training investment is necessary with fixed asset investment in order to avoid as far as possible imbalances in the development of both.

Returns on VET investment in the EU Member States are seemingly lower than those in general education. However, these statements must be interpreted with extreme caution. The complementarity of the two make an exact allocation of returns to general and vocational investment very difficult. At present in European countries the trend is an over-emphasis on the contents of vocational education in schools which could be acquired in a more cost-efficient and profitable manner in vocational practice and at the workplace. The reasons for this are the state subsidies for school education which reduce the costs of initial and continuing training both for the individual and for his later employer. The efficient and ongoing balancing of general and vocational education investment will only then be possible when more particularly the allocation of costs is done in a more correct manner and formal general school education and in-school vocational education will be restricted to what can be taught at the most cost favourable level. This implies that the power of teachers associations and their dovetailing with state administrations and politicians, as can be observed in a number of EU Member States, must be restricted.

In-school vocational education should restrict itself to those subjects which are not specific to the companies and which can be acquired more cost-effectively at school than at work. In the narrower sense the dual system offers vocational education good preconditions for ongoing trial and error and necessary adaptations for the distribution of tasks between schools and companies as long as this is not over-regulated by the state.

Age dependence of return effects of state VET subsidies and qualification programmes: State subsidies (allowances, subventions) for education and training measures for older adults with large education and learning deficits and for qualifications for older, unemployed workers are not so efficient as they are for young people. Furthermore, it has been shown that above a specific age and below a specific qualification level education investment and state subsidies for qualification programmes produce very low returns. A redirection of state promotion of vocational education which bears this in mind leads to higher returns with the same level of costs.

Monetary returns on private qualification programmes tend to be higher than those of public ones. Private qualification programmes have the advantage that (1) employees are promoted who profit most from this (improving monetary returns) and (2) they orient themselves more to the market, i.e. to qualification demand. Public qualification programmes in contrast yield far less an increase in monetary returns and this increase is far below the increase in the return of private qualification programmes. However there may be greater imponderable effects. It is therefore recommended that more tax relief and subsidies should be granted for initial and continuing training on the job than for large public initial and continuing training programmes. The latter should be re-examined, replaced by private, state subsidised or other schemes or even dismantled.

For older, less qualified workers wage subsidies are more suited to raising their work returns (monetary income) than are investments in initial, continuing training and retraining. Wage subsidies not only promote the employment of older workers, but also lead to the (functional) learning of skills at the workplace. Wage subsidies do tend to reduce investment in vocational training. But along the lines that the qualification of the less able, older workers is unproductive, the individual and economic advantage is greater. Furthermore unemployment with its destructive effects on the individual is prevented and socially imponderable returns are obtained such as a reduction in criminality or a strengthening of social stability.

The financial means and measures to overcome particularly large educational deficits have declined in recent years. Unskilled or semi-skilled workers are receiving less additional support for on the job training.

Group-specific willingness to run up debts is not clear. Advocates of the zero rate and state subsidies frequently argue that loans prevent young people from less well-off families from going to university. This situation is not clear. It is true that the number of students in these groups is far lower. But the reasons for this are normally not a lack of financial means. The family and its environment often do not meet the preconditions which would make investment in university education worthwhile both in terms of the individual and the economy. An unfavourable family and social environment cannot be compensated so readily by zero rate, grants, state guarantees, interest subsidies or the like.

Additional funds for public schools under the existing circumstances will probably only lead to minor increases in quality. As a rule, public primary and secondary schools are normally subsidised by the state to 100%. It is likely that additional public funds in most EU Member States only lead to minor improvements in the standards of public schools under the given administrative conditions. There are more recent findings which indicate that measures to support the viability of families early on involving the same level of costs generate greater returns for the individual and the economy in a direct manner as well as through the ability acquired early on to make further education investment as a way of increasing return as a means of keeping pace with future structural or technical change.

As a rule continuing training does not lead to higher wages and salaries. In the Netherlands, the figures indicate that in-company continuing training has already proved its worth with a wage increase on average of 2.8% for each successfully concluded continuing training course.

Educational investment and the risk of unemployment: The employment risks of the graduates at the different educational levels and strands are different and vary in terms of time and place. On the whole the labour market risk for graduates from lower educational levels is greater than that of graduates from higher education levels. Furthermore, the risk of unemployment varies considerably amongst the higher educational certificates. The risk of unemployment in recent years has probably widened considerably between the lowest and highest qualifications. A development of this kind is dependent above all on the institutional factors of the labour market which amongst other things prevent necessary flexibility in wages and on the circumstance that companies assume a high probability of in-company application when a higher formal certificate has been obtained. They assume that the free selection processes of public schools and universities could not be matched by them without resorting to costly selection processes.

The influences of state taxes on the costs and returns of VET investment: From the economic angle it is desirable for the scarce resources of an economy to be used as effectively as possible for the development of human resources and real capital. This calls for a tax and levy system that avoids distortions in the formation of human and material resources by means of equal treatment. If an economy moves from a progressive tax rate to a less progressive one, then it is to be expected that in overall economic terms the stock of human resources will increase since the net return after tax, i.e. available income, will increase for broad echelons of the population. At the same time, there is probably a negative effect on the VET investment of the less qualified who are less well off following a change of this kind in the tax

rate. If the tax system shifts in its weighting from taxation of income to greater taxation of consumption, then investment in human resources will be increased. However this will lead to greater income inequality between skilled and less skilled workers since further investment in vocational training for the latter will be less rewarding. If training costs, study fees etc. are tax deductible items, then this encourages investment in human resources.

As a rule tax systems give more advantages to people from wealthier families and more qualified workers than they do to the less qualified. The latter group benefits from state expenditure policy by means of the social transfer.

Compared with the incentives which tax policy has on investment in real capital, the effects of taxes on investment in vocational education are limited. This is probably mainly due to the fact that education so far has been regarded as a State responsibility and the State, along with the municipalities, runs the schools as part of the administration and finances them from state or municipal budgetary funds. If, however, the subsidiary function, which the state assumes for the above reasons in financing and which can best be assumed by means of a public educational bank, is separated, then the task of the state within the framework of fiscal policy is restricted to the tax handling of educational investment or the granting of subsidies for specific services which are not spontaneously offered by decentralised education systems and to the distributive measures within the framework of the goal of social justice.

1. COSTS AND BENEFITS AS THE CRITERION

In economic terms vocational education and training (VET) is an investment in human resources. Vocational training programmes, efforts by individuals to acquire knowledge and skills, in some cases also values, serve the purpose of making human work performance more productive than it would be without them. Hence vocational training (in the widest sense) is a "production detour" which generates costs but which must pay off later by means of higher returns.

Contrary to the situation in general education in which consumption elements play a role, vocational training is constantly orientated towards improving the return on human work in comparison to the previous situation¹. It is not therefore an economic presumption to submit each and every type of vocational training to a cost-benefit analysis and to examine whether the return on vocational training (tangible and intangible income) or its benefits in the widest sense are greater than the costs. This applies to the individual (employee, self-employed) who at least for a short period takes upon himself the efforts of acquiring knowledge and skills and renounces other activities during that time; and to the company or plant (employer) who provides the training place or provides continuing training programmes for his employees. For companies² the costs of the initial and continuing training programmes must "pay". This means that the returns on initial and continuing training programmes must be higher than their costs. In the final instance the same applies to the State bodies or the public authorities, their initial and continuing training schemes and programmes as well to the costs borne by them in the form of subventions (subsidies, interest subsidies, guarantees) and tax relief.

All these schemes and financial support must be measured against the yardstick that human resources are rendered more productive in the overall economic sense and reach a level in

¹ This does not exclude that vocational training as a "side product" may also have some consumption elements i.e. the acquisition of vocational training contents already brings with it a benefit, is a pleasure in itself. This does not exclude that vocational training as formal education is not oriented towards increasing performance but far more to obtaining economic returns by means of access to a closed labour market. This means that major parts of general education are "vocational training" in the economic sense used here and therefore have an investment character.

² The term "company" is used hereinafter to describe all companies, plants, freelance offices and offices independently of whether they are profit or non profit organisations seeking merely to cover their costs. This is not important for the ensuing statements unless this is specifically indicated.

social terms which would not have been possible without the State schemes and aids³. Even private foundations and donors, who fully renounce any return (counter-service by the recipient) will assess this selfless support according to whether the promotion of vocational education has reached the goal of enabling as many people as possible, by means of financial and other forms of support, to acquire vocational training which enables them to become economically independent or which at least gives them as much access as possible to a high return on their individual skills.

If investment in vocational training meets the criterion of benefits > costs, then this will result in an increase in prosperity for the individual and under specific conditions for the economy as a whole. Investments of this kind increase the gross national product, promote economic growth and increase a country's tax revenues. If they fail to meet this criterion, individual and national resources are exhausted but there will be no net return.

2. THE IMPORTANCE OF THE INSTITUTIONAL FRAMEWORK FOR THE RECORDING OF COSTS AND BENEFITS

Since decisions by the individual, the company, the State or non-profit foundations to invest in vocational training are always taken in a situation of uncertainty, false decisions and mis-investments can never be ruled out. Concerning the individual and the national economy, decisions should be taken as efficiently as possible and erroneous decisions should be avoided. Suitable institutional conditions are an important precondition for this.

Already at this point it becomes clear that the various references (e.g. European Commission DG XXII 1996, pp. 13-43; Tessaring 1997, pp. 21-39) to the positive return on training investments and the calculations of training return - if the data have been correctly recorded and calculated - might prove to be true for the corresponding period under review as well as possibly for the operators concerned. However, these historical data cannot be the reason for assuming that it always pays to invest in vocational and academic training. This applies both from the angle of the individual, the company and above all from the angle of the State since it bears by far the largest share of costs for schools and universities funded from income from tax payers and is at the same time responsible for the institutional preconditions in which decisions of investment in human capital are taken. This does not say anything about the educational or other alternatives, the choice of which would have been more favourable in the respective situation - not to mention the advantages of different training routes and certificates or the benefits of different education, training and qualification services.

False decisions concerning investments in vocational training and the risk of erroneous macro-economic developments in the creation of human capital depend, natural resources (people's aptitudes, talents) and requirements of the employment system given, to a large degree on the institutional conditions under which decisions are taken. According to the statements of the economics of institutions, erroneous decisions can be avoided

(1) the more the individual (investor) has an incentive to inform himself about his personal suitability for a vocational training programme and about the later opportunities to use the knowledge and skills acquired, if he is free to take training decisions according to his expectations; but he also has to bear the cost of these decisions in the same way as - being the owner of knowledge and skills - to obtain the returns;

³ It is common knowledge that the state - depending on cultural tradition and constitution - has to facilitate by means of suitable framework conditions and other methods the highest possible return on investment in the performance of economic subjects besides its allocational targets and also to assume social distributive tasks for instance by means of transfer payments. Measures of this kind are to be distinguished from measures to increase the performance of the individual or the economy as a whole. They are not oriented towards generating net income (costs < return) but towards the agreed distribution of what has been generated or more just distribution of income, assets and opportunities in order to ensure that in the long term efficiency can also be promoted indirectly.

(2) when the companies and the State as the providers of initial and continuing training or as the pre-financiers or subsidisers of vocational training investment, are interested in producing information about the costs and benefits of vocational training and in generating net returns. For the companies these conditions are best met when they are profit-oriented and when they are constantly controlled in respect of their performance by competition on the goods and factor markets. This applies to the State and other public bodies as the providers of funds only to a limited degree (competition between State or municipal individual budgets, competition in terms of attractiveness and location between territorial entities, control by the electorate) and this also applies less to state and public schools which are normally dependent institutions in economic and pedagogical terms without any cost and performance calculations and above all without any external control and sanctioning mechanisms. Similar things apply to non-profit private organisations when a foundation or subsidy market is only beginning to develop and when there is no performance transparency or reporting obligation.

Investments in vocational training will tend to go wrong the less the people involved in the decisions are informed about the costs and returns (information deficiency) and the more institutional conditions allow those involved to pass on the costs to other members in society but, at the same time, to appropriate the monetary and other benefits or when others are in a position to reap the benefits without bearing the costs.

This situation is going to be demonstrated by taking some examples from Member States of the European Union:

In the German dual system of vocational training, for instance, it can be observed that in a number of normally demanding training occupations (e.g. industrial mechanics, construction mechanic, bank clerk, cf. Table 1), companies bear the costs of the training places but are normally not in a position to access the return on training on a scale which would at least enable them to cover the costs incurred. This situation is attributable less to the fact that companies take wrong decisions within the framework of their medium and long term personnel planning or erroneously assess the actual suitability of the individuals undergoing initial or continuing training (wrong entrepreneurial decisions). This has rather to do with the fact that the institutional conditions make it more difficult to make profitable investments in the training of their own junior staff or in the further training of their staff. The consequence is that in a competitive situation, training places of this kind (perhaps also continuing training measures) are not offered on a necessary scale or that the training company may reduce the costs of training which can have unfavourable effects on the quality of training. Conversely, in the German dual system there are training occupations in which company returns are clearly and systematically higher than the costs of the training already during the training period. In these cases, too many training places are offered and accepted by apprentices because of a lack of transparency on the training market or because of a lack of training alternatives. R. Neubäumer (1997) again clearly identified this only recently in an empirical study for the Federal Republic of Germany.

Table 1: In-company training costs in Germany 1991, in DM

| | Bank clerk | Construction mechanic | Industrial mechanic |
|-------------|------------|-----------------------|---------------------|
| Gross costs | 32,768 | 33,360 | 39,273 |
| Return | 10,258 | 7,789 | 10,841 |
| Net costs | 22,510 | 25,571 | 28,432 |

Source: Federal Institute for Vocational Training

School training systems such as the French one scarcely provide any information about costs and benefits and make cost-benefit considerations even more difficult for those concerned (trainees and companies) on the transition threshold from school training to employment.

The more market-oriented training system in the United Kingdom practised since a number of years as well as the in-company continuing training systems in general in various countries, have established a closer link between the costs and benefits of vocational training and tend towards a more correct consideration of them in initial and continuing training decisions. In the school (secondary level) but above all at university level the institutional and financial conditions tend to indicate over-investment. The costs of schools and universities borne by tax payers correspondingly reduce the individual costs of training whereas the apprentices for instance in Germany themselves bear the costs indirectly by means of productive work during training and later often because of their lower wages. Correspondingly the individual demand for school and university education is higher.

For a specific segment of pupils the obligation to attend compulsory education may mean higher individual costs (foregone paid activities, dissatisfaction at school, shortage of functional participation) and correspondingly lower income throughout working life and individual prosperity, in part also social costs above all through vandalism and criminality in and outside school (Husen 1978, Eichhorn 1979, Rubel (ed.) 1965, Cameron and Heckman 1997, cf. also van Lith 1985, pp. 73-79 and the Crowther Committee in Great Britain).

In the opinion of some economists, privately financed initial/continuing training and retraining schemes for job seekers are superior to State or publicly (municipally) funded schemes because amongst other things the costs and returns on schemes of this kind are more balanced and take into account market signals (Lillard and Tan 1986, Bartel 1992, Bishop 1994, Heckman, Smith and Tabor 1996, Wolfing and Brinkmann 1996, Bach and Spitznagel 1994). It should be borne in mind, however, that the target groups in respect of their qualification preconditions are not always comparable and furthermore public institutions such as the Federal Employment Services in Germany have to run programmes which are not offered and could not be afforded by the private sector (cf. also Blaschke et al. 1992 and 1995).

To the extent that the institutional conditions largely guarantee the correct assignment of costs and benefits, wrong decisions are less likely and if they are taken they will be relatively rapidly corrected in the institution's own interest. Erroneous estimates of the costs and benefits of vocational training by the individual participants in initial and continuing training, by companies and State or public bodies will never be completely avoidable. Decisions about investments in education are genuine "entrepreneurial" decisions taken in a climate of uncertainty.

3. COSTS AND BENEFITS OF VOCATIONAL TRAINING AND THE LIMITS OF COST-BENEFIT ANALYSES UNDER EXISTING INSTITUTIONAL CONDITIONS

Since investments in vocational training have increased considerably (cf. for Germany: table 2) and should always aim at generating net earnings, at promoting productivity, monetary and/or non-monetary income of individuals and the whole economy, as well as at promoting growth, employment and the dissemination of innovations, there are numerous efforts to prove this on the micro-economic (cf. also the references given by W. Kau, in this volume) and on the sectoral and macro-economic levels (cf. the synopses by the European Commission, DG XXII 1996a and Tessaring 1997) or to subject it to critical examination (cf. for individual studies the references given in annex 2).

Table 2: **Costs per pupil in vocational part-time schools, Germany 1990 in DM**

| | |
|-----------------------------|-------|
| Total personnel expenditure | 7,903 |
| Total material expenditure | 1,133 |
| Total operating expenditure | 9,733 |

The objective (scientific) recording and calculation of the costs and benefits of vocational training still face considerable difficulties even today. Despite the methodological progress of related approaches this applies to the individual economic viewpoint (trainees undergoing initial or continuing training, company, school) and all the more to the macro-economic and State level (Griliches 1997, Welch 1986, Dürr 1996). Considerable progress has been made in regression and factor analyses and in distinguishing between parameters such as natural talent, origin and social environment, practical work experience, educational results, productivity, educational return and career opportunities. Nevertheless the results are frequently not convincing for various reasons. Above all the decision-making foundations are scarcely of any use for the individual and for companies and State authorities for the following reasons.

All the econometric and financial mathematical calculations (cf. annex 2, sections: growth, employment, productivity, income, educational return) are ex-post calculations. Ex-post observations, however, are not a suitable basis for decisions about investing in education and certainly not about investing in specific education, educational routes and qualifications. They can scarcely contribute anything to the central issues of the allocation of scarce resources and the efficient development of human resources - if at all, only in the form of monitoring success. What constitutes a viable investment in vocational training at a specific time and at a specific place under specific conditions must not necessarily be a viable investment under other conditions. This applies to the individual, the investor, and also to the company financing vocational training and the State.

A projection, such as that undertaken in the form of cost-benefit analyses in respect of infrastructure investments by public authorities in the transport sector (in the motorways, road tunnels, railways, airports) or as undertaken by private investors within the framework of investment planning, has not been done so far. The methods and the data required for the prospective estimation of increases in growth, productivity, employment, wages and income in some cases are either not available or are not reliable enough.

Micro-economic and aggregated macro-economic costs and benefits are subjective and furthermore are limited parameters concerning time and space whose knowledge exceeds the potentialities of science.

What is noticeable in this connection is that science are called upon and commissioned to calculate education returns and the other positive effects and to calculate the returns and yield on investments in education. This is not, however, a task for science as an institution which is interested in new, space and time-free knowledge - that is the identification of regularities. Investment planning and control is an entrepreneurial function which is a daily task and responsibility of each investor but not of science⁴.

If this is correct, there is no need for more detailed focusing on the various methods of regression analysis and investment calculation. Attention should focus far more on how the preconditions can be met for an improved estimation of costs and benefits by those concerned in respect of the diversity of vocational training alternatives and the expected developments on the labour markets. In this context it should be stressed that costs and benefits are subjective concepts.

4. THE SUBJECTIVITY OF COSTS AND BENEFITS

In economic terms the correct cost term is *subjective* costs, i.e. costs which the decision-maker (trainee in initial or continuing training, the company offering continuing training, the school or the State body financing training) expects when he or she gives preference to one alternative (initial, continuing training) over another. This is the case for a young person for

⁴ Of course, a distinction must be made between that and the processing and examination of the reliability of investment calculations, cost benefit analyses, econometric procedures etc.

instance who decides to undergo initial training rather than to earn his money as an unskilled worker. In the same way the company offering initial or continuing training bears the costs of the alternative to recruit trained staff instead of investing in initial vocational or continuing training. Public bodies have to bear costs because they have to renounce the alternative use of taxes and levies and thus public and social advantages which would otherwise have been generated. This applies to the State financing of schools as well as to the subsidies and other assistance for trainees in initial and continuing training or for companies.

Any attempt to identify the costs and benefits of vocational training in an objective manner is subject to limits because recording and identification face the difficult problem of revealing the subjective costs perceived by the decision-maker after selecting the best alternative. To the extent that the trainees undergoing initial and continuing training and companies are able to express their preferences for specific training programmes within functioning markets, the prices which are formed on these markets are relatively reliable indicators of the costs (or foregone alternatives). This also includes for instance monetary income including statutory, collective bargaining and in-company social benefits. Aside from the fact that markets often have functional weaknesses (market imperfections, positive or negative external effects) which often have to be accepted because no better procedure is available, markets are not always available to reveal preferences and a willingness to bear costs. But even those costs and benefits which are difficult to measure but which nevertheless should not be neglected (such as the spatial proximity to employer, the social integration into family circle and circle of friends, leisure and sport activities, social prestige in the case of training in a particularly well-known and reputed company) are assessed in a subjective manner by trainees and are therefore included as determining factors in the decision about initial and continuing training.

From the company angle greater social prestige is assigned to companies which offer a good training and focus in a comprehensive and generous manner on the continuing training of their workforce. Furthermore, the positive and not easily quantifiable effects such as cost reductions in induction and personnel procurement (cf. von Bardeleben 1995, G. Cramer and K. Müller 1994, R. Weiss 1990) are included in the cost-benefit considerations of companies. The same applies to municipalities and other public authorities and to State bodies who finance initial and continuing training where social goals are particularly to the fore, the implementation of which is a State task and can be achieved in the most cost-efficient way by promoting investment in vocational training rather than in other measures.

Finally it is not or only indirectly a question of the social advantages of vocational training which can be expressed directly or indirectly in monetary units which neither the individual worker nor the individual employer includes in his subjective cost-benefit calculation. At the same time they are of considerable importance and are part of the overall economic cost-benefit calculations from the economic angle. This may include, for instance, the promotion of social and political stability, democratic awareness and tolerance, reduction of criminality and vandalism, promotion of health and rational consumer behaviour, changes in generation-related behaviour. If this is correct, it is the task of the State to correct the individual decisions of investors in education by means of subsidies or other suitable measures to the extent that the damage which can be avoided will be greater than the costs of the subsidies and schemes.

5. VOCATIONAL TRAINING, INCOME, EMPLOYMENT, ECONOMIC GROWTH AND INNOVATIONS

5.1 Education, training and economic performance

One of the central questions is whether and, if so, to what extent vocational training promotes economic growth. This question is all the more important since in the Member States of the European Union there has been considerable investment above all in academic vocational training. This policy was generally based on the idea that investment in general and

vocational training promotes the growth and economic development of a country. The more investments in education are taken, the more economic growth is resulting. This however is a mistaken estimate of what education, in particular vocational education, can in fact achieve.

The previous comments reveal that vocational training always promotes economic growth, measured against the real GDP, if the individual undergoing initial or continuing training, or the company and the State funding vocational training, realize net returns, provided that this happens under institutional conditions which guarantee wherever possible the correct allocation of costs and benefits. A positive effect of investment in vocational training on economic growth is also to be found when the GDP is not growing but through vocational training, through the performance and flexibility of the initial and continuing training system its decline is halted. This will be the case particularly in periods of major structural change. Macro-economic ex-post estimates of the influence of vocational training on economic growth are extremely difficult in assessing this correctly. What is far more important than an accurate ex-post estimate is that those involved in the decision-making system obtain correct information in time concerning the expected costs and returns, that they take their decisions along those lines, monitor them and correct them if necessary. This, however, requires major capabilities in information-processing and flexibility of the education system and the labour market.

Empirical studies may be used which draw on education figures⁵ (participation rates by age groups within primary, secondary and university education or the literacy rate) as an auxiliary to assess investments in education (cf. particularly Alesina et al. 1992, Amable 1993, Barro 1991, Baumol et al. 1991, de Long and Summers 1991, Blomström et al. 1992, D. Cohen 1992, Denison 1998, Engen and Skinner 1992, Levine and Renelt 1992, Lichtenberg 1992, Wolff and Gittleman 1993)⁶. They aim at determining the influence of education on economic growth but are ex-post parameters and apply solely for the period and country for which they were used. They cannot, therefore, be used as examples in order to explain the same behaviour in other situations. Reference to them merely shows how little those involved know about the costs and benefits of vocational training and that on this basis decisions are taken about training investment and its financing. The individual investors, training providers and sponsors of vocational training will, however, have expectations about costs and benefits. In principle, this is the same procedure as for investment in materials although in the case of investment in vocational training it is difficult to estimate the returns over long periods.

Despite the problems and difficulties in calculating the contribution of vocational training to economic growth, it is not very surprising when the results are so different in terms of the individual and the whole economy. Examples can be given in which education clearly has positive macro-economic growth effects just as there are examples in which investment has not triggered any growth effect particularly in school and academic education, where unemployment increased amongst school graduates and academics and where the education system was sometimes used to "park" people out of work. In the macro-view, this is particularly the case when the duration of compulsory education has been increased, when there is no corresponding demand for trained labour in the economy and administration as was observed in some developing countries. For the Federal Republic of Germany and a few other countries in the European Union it can be noted that the high economic growth in the 1950s and 1960s was achieved by workers which had far less schooling and had received far less academic training than the workforce in the 1980s and 1990s (cf. the literature given in van Lith 1985, p. 28, 76).

At the same time, it can be noted that the considerable investment in education and training could not provide the stimulus for more macro-economic growth and employment and that instead the lower levels of the employment system were occupied with long-term and academically trained workers (Büchel 1995, Büchel and Weißhuhn 1996) whose training was not necessary for carrying out these jobs. Nevertheless the behaviour of the individual to

⁵ Cf. OECD: Education at a glance OECD indicators, Paris 1995, pp. 125 ff.

⁶ Cf. the overview in Tessaring 1997, p. 43 f. and European Commission DG XXII 1996, p. 2f. and 14 ff.

invest in formal training was rational under the given conditions as long as they could expect that a formal qualification on higher secondary or university level would increase their competitiveness with others and as long as the costs of training were borne by the general body of tax payers. For some of them however this behaviour would probably not have been appropriate if they had to bear the cost of their longer in-school education themselves and if they had included this in their cost-benefit calculations. In other words, over-investment occurs, individual economic rationality given, in the case of State subsidies and if the costs can be passed on to other people.

In this connection the recruitment behaviour of employers also plays a role: they assume that the "over-qualified person" should be given priority over someone who is sufficiently qualified and offered the same wage. This is based on the assumption that in a situation of uncertain expectations the opportunity to obtain the desired performance is greater in the case of the over-qualified person. Employers expect the benefit of a gratuitous selection of candidates within tax-financed schools as being greater than the net benefit of their own selection procedures which cost money. To that extent the behaviour of employers is rational, too, although under the given conditions this systematically leads to macro-economic mis-investments in vocational training.

Concluding, the fact that these are ex-post calculations and that the statements are furthermore lacking theoretical, universal reliability, means that they are an unsuitable basis for any decisions about future investments in vocational training. The statement "investment in training increases economic growth" does not apply in general nor does the general statement "the higher the participation in education, the higher the level of economic growth" or "the more expenditure on education, the more economic growth there is". Even the statement "the higher the illiteracy rate, the lower the level of economic growth" cannot always be confirmed for the above mentioned reasons either.

Equally, when monitoring State education and investment, i.e. when examining whether educational investment has promoted economic growth and when examining whether perhaps different approaches should be taken in future, the above-mentioned calculations may, among other things, only be interpreted and used with considerable caution for the reasons given below:

- As measurement concepts they are neither accurate or differentiated enough in order to be able to distinguish between alternative educational investments and education routes sufficient to accurately determining their contribution to economic growth. In addition, they cannot state about whether the scale of school education was necessary on that level or whether some parts of this education or training could not perhaps have been offered in a more flexible and cost favourable way at the workplace or otherwise functionally incorporated into the social environment.
- They do not take into account the complementarity of human and material capital and the problems of the allocation of the production results to the factor labour and the factor capital in conjunction with changing technologies or changing production methods. Thus, the return and equally the productivity of an hour of qualified labour will increase when as a consequence of technical innovation the machine contributes a greater performance to the overall result or when as a consequence of organisational changes the return or the value product are positively influenced without a change in the work performance.

5.2 Complementarity of vocational training investments and fixed asset investments

Theoretically, investments in vocational training can be independent of investments in fixed assets, they may substitute or supplement them. In fact, however, only the general, elementary educational goods (internalisation of values, acquirement of fundamental social skills such as speaking, reading, writing, arithmetic) are independent of the quality and quantity of fixed asset investment.

There may be a twofold substitutive relation: substitution of real capital by investments in vocational training and substitution of human capital by real capital. In the first case the qualification of skilled labour and its use leads to the substitution of previous production plants and methods. This is of minor importance. In the second case new plants and production methods replace labour. In the micro-economic and much more the macro-economic view the complete replacement of skilled labour by capital is not possible. The complementary relationship between real capital and human capital is, therefore, to the fore of our considerations.

Investments in vocational training normally go parallel to investments in real capital. They will change in their volume and quality depending on real capital although if they promote the dissemination of new scientific and technical findings, and thus make possible innovation and technical progress. In the final instance every stimulus for qualitative changes of real capital stems from qualified and highly qualified work performance. Per se, and without a link to real capital and work organisation, investments in vocational training yield low returns. This even applies to general, vocational training contents which have a low productivity if they are not supplemented with specific know how and skills. Vocational training investments will be the more productive the more vocational training and real investment are finely tuned to each other and the less neither the one nor the other creates a bottleneck which impairs the overall productivity of the utilised performance factors taking into account their cost prices. Investments in the qualification of the labour force in itself does not generate a return or promote growth unless the acquisition of know how and skills will lead to fixed asset investments and thus increase employment.

Very little is known so far about these interrelations. It is, however, likely that investments in vocational training only rarely induce fixed asset investment disregard university research and the diffusion function of scientific instruction (cf. annex 2, section innovations). The reason is that fixed asset investment presuppose an entrepreneurial idea (a new product, cheaper production methods, market potential untapped so far) - knowledge which is not normally the subject of vocational education. Entrepreneurial ideas are scarcely emerging by means of vocational training and rarely by continuing vocational training, but - if at all - through occupational practice and market experience and through personal traits and competencies which can scarcely be developed or taught in schools and universities. Accordingly, economic research cannot confirm any empirical link of this kind. This does not exclude that when there is an entrepreneurial idea it becomes necessary to acquire additional know how or to recruit the corresponding staff or to purchase consultancy back up. This situation is well known from cases in which computer scientists, engineers and natural scientists working in companies had to acquire commercial knowledge.

In the last few decades State promotion of vocational training has concentrated on in-school schemes both in the form of general full time schooling, sometimes with occupational elements, on full time academic training both quantitatively and by extending the duration of studies, and also on initial vocational training with its theoretical and its out-of or inter-company parts. This applies at least for the Federal Republic of Germany⁸.

It is also assumed that the occupational qualifications acquired in this way are certainly not acting as stimulus for additional business activities or corresponding investment in real capital and new jobs. Far more it is assumed that the more school-oriented and theoretical knowledge produced fewer business ideas, new companies and investment⁹.

⁸ Cf. Federal Ministry of Education, Science, Research and Technology: Basic and structural data 1996/1997. This has tended to lead to a decoupling of vocational education from the labour market which has had a positive influence on the return on education investment. In this context a large proportion of the costs was passed on to tax payers in the form of higher taxes. A brake on economic growth is therefore more likely.

⁹ In Germany and other countries several initiatives have recently begun at the universities to work in the opposite direction.

For Germany but also for other countries in the European Union it can be observed that the trend towards schools and theoretical education has, at the same time, encouraged a development which has led to young people after completion of these educational paths to look for more stable jobs in public administrations and large private companies rather than in risk related, entrepreneurial or independent areas of activity. This development was only recognised recently and attempts are made by means of State programmes to counteract this trend¹⁰.

When investment in vocational education is seen as a complement to fixed asset investment, it yields the highest return when qualifications are acquired which facilitate real capital investments in new business areas, new products and procedures and thus make vocational training efficient and profitable. If areas of this kind as well as market gaps, new markets and growth opportunities are missing, it cannot be expected that the education system and its sub-systems will promote growth and economic activity. Those expectations overstrain the education system and what vocational training can really achieve. If expectations of this kind are maintained, then they are caused mainly by the behaviour of the educational lobby and are possible because contrary to other sectors of the economy, schools and universities but also vocational training are not subject to competition and performance analysis in most Member States of the European Union as is the case for companies which are assessed by markets. One decisive point here is that those people who seek the services of school and academic institutions do not as a rule pay for them. It was not possible to develop price and cost transparency and related decisions by those involved. This lack of transparency and information has led to major erroneous developments and to a perseverance of structural distortions which are detrimental to economic development and competitiveness.¹¹

A series of macro-economic calculations of return, educational investment result in positive contributions (Tessaring 1997, European Commission DG XXII 1996). We have, however, to bear in mind what these calculations really state:

- They often do not address the issue of whether education has made growth possible or whether, conversely, growth has led to an expansion of school and academic education. The latter would mean that we only seemingly have to do with investment in vocational education. In reality this expansion has a consumptive character and serves to uphold the rigidities on the labour and goods markets and to make possible the necessary adjustments by "parking" job-seekers outside the labour market. The label "investment" enables to procure the financial resources by imposing a burden on the general public. In some cases this behaviour is supported by the uncertainty which educational strategy is the appropriate one in respect of international competition and of comparisons with other countries. This consumption of resources is set against a minor return.
- Furthermore, a positive return does not indicate whether productivity has been improved and whether the positive return has not been induced by power positions on the labour market and therefore has its roots in monopolistic rents which have nothing to do with performance and productivity.
- Often they do not say anything about the extent to which the increased productivity of trainees is a result of their personal talents, family background, social environment or - in the case of those undergoing continuing training - of their occupational experiences in the employment system or of their actual performance at school, university or in the training company. In other words it could also be assumed that the same or higher returns and growth rates could have been achieved without any or at least less educational efforts measured in terms of the national income. Both from the angle of acquiring knowledge

¹⁰ For instance the initiative of SMEs "Go" of the Northrhine Westphalian regional government which expressly has these contents and explicitly corrects education and university policy.

¹¹ This also includes the efforts by industry in the Federal Republic of Germany to counteract the general trend towards young people spending a long time in schools and universities by means of specific material incentives and new career paths.

and skills (development of human resources) and from the angle of the education system having to select people mainly according to their talents and abilities (education system as selection system), the achievements of the education systems in some companies must be relativised particularly in the tertiary education sector. The free charge for users and the cost and price intransparency frequently observed seem to indicate that there are subjects taught and learnt in school and academic institutions which partly could be imparted in the employment system or at the work place at less expense. These are mainly subjects which yield no return because they are superfluous and under conditions of greater cost transparency and cost allocation would no longer be taught in schools.

Finally it can be observed in the current economic debate about promoting overall economic growth and employment that the education system is not given priority. To a much higher extent obstacles on the goods and factor markets are held responsible for the weaknesses in investments and growth of the European economies: for instance over-regulated markets for goods and services, complicated approval procedures and environmental provisions, inflexible wages and rigid wage structures, high non-wage labour costs, low mobility of workers, high taxes and levies, and an aversion to technology amongst the population. By contrast, the obstacle to more employment and growth is not seen in the low performance of the general and vocational education system.¹²

5.3 Vocational education and innovation

In the overall context of vocational education, economic growth and employment the question is raised whether vocational training can promote innovation and technical-economic development. Here a distinction must be made between the question whether vocational training itself can trigger innovation and what vocational training can do in order to facilitate the application and dissemination of existing innovations. As a rule this calls for different or new qualifications. The latter would be a reaction of the vocational training system to the emerging qualification demands of industry and would determine the speed at which innovations in individual companies spread through certain sectors and through industry as a whole and thus could be used as competitive advantages. Whereas there is no doubt that the vocational training system makes a major contribution to pushing through innovations and their dissemination within companies and throughout industry thus documenting its importance for competitiveness, the reverse link is questionable.

Technical, labour-saving progress destroys what were economically viable qualifications. This applies to the lower qualification groups as well as to the medium and high levels such as engineers, chemists and other natural scientists (Bellmann et al. 1994, Prognos 1995, Staudt 1996). However, new jobs are created which as a rule call for new qualifications and trigger a new demand for qualified labour (structural change). This change tends to be linked more with process innovations rather than with product innovations. The prevailing opinion is that this leads to less demand for lower level qualifications and a growing demand for higher qualifications.

6. COSTS AND BENEFITS DEPENDING ON THE INFORMATION AND RESOURCE-CONTROLLING PROPERTIES OF THE EDUCATION SYSTEM

When the returns on investment in vocational education depend to a major degree on the requirements in respect of the various performance processes of industry and their changes by technical and organisational progress being recognised as early as possible and implemented in the form of educational decisions, and when today more than ever it is a matter of accurately estimating the talents and performance of individuals and of training

¹² It is indeed the case that employers in the Federal Republic of Germany complain about the dwindling standards of what people learn at school. Even if this were true and an improvement in performance could be achieved, this might lead to new opportunities for individuals but in terms of the overall economy it is scarcely likely to have a positive effect in employment and growth.

them in as a cost-favourable a manner as possible in the tasks and functions in which they can make their best possible contribution for themselves and other members of society, then it becomes clear that today more than ever what is important are the properties of the vocational education system rather than the existing stock of qualified labour. It will mainly be a matter of creating the preconditions in order to reveal the true costs and benefits of vocational education in order to improve the decision-making bases of all those involved (owners of human capital, State and companies as the providers of subsidies and investment, schools, universities and companies as the providers of vocational training, State supervisory bodies etc.).

The increase in the relative importance of the institutional properties of the vocational education system compared with the stock of qualifications (human capital stock) can be attributed above all to the following situations:

- globally available scientific and technical knowledge can only be used and applied in products and production methods if this knowledge is coupled with the factor labour which is in a position to understand this knowledge, to process it, further develop it or use it practically;
- the life cycle of products and services as well as production methods has been considerably shortened; further reductions are to be expected;
- research and development, innovations, quality assurance, services tailored to the individual customer will increase against the global backdrop;
- any standard which has been achieved in terms of qualified and highly qualified human assets risks far more rapidly than was the case before of becoming economically obsolete.

If that is the case then for the European industry what is important today is less the stock of intangible capital (stock of knowledge) and human capital than far more the ability of the education and scientific system to constantly produce, impart and apply new knowledge and, what is more, to identify the qualification requirements of an economy which is subject to permanent and accelerated change, to implement this in education, initial and continuing training products, and to select suitable pupils, students, trainees in initial and continuing training on the basis of their aptitudes, skills, talents and know how and to train them by drawing on suitable selected staff (teachers, trainers, etc.) and using the necessary and appropriate means and procedures.

Only when we succeed in more rapidly processing new theoretical and application-related knowledge using the properties of the education system, in training suitable people in qualitative terms and on the "right" scale in terms of the national economy, will a highly developed economy such as those in western Europe be able to develop a sustainable locational advantage in global competition. In order to tackle the above-mentioned changes in global competition, which does not just mean economic competition but also takes in culture and the sciences, the institutional properties of educational systems must be improved, the costs and benefits must be rendered more transparent and information must flow more rapidly into resource-controlling decisions. This is the only way of guaranteeing long-term growth and employment, prosperity, economic and cultural development.

A number of social scientists and economists (Memorandum 1995, van Lith 1983, Mertens 1995) are for the above reasons calling for a change in the paradigms of educational policy, which will lead to changes in the attitudes and behaviour of those concerned, i.e. teachers, school directors, State supervisory officials and training companies and also participants in initial and continuing training and which will reveal to a greater degree the costs and benefits of training production.

7. SCHOOLS AND THE COST AND PERFORMANCE TRANSPARENCY IN ORDER TO IMPROVE THE DEVELOPMENT OF HUMAN RESOURCES

The individual school and school organisation is to be measured in terms of its performance. This performance, unlike commercial companies operating on the market, does not involve the generating of a return on the capital invested but rather, as non-profit organisations, using the necessary funds is to provide the best possible initial and continuing training schemes.

The services are to be rendered transparent by means of corresponding reporting which does include commercial accounting but which above all makes it possible for trainees, their parents, employers, State bodies, expert organisations and media to develop their own opinion, to assess the performance of the school and evaluate it. The annual report, which may include compulsory and optional sections, may also cover the staff and material resources, the pupil-teacher relations, the number of school drop outs, students who repeat a year, teacher and pupil absenteeism, numbers of pupils successfully completing the course, transition quota to higher schools and universities, the successful placement of trainees in the employment system, international contacts with data on pupil and teacher exchange, practical links and organisational forms of their implementation, in particular technical and non-technical services (e.g. bridging, adaptation courses, special courses for the learning impaired, looking after foreign pupils, diagnostic and psychological services).

What is important in reporting is that the performance of the individual schools is subject to greater transparency and evaluation, that considerably more information is provided about "good" teachers, suitable school directors, goals, contents and methods of instruction, that schools compete with each other in respect of their services in order to prepare young people as best as possible for working life and the requirements of practice.

The incentive to create and use this information implies that information is worthwhile and that initial and continuing training services will be rewarded. If that is the case then what are to be expected are a far higher level of information, the mobilisation of performance reserves, a lower labour market risk and, consequently, safer returns on education investment linked with increased cost awareness and greater cost transparency. Under these conditions markets will emerge for teachers and school directors and indirectly teacher training at universities, and previous practical experience of teachers etc. will be subject to an assessment by schools and school sponsors. Of course there may also be flexible systems which are oriented more to practical requirements in which there are ongoing processes searching for new or changed qualification requirements, suitable methods and organisational forms of implementation, suitable and well trained teachers and pupils. However, it cannot itself create the preconditions for an increase in economic growth and employment. It can, however, by means of its greater adaptability and performance provide a stimulus for growth from a qualification side and guarantee a time-related and also qualitative edge over other education systems. This is an advantage which can sustainably increase the attractiveness of the location for domestic and foreign capital and its attractiveness for science and culture. Various studies commissioned by the governments of EU Member States (Germany: Federal Ministry for Economic Affairs, France, Great Britain, European Commission DG XXII) focus on these issues. The decisive and necessary steps are and must be expected in the next decade. This applies all the more the higher the proportion of in-school education in vocational education is and therefore will probably be particularly important for school organised vocational training in France.

8. FRAMEWORK CONDITIONS AND THE COSTS AND RETURNS OF COMPANIES

The goal of increased transparency for the estimation and allocation of costs and returns for the institutional arrangements also has consequences for the in-company part of vocational training. For the in-company part of vocational education, the decisive factor is likely to strengthen the control function of investment in vocational education (quantitative and qualitative demand for qualifications).

8.1 Design of in-company vocational training

Companies are themselves interested in good initial and continuing training to the extent that their training places and their continuing training programmes are actually oriented towards their own future qualification requirements. Unlike most State schools, those training institutions have an indirect interest in return derived from the company goals. Against this backdrop companies also have the incentive of shaping training contents and back up training measures in such a way that the bond to the company is maintained beyond the training period, for instance career opportunities, in-company pension schemes, profit sharing etc. From the angle of the companies this makes sense in order to secure returns from the trainees in the long term. At the same time it secures future employment for the participants in initial and continuing training.

This behaviour of the company is however disadvantageous for the trainee when the switch to a better paid or otherwise advantageous position is made more difficult and he cannot fully realise the return which he could otherwise have with his knowledge and skills acquired elsewhere. In macro-economic terms this would be undesirable, too, since the trainee achieves a higher productivity, a better position or can provide services on the same level of productivity which lead to added values and demand. State legislation and training ordinances serve the purpose of restricting developments and situations of that kind. However, it is in the interests of both sides that company-specific components play a role. That is for instance the case when they contain innovative components which have not yet become the common property of initial or continuing training and which only spread later, for example in conjunction with new techniques and organisational forms within or beyond specific branches.

Furthermore, it is economically correct when the bond to the company leads to the costs of the in-company training (including pre-financing costs) being covered by returns and the zone of net returns will start at the time of completion of training and the transition to an employment contract.

In principle, there are no serious problems in this case (interest of the company in the long-term covering of its own qualification needs). In their own interests companies consider the disadvantages and advantages of initial and continuing training schemes compared with alternatives such as recruiting skilled labour on the external labour market (including the risk of a shortage of skilled labour when others behave in the same way), substitution of work by capital, relocation of production to a different location. At least in Germany companies compete with their training services and candidates at the examining boards of the chambers concerning whether and with what results their trainees will pass the final exams. Furthermore, training contents within the statutory framework are the subject of discussions within the vocational training committees.

8.2 Influence of State training regulation on costs and benefits

The situation may be different in the case of the regulation of training occupations. Voices can be heard from amongst practitioners (chambers of industry and commerce, Federal Ministry of Education and Science) and scientific circles (cf. *inter alia*: Staudt) which state that the statutory regulation of training and training ordinances considerably delays the adaptation of training contents and the creation of new contents, and thus impairs employment and growth opportunities particularly in those areas which have a very promising future because of innovation and structural change. In these cases employment and growth opportunities are handed over to other business locations with a greater capacity for adaptation in their qualifications (cf. N. Oulton, in: Booth and Snower 1996). Regulations of this kind increase costs and reduce return if they impede the occupational mobility of pupils as a consequence of long retraining periods and costly retraining measures more than they bring about productivity increases and a greater degree of quality reliability in the performance process.

If companies do not orient their initial and continuing training capacity towards their own future qualification requirements, they clearly expect these requirements to be provided in a

more cost efficient manner for them on the external labour market. This includes above all the institutionally important case in which the companies assume that the costs of training on average will not be covered by the returns generated by trainees (case of training below needs). Another possibility would be that training already generates larger net returns during the training period which would make trainees for companies for whatever reasons more profitable than other skilled workers (case of training beyond needs).¹³ Typical cases of training below needs in Germany are (Neubäumer 1997) above all health care occupations, building engineers, surveyors, retail packaging experts, animal attendants, data processing clerks, road transport occupations, skilled chemical workers, gas welders, clerks in accountancy and fiscal occupations. Typical cases of training beyond needs are farmers, bakers, mechanics, butchers, hairdressers, painters and varnishers.

The first case may lead to bottlenecks and cyclical shortages or surpluses emerging on the market (K. Burdett and E. Smith, in: Booth and Snower 1996). In order to protect themselves against the risk of not being able to procure skilled labour in time, companies will select the path of their own training anchored in the company or run the risk and endeavour to attract skilled workers on the labour market by offering them higher wages and other bonuses.

8.3 Financing of vocational training

In both above mentioned cases in which the costs and return on training systematically deviate from each other on a large scale, German trade unions plead for a redistribution of financing (cf. IG Metall 1983, German trade union convention (DGB) 1995, Senator Brüggemann 1996, all quoted by van Lith 1997).

Political and expert discussions frequently neglect the fact that false orientations of institutions of this kind, given the disparity between cost and return, could be corrected by corresponding adaptation of training periods, by extending the duration of training in those cases in which costs are higher than returns and by shortening training periods in which a shorter training duration will clearly suffice in order to impart the necessary theoretical and practical training. Here it should be borne in mind that a financing concept is linked to a training place in the sense that the individual by means of the growing productivity of his performance within the company during the training period in fact pays for the costs of his training, including its pre-financing.

The more the trainee owes the company in terms of costs, the surer the company will be that the trainee will remain with the company for a certain period of time as a skilled employee on completion of the vocational training programme. If in-company training fulfils this function, then it makes sense not to establish a direct comparison of costs and returns but rather to encourage the training company to win the trainee as a long term employee. Otherwise there will be a trend towards a development in which in-company training is undertaken less for the company's own requirements and far more for the anonymous market. The in-company training willingness then loses its signal function in respect of future qualification requirements and training in the company will be separated more from an individual's social or production process so as to prevent the increased drain of internal company knowledge from the company. The opposition to financing by means of a levy, as has been observed in Germany, may therefore be justified. Given the difficult labour market situation in Europe, there are several signs that there are far better chances of a German trainee obtaining a job after undergoing dual vocational training compared with a trainee in France. This can be attributed to the fact that in-company vocational training is coupled with the covering of the long-term need for qualified junior staff. Even if it were the case that this were linked in Germany with higher unemployment than in France, this does however offer the economic advantage of helping new technologies and organisational forms to establish themselves

¹³ What should be noted in this context is the situation in which companies because of the moral pressure of entrepreneurial associations as a whole, political circles and the general public train more young people than they need in order to prevent youth unemployment.

with this junior staff and hence of increasing productivity, innovative capacity and competitiveness as well as economic growth.

9. FRAMEWORK CONDITIONS AND THE COSTS AND BENEFITS FOR THE INDIVIDUAL UNDERGOING INITIAL OR CONTINUING VOCATIONAL TRAINING

As already mentioned at the beginning, vocational training aims to equip the individual with knowledge and skills which will enable him to increase his performance, to work more productively and augment his own income and also his contribution to common prosperity. If investment in vocational training is to generate as high a return as possible, then it is very important for the individual undergoing initial or continuing training that the institutional conditions are shaped in such a way that the individual can draw the best possible benefit from his natural talents and abilities in the interests of himself and other members of society. The precondition for this is making costs and benefits as transparent as possible.

One of the main preconditions to creating this incentive is the right of ownership to the knowledge and skills acquired. The constitution of free States protect this fundamental right to the integrity of the individual and the ban on forcing people to use their knowledge and skills (ban on forced labour, slavery, free selection of occupation). Moreover, highly developed industrial countries protect the monetary income generated by work from a certain scale upwards against creditors (non-seizable income). Under these conditions there is considerable incentive for the individual to invest in vocational training taking into account his own aptitudes and skills and to search for the best possible opportunities to use them in the employment system. If the other institutional conditions are met (free choice of workplace, freedom to pursue an occupation, private ownership of the means of production), this will lead to relatively large scale prosperity whereby, depending on the cultural traditions of a country, the detailed provisions of these rights may vary.

9.1 Obstacles to the financing of vocational training

The rights anchored in the constitution do, however, lead to some difficulties when it comes to financing investment in vocational training which must be overcome by means of suitable State measures and institutional steps.

Initially it seems clear that the individual who owns the property and access rights to skills or knowledge which have been acquired, will also determine in the final instance the location, time, type and intensity of their use and that he will also have to shoulder the costs of the acquisition of this knowledge and skills. Since, however, these costs occur before any return, this leads to a financing problem. This may take on major proportions since in the case of school, academic and vocational training, costs may accumulate over several years before the first return can be generated in the form of monetary income.

The real difficulty emerges, however, when financing vocational training as a consequence of the property rights scarcely permits financing via the capital markets in contrast to financing fixed asset investment. Statutory protection of the individual only allows for financing from his own funds or from the funds of his family - not however financing on the basis of acquired human assets. In the case of fixed asset investment the matter itself may serve as a security for the lender. The fact that acquired knowledge and skills are not sufficient to give access to a loan creates difficulties for the individual, particularly young penniless people and, without any external aid, and prevents investment in education which, by extension, increases prosperity.

Institutional economics see this problem as the main reason why the State (tax payers) has assumed responsibility for financing the costs of in-school education and why the employer, as the pre-financing source, assumes the costs for the in-company part of initial and, in some cases, continuing vocational training which must later be covered by productive contributions to performance with correspondingly lower remuneration for the individual.

In the case of in-school and academic vocational education this means that the interest of the pupil or student or, in the case of minors, of the parents in the performance and economic return drops when school resources are scarce. In administrative terms it is difficult to monitor the performance of the school or university. So far there has been no incentive whatsoever to make provisions which could lead to a higher cost and performance transparency of State and other public schools and universities. The fact that this situation continues even today has to do with the fact that the schools and the State, i.e. the performance processes in the school and university, and State monitoring and financing of school are not separate from one another. At the same time, the State is the body which produces school services, which finances and bears responsibility for performance and which therefore monitors this and is only sporadically subject to general political control by the electorate for whom education policy is just one item in a party's manifesto. Competition between schools plays a role at best when there is a shortage of pupils but it is not a characteristic of the system and is not used to improve performance, to access information, to competitively assess expectations about the desired training objectives, methods, suitable teachers or pupils etc. A further consequence of this method of funding is finally that the pupils or their parents are viewed merely as the target group for the service and not as "clients". Even the co-determination rights granted in some countries to pupils and parents were not able for various reasons to do very much (van Lith 1985, p. 98 ff.), not to mention introducing performance and cost transparency.

The financing problem of training investment described above and in historical terms the assumption of the church education monopoly by the State have meant that both components, education production and financing, have been merged and that the State has imposed its administrative principles (standardised management and instructions, chamber system) on the education system. In fact, it is only the financing issue (van Lith 1985) facing families, pupils, initial and continuing training and trainees, which speaks in favour of a State task, aside from establishing and maintaining order, in which there is a clear allocation of rights and where education can fully develop its obligations.

Only recently (van Lith 1983/95, Mertens 1995) it was suggested that State funding in the form of institutional funding (financing of schools, staff, material resources directly by the State or municipalities) should be replaced by a financing in which the State or the competent municipality gives the users of vocational training institutes purpose-related resources (technically as training allowances, children's allowances, training certificates, deduction of training costs from taxable income, negative income tax etc.) (cf. van Lith 1985, pp. 127-262; specifically for training financing cf. Kath 1995) and places them on a par in respect of provision of funds with other training strands (polytechnic, university). The consequence would be that the individual who attends training is made more aware of the fact that the services he uses cost money. Vocational schools would orient themselves more towards the training needs of participants in initial and continuing training and would introduce more cost transparency if resources were only to be made available to schools on the basis of the free school choice of the individual.

9.2 Supply-oriented financing does not create cost awareness and transparency for improved cost-benefit assessment by the owners of human capital.

In terms of competition the financing of schools could also be shaped in such a way that the State and municipalities allocate funds on a school-place basis linked to the individual's choice of school. Cost awareness and a direct orientation towards the education wishes and preconditions of the individual person undergoing initial and continuing training would be less developed. Nor could the necessary transparency be established for a cost-benefit assessment by the individual as the owner of the human capital and there would be no possibilities of selecting a school or training place abroad perhaps in order to spend a year learning a foreign language. Nor would there be any competition in respect of services and costs between schools and training strands involving this kind of alternative.

9.3 Self contribution increases cost and return awareness

If depending on the economic circumstances, e.g. dependent on income, the State or municipality decides to introduce a certain self contribution by the trainee concerning the costs and if this is not a transitory item in the private budget, then this will strengthen, in addition to revealing the costs of initial and continuing training, the economic handling of scarce resources. Cost awareness would not only be increased by means of an individual's own contribution (loss of time which could have been used in a different way) but also by the resources (school, study place) which up to now have been used as a matter of course and in a generous way at the taxpayer's expense. This resource would increase in subjective value and would also encourage schools to use this scarce resource more economically.

The greater the role that the school part of training plays in terms of costs, the greater its proportion in training. In the dual vocational training according to the German model this is a lower proportion than in the case of the French or Danish vocational training. Also in comparison with initial and continuing training at universities and polytechnics, the institutional costs of which are scarcely known even today and which are only borne to a very limited degree by the users, the school costs of vocational training are low.

9.4 In-company part of vocational training

The situation looks different from the angle of the individual in respect of the in-company part of initial and continuing training. The costs of in-company vocational training are not directly known although perhaps more is known about continuing training than initial training. The individual company is, however, interested in making viable economic use of the resources made available for in-company initial and continuing training. Furthermore, the trainee knows that he must convince his employer by means of his performance particularly if he wants to improve his career opportunities on completion of training. Furthermore, the training contract also outlines the obligations which the two parties have entered into.

However, in this context the question is raised whether the trainee should in principle contribute to the costs of vocational training in those cases in which the expectations of his employer are negative concerning the medium to long-term economic advantage in terms of a training return (unfavourable social prospects, higher training costs than return). The training allowance which used to be a cost contribution, played this function when it did not have to be paid as entrance money to closed (handed down) apprentice markets. By banning apprenticeship payments the State has removed this opportunity for compensation to the extent that it was attributed to a real shortage of training places, but at the same time by subsidising training places it has consistently assumed the function itself of financing some of the costs of training places or even entire training places for trainees. Given the financing problems described above this financing function makes economic sense and promotes welfare. It does not however justify any intervention in vocational training since it is a subsidiary function of the State when financing the vocational training of young people.

From the economic angle the question is raised both in the case of school and the in-company part of vocational training whether funding by the State should be rendered more transparent for the individual and submitted to an assessment in order to increase the allocation of costs and benefits and by extension, the net earning power of this investment. Furthermore, we should examine whether a fund should be set up which would be open to all trainees up to a specific level if they so desire. People who take advantage of this would then pay back a certain amount from their later income which strictly speaking would cover capital and interest and would facilitate the assessment of costs and returns. The State would be free to grant relief according to social criteria which would, however, be transparent in contrast to the current situation and would be more readily understandable in terms of their distributive target accuracy (van Lith 1983). This would raise the question to what extent this allocation and transparency are desired. The scope could be decided freely, however, a lack of transparency must be weighed against a loss of efficiency.

Whereas in economic terms it is undoubtedly the case that greater transparency and better allocation of costs make sense above all for the school and academic part of vocational training, this is not necessarily the case for the in-company part within the dual system.

In-company training in the dual system is a concept which links training and financing and, therefore, assumes an orientative function in the control of qualifications even if there are limits (cf. contribution by Kau, in this volume). The training company does not just offer a training place but also its financing. It assumes that the training costs and their pre-financing are worthwhile because the expected productive return during the later phase of training and, with a certain degree of probability later on, too, including costs saved in respect of external recruitment of staff etc., will be higher than the costs. Both sides would therefore have an advantage, both the trainee and the training company. One advantage of this system is that young people on completion of general education are informed which companies are indeed looking for junior staff in which occupations, which confirm this by their willingness to pre-finance training and, at the same time, with the conclusion of the training contract positively assess the individuals' characteristics in respect of being fundamentally suitable for training and later employment by the company. Both the indicated demand for qualifications, the financing function and information about the suitability of individuals interested in training are important elements of information in order to avoid mis-investment and help guarantee a net return for those involved. However this does require that companies offer training mainly along those lines. Demand which is solely based on gaining access to cheap labour during a training phase restricts this control function even if it does help to give young people an opportunity to make some form of transition to the employment system.

If we were to abandon the holistic training and financing concept of the dual system and to leave the financing of in-company training costs to a fund, which would cover the costs of the training place, companies would train on a scale and in areas which would have very little to do with the long-term needs for skilled staff. In-company initial training would become an activity pursued against remuneration without any obligation for the company to take the trainee over into permanent employment. Against this backdrop this "automatic" training would probably have the function of enabling companies to get to know junior staff and to recruit the trainees later if they prove suitable. There would be a continued incentive because they could save recruitment costs, erroneous recruitment and other costs. The control function exerted on resources by the dual training system is largely lost with the consequence that the trainees have to run a greater risk of training "which does not meet demand". This leads to unsure returns in conjunction with costs which have to be borne by the community (trainee or employer). A fund of this kind for trainees and future employers would be able to limit the net costs of training but it would not be easy to identify costs and returns.

A fund financed by employees themselves would be a substitute (in whole or in part) for State subsidy programmes and would release employers from additional costs which are a burden for them in times of poor economic growth and weak economic climate and would render them more open and ready to offer training. Above all there would be no threat of intervention by the fund or the State in vocational training which would mean there would be no opposition to a levy demanded by them. They would continue to be the sponsors of the in-company part of vocational training and offer training within the statutory framework on a contractual basis. They would not be forced to participate by means of a levy and no administration would be set up to distribute funds on the basis of specific criteria.

If a fund of this type were to be created to finance alternative initial and continuing training paths, above all for academic training, then a careful choice would have to be made between these training courses on the basis of an individual's talents and ability to perform and the hidden goals and educational investment would have to become far more calculable. Costs and return expectations would then be revealed on markets which scarcely existed so far.¹⁴

¹⁴ Systematic climbing on the bandwagon at the expense of others would no longer be possible at all or only to a very limited degree.

A switch of financing from the funding of institutions to the funding of initial and continuing training of the individual would increase his choices and, together with cost transparency, would promote the selection of a school and training place even beyond the political administrative borders within the European Union. Up to now the exchange between schools and training companies was undertaken on the basis of comparatively inefficient barter systems in kind. The precondition for this is that in a more or less random manner the interests of pupils or trainees are set against those of the partner schools and companies. It is the case that barter and exchange systems have developed in the European education system which also undertake complicated barter acts or three-way exchanges. However this situation in the education systems of what are otherwise highly developed monetary economies is very inefficient because it is cost intensive and, at the same time reduces return.¹⁵

If the individual, as the person benefiting from knowledge and know how, were to be justifiably called upon to bear more of the costs and return, then this implies that information about the individual's skills and the future of applicability of the knowledge and know how have to be improved. The incentive for the company, be it directly or indirectly (test institutes, assessment centres) to offer information about the suitability of individuals and about the opportunities for using the technical knowledge and skills acquired, would have to be increased. For these reasons vocational training will probably be shortened and reduced, more finely tuned or organised in a modular manner in order to quickly correct erroneous decisions and to make better use of new occupational opportunities by means of more precise co-ordination with qualification requirements. But also back-up measures such as timely and more diverse information about prosperous occupational areas of activity should emerge and the irrational dreams which are often observed and which are far away from the occupational reality could be channelled more quickly into realistic spheres¹⁶.

10. THE INFLUENCE OF TAXES ON THE COSTS AND RETURNS OF VOCATIONAL TRAINING INVESTMENTS

From the macro-economic angle it is desirable to ensure that the scarce resources of an economy are used as efficiently as possible for the development of human and real capital. This calls for the balanced and harmonised production of human and real capital. Only in this way can the national economy achieve the highest possible return and prosperity with the given resources. It has already been pointed out that special problems arise for the financing of educational investments because of property rights in respect of educational investment. This calls for special arrangements to be taken by the State. Furthermore it is also necessary for the State to shape its tax and levy system in such a way that erroneous developments or distortions in the development of human and real capital will be avoided.

Fiscal policy has by no means insignificant effects on the costs and return of educational investments. If a national economy moves from a progressive fiscal system to a less progressive one, it is to be expected that macro-economically the human capital will increase because for large areas of the population the net earnings flow after tax, i.e. available income, will also increase. At the same time, there will probably be a negative effect on vocational training investments by the lower qualified who are placed in the less favourable situation by changes of this kind to the fiscal system. If the tax system moves in its weighting from the taxation of income to a greater taxation of consumption, then investment in human capital will be strengthened. However this will lead to greater income inequalities between the skilled and unskilled since further investments in vocational training for the latter will be

¹⁵ The consequences would be the faster and more cost-effective acquisition of languages and the understanding of other countries, social contacts beyond national boundaries and thus the promotion of social integration and cohesion, of political and economic understanding but above all increased competition between schools and training strands.

¹⁶ Survey by the German Youth Institute: Fit to start a career? Occupational choice and occupational guidance from the pupils' angle, Material from labour market and occupational research, number 3, Nuremberg 1996.

less profitable. If training costs, study fees etc. are tax-deductible, then this will encourage investments in human capital.

As a rule tax systems give priority to individuals from better off families and more highly skilled workers rather than to the less skilled. The latter benefit from State expenditure policy by means of the social transfer.

Compared to the incentive effects which fiscal policy has on investments in real capital, the effects of taxes on investments in vocational training are limited. This may have something to do with the fact that up to now education was regarded as a State task and the State along with municipalities operated schools as part of the administration and financed them from funds from the State or municipal budget. If this subsidiary function, which the State has assumed in financing for the above reasons and which can best be undertaken by means of a "public education bank", is then made separate, then the task of the State within the framework of fiscal policy will be reduced to the tax processing of education investment or the granting of subsidies for specific services which are not spontaneously offered by the decentralised education system and to distributive measures within the framework of the goal of social justice.

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