

The benefits of education, training and skills from an individual life-course perspective with a particular focus on life-course and biographical research

Maren Heise, Wolfgang Meyer

In:

Descy, P.; Tessaring, M. (eds)

Impact of education and training

Third report on vocational training research in Europe: background report.
Luxembourg: Office for Official Publications of the European Communities, 2004
(Cedefop Reference series, 54)

Reproduction is authorised provided the source is acknowledged

Additional information on Cedefop's research reports can be found on:

http://www.trainingvillage.gr/etv/Projects_Networks/ResearchLab/

For your information:

- the **background report** to the third report on vocational training research in Europe contains original contributions from researchers. They are regrouped in three volumes published separately in English only. A list of contents is on the next page.
- A **synthesis report** based on these contributions and with additional research findings is being published in English, French and German.

Bibliographical reference of the English version:

Descy, P.; Tessaring, M. *Evaluation and impact of education and training: the value of learning*. Third report on vocational training research in Europe: synthesis report. Luxembourg: Office for Official Publications of the European Communities (Cedefop Reference series)

- In addition, an **executive summary** in all EU languages will be available.

The background and synthesis reports will be available from national EU sales offices or from Cedefop.

For further information contact:

Cedefop, PO Box 22427, GR-55102 Thessaloniki

Tel.: (30)2310 490 111

Fax: (30)2310 490 102

E-mail: info@cedefop.eu.int

Homepage: www.cedefop.eu.int

Interactive website: www.trainingvillage.gr

Impact of education and training

Preface

The impact of human capital on economic growth: a review

Rob A. Wilson, Geoff Briscoe

Empirical analysis of human capital development and economic growth in European regions

Hiro Izushi, Robert Huggins

Non-material benefits of education, training and skills at a macro level

Andy Green, John Preston, Lars-Erik Malmberg

Macroeconometric evaluation of active labour-market policy – a case study for Germany

Reinhard Hujer, Marco Caliendo, Christopher Zeiss

Active policies and measures: impact on integration and reintegration in the labour market and social life

Kenneth Walsh and David J. Parsons

The impact of human capital and human capital investments on company performance Evidence from literature and European survey results

Bo Hansson, Ulf Johanson, Karl-Heinz Leitner

The benefits of education, training and skills from an individual life-course perspective with a particular focus on life-course and biographical research

Maren Heise, Wolfgang Meyer

The foundations of evaluation and impact research

Preface

Philosophies and types of evaluation research

Elliot Stern

Developing standards to evaluate vocational education and training programmes

Wolfgang Beywl; Sandra Speer

Methods and limitations of evaluation and impact research

Reinhard Hujer, Marco Caliendo, Dubravko Radic

From project to policy evaluation in vocational education and training – possible concepts and tools. Evidence from countries in transition.

Evelyn Viertel, Søren P. Nielsen, David L. Parkes, Søren Poulsen

Look, listen and learn: an international evaluation of adult learning

Beatriz Pont and Patrick Werquin

Measurement and evaluation of competence

Gerald A. Straka

An overarching conceptual framework for assessing key competences. Lessons from an interdisciplinary and policy-oriented approach

Dominique Simone Rychen

Evaluation of systems and programmes

Preface

Evaluating the impact of reforms of vocational education and training: examples of practice

Mike Coles

Evaluating systems' reform in vocational education and training. Learning from Danish and Dutch cases

Loek Nieuwenhuis, Hanne Shapiro

Evaluation of EU and international programmes and initiatives promoting mobility – selected case studies

Wolfgang Hellwig, Uwe Lauterbach, Hermann-Günter Hesse, Sabine Fabriz

Consultancy for free? Evaluation practice in the European Union and central and eastern Europe Findings from selected EU programmes

Bernd Baumgartl, Olga Strietska-Ilina, Gerhard Schaumberger

Quasi-market reforms in employment and training services: first experiences and evaluation results

Ludo Struyven, Geert Steurs

Evaluation activities in the European Commission

Josep Molsosa

The benefits of education, training and skills from an individual life-course perspective with a particular focus on life-course and biographical research

Maren Heise, Wolfgang Meyer

Abstract

This paper has been prepared within the framework of the third Cedefop report on vocational education and training (VET) research in Europe which is dedicated to evaluation and impact research. The objective is to provide an overview of national and cross-national research into the benefits of education and training from a life-course perspective. The existing literature and approaches in this field are reviewed and their results discussed from a European perspective. The report tries to develop an integrated perspective on the material and non-material benefits of education and training throughout the life course and introduces the theoretical approach of life-course and biographical research and its methodological implications. The added value of life-course studies and biographical research for conventional research on education and training benefits is highlighted through lines of thematic investigation. After a review of current empirical work carried out at national and European level, a summary of key findings is presented which highlights those results that allow European (or at least cross-national) comparisons to be taken into consideration. Finally, addressed are the implications of research evidence for policy and practice and recommendations for further research and on how to improve data comparability, particularly at European level.

Table of contents

1. Introduction	324
2. Individual benefits of education, training and skills	325
3. Approach and focus of investigation	328
3.1. Life-course and biographical research	328
3.2. Relevance of life-course and biographical research for the investigation of education and training benefits	334
4. Empirical evidence	338
4.1. Life-course and biographical research in Europe	338
4.1.1. Monetary returns on education and training and life-time income	339
4.1.2. Education, training and labour-market participation	340
4.1.3. Education and transitions	340
4.1.4. Generational differences in education and training benefits	341
4.1.5. Social differences in education and training benefits	342
4.1.6. Subjective perception of educational benefits in the biography	342
4.2. Research design and data	343
4.3. Empirical Studies	346
4.3.1. Studies at national level	347
4.3.2. Cross-national studies	352
5. Discussion of results	357
5.1. Individual monetary returns on education and training	357
5.2. Education, training and labour market participation	359
5.3. Education, training and transitions	360
5.4. Generational and cohort differences in education and training benefits	361
5.5. Social differences in education and training benefits	361
5.6. Non-material benefits of education and training and subjective biographical perception	362
5.6.1. Non-material benefits of education and training	362
5.6.2. Subjective biographical perception of educational benefits	363
6. Conclusions and recommendations	365
List of abbreviations	367
Annex: list of data and information sources	368
References	371

List of tables and figures

Tables

Table 1: Longitudinal data sets for research into the impact of education and training in Europe	346
Table 2: National studies on education and training benefits from a life-course perspective	348
Table 3: Selected cross-national studies on education and training benefits from a life-course perspective	354

Figures

Figure 1: Individual benefits of education and training	326
Figure 2: Cross-sectional design	331
Figure 3: Retrospective design	332
Figure 4: Comparative cross-sectional design with retrospective questions	332
Figure 5: Panel-design	333
Figure 6: Panel-design with retrospective questions (source population only)	333
Figure 7: Panel-design with retrospective questions (additional sampling)	333
Figure 8: Lexis diagram	334
Figure 9: Prospective data designs	343

1. Introduction

This paper has been prepared within the framework of the third Cedefop report on vocational education and training (VET) research in Europe, which is dedicated to evaluation and impact research. The paper aims to present an overview of national and cross-national research into the benefits of education and training from a life-course perspective and will discuss relevant approaches and methodologies in the field. Since other contributions focus on VET impacts on a macro or meso level, our study is concerned with the individual, or microsocial benefits of education. In particular, we look at the impact of education, training and skills from a life-course perspective. Life-course and biographical research complements other studies by investigating the long-term educational benefit for individuals and the impact over time of social and structural change. The aim of our study is to provide an overview of existing literature and work in this field and to discuss its findings on the benefits of education and training for the individual in different European countries. In contrast to other approaches, life-course and biographical research is not limited to investigating material issues such as employment and income differentiation, but also focuses on the non-material outcomes of education and training. Our paper will, therefore, consider the material as well as non-material benefits of education and training.

As with many other contributions in this report, the basis of this paper is a secondary analysis of recent empirical studies. Besides reviewing published literature for this investigation, we use sources from internet-based material, national experts and grey literature. A complete list of sources is attached in the annex. Nevertheless, the search for relevant material turned out to be quite complicated, especially when trying to provide a European overview. As little work has been found in southern European Member States, any generalisation of results remains limited. Furthermore, it has become obvious that national

research is diverse in both its quantity and quality, which is clearly reflected in the data sources used. Comparisons between different countries are therefore difficult to reach. These and further problems of investigation will be discussed in the following chapters of the paper.

Following the scientific debate on what benefits of education, training and skills precisely are, the second chapter sets out different concepts and tries to develop an integrated perspective of material and non-material benefits. Furthermore, a classification of education and training benefits is attempted in order to provide an analytical tool for the later arrangement of empirical research in the field. The third chapter introduces the approach of life-course and biographical research and illustrates the methodical implications for empirical research work. The focus of the investigation into the benefits of education and training is explained from the perspective of life-course analysis, and the added value of life-course studies for conventional research into education and training is highlighted. Chapter 4 provides an overview of existing empirical work on the benefits of education and training from a life-course and biographical perspective. Also in this chapter the main methods used to investigate the impact of education and training through life-course and biographical research are clarified and supported by studies from national and cross-national empirical work. As most of the studies are based on different national longitudinal data sets, a comparative and critical approach is adopted. Chapter 5 sums up the key research results. The evidence for the material and non-material benefits of education and training throughout the individual's life course is reviewed and scrutinised critically for its relevance for European VET research. The final chapter tries to derive some implications for policy and practice through focusing on recommendations for further research and on how to improve data comparability at European level in particular.

2. Individual benefits of education, training and skills

The simple assumption that education and training have short-term and long-term effects on life-course patterns, at least on the individual's career and (life) wages, is generally accepted and its correctness seems to be fairly obvious. But when it comes to actual education and training benefits, questions arise: what do we understand by the term 'benefits' and – equally contentious – how can these be measured? Furthermore, education and training can take quite different forms as regards its type, content, degree of formality and resources invested. This chapter therefore deals with current perceptions of the benefits of education and training and their consequences for empirical investigation. As concepts of education, as well as training and skills, differ strongly not only between European countries but also because of different 'schools of tradition', it is necessary to clarify the definitions of education and training as used in this paper. A research review of empirical work needs, as an introduction, a relatively simple technical understanding of its central terms (education, training and skills), in order to clarify the various definitions of education, training and skills/qualifications in existing empirical surveys:

(a) education:

the term education is used to mean programmes of learning with general objectives relating to the personal development of the learner and his/her acquisition of knowledge. Formal education takes place in a structured and taught manner normally in schools or other educational institutions. Education is also a property that a person possesses after going through this process, usually confirmed by a formal and generally accepted qualification. Therefore, education as a concept is tangible and is – in comparison to intangible terms like learning – relatively easy to measure (Tessaring et al., 2003; Desjardin, 2001);

(b) training:

in comparison to education, training is more directly related to the preparation of individuals for employment in current or emerging occupations. Training can take place on-the-job as well

as off-the-job, the latter usually being organised as programmes offering a sequence of courses. Training can include applied learning, problem-solving skills, work attitudes, general employability skills, and the occupational-specific skills necessary for economic independence as a productive and contributing member of society. The training a person has obtained is usually measured in quantitative terms (duration, frequency) discriminating between types (initial, continuing), degrees of formality and place (Pfeiffer, 2001);

(c) skills:

The term skill is defined as the relevant knowledge and experience needed to perform a specific task or job. Skills also constitute the product of education, training and job experience together with relevant technical know-how. Specific skills can only be measured through elaborate testing procedures which are normally too costly to perform. As an alternative to the lack of objective measurements, surveys rely on subjective statements from respondents regarding the skills they believe they possess. This is unlikely to be reliable, because the subjective perception of skills can differ strongly between individuals (Bjørnåvold and Tissot, 2000; Mertens, 1999; ETF, 1998).

Most empirical studies seem to be based on rather implicit definitions of education and training and reveal a somewhat unstructured picture. As there are many different notions of complex concepts like education, training or skills, there are also many different perceptions of the benefits of education and training. In econometric studies, for example, individual benefits are often reduced to educational returns in terms of income or wage development, avoidance costs and other measurable economic benefits. Predominantly based on human capital theory (Section 4.1.1.), these studies have a clear concept of educational benefits which is as consistent as it is simplistic.

In contrast, psychological and educational research concentrates on non-monetary or 'wider' benefits like health, reduction of criminal

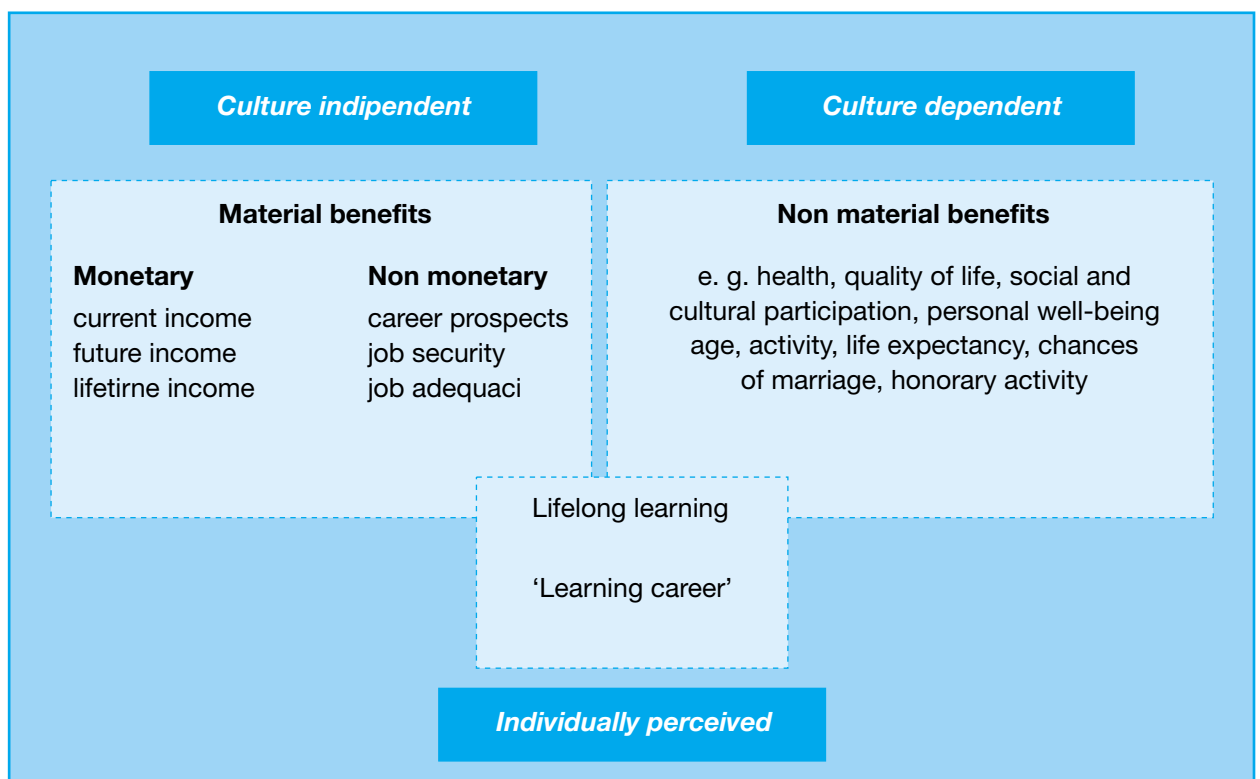
behaviour or social exclusion, usually without providing any corporate concept of the benefits of education and training. Theoretical educational discussion does not really contribute any greater clarity. Lacking more or less any descriptive concept, most of this research dissipates into some kind of philosophical discourse about the meaning and importance of educational benefits.

From a sociological perspective, benefits are perceived as bringing all manner of advantages – material or non-material – concerning the individual's place within society. Social institutions (e.g. educational system, labour market) and individual behaviour (e.g. educational decisions) determine the chances and risks of attaining, or not attaining, the social position to which an individual aspires. Such a definition allows at least for the integration of economic and non-economic benefits (e.g. power, prestige, satisfaction) and – as sociological research shows – points to their strong interrelationship. The all-embracing sociological concept is social status, i.e. the position of a person in the social structure of a certain group or society. Status

can be assigned (e.g. through nationality, age) but also attained actively through individual performance. It is assumed that education and training play a major role in status attainment. Within this concept 'hard' education and training outcomes, that might be termed material benefits (employment, occupational position, etc.), are more or less directly linked to monetary aspects while other 'soft' or non-material outcomes are rather indirectly influenced by education and training and often conveyed through these material benefits. For example, health or participation in social and cultural life are, at least in part, influenced by individual earnings or the economic status of a person. We recommend the following differentiation between material and non-material benefits as a first analytical tool in this review of studies dealing with the benefits of education and training.

Nevertheless, this applied perspective also brings with it some difficulties. Although it seems to be common sense that material benefits are mainly represented by patterns of employment, income and career prospects, concepts of

Figure 1: **Individual benefits of education and training**



non-material benefits are more controversial ⁽¹⁾. Moreover, non-material benefits are not primarily objective constructs but are merely the result of subjective judgements or cultural dispositions. Marriage, for example, has largely been seen as a social benefit and higher education has increased the likelihood of marriage. Today – as a result of individualisation – marriage is losing its attractiveness, especially for those with experience of higher education. Nevertheless, some non-material beneficial aspects can be considered substantially agreed upon, such as health and social participation, even if the perception of their benefits remains again rather subjective. For analytical correctness we recommend three additional dimensions of education and training benefits: individually perceived benefits; culture dependent benefits; and culture-independent benefits.

Most empirical research into the benefits of education and training claims to apply an objective perspective as a benchmark for beneficial outcomes. But this objectivity is rather questionable even with regard to material benefits, because every benefit remains subjective at micro level. As a kind of compensation for this problem of attribution (how can we know then what is an individual benefit and what is not?) an implicit transfer of a macrosocial to the individual perspective is carried out. Whatever is labelled a benefit from a mass perspective is also a

benefit from the individual perspective and *vice versa*. Understanding individual (micro) benefits is, therefore, largely congruent with social (macro) benefits (for a discussion of the macrosocial benefits of education see the contribution of Green et al. to this report). There is also a tendency to stress the intended outcomes of education and training rather than the unintentional benefits or harm.

Research from a life-course perspective tends to concentrate on those education and training benefits which have a longer-term relevance in an individual's development and which undergo a form of accumulation over the life course. Among possible material benefits are primarily (lifetime) income, employment opportunities, career prospects and the avoidance of unemployment. Non-material outcomes of education and training in which life-course research has an interest relate mainly to health, marriage and family formation as well as social participation and status attainment. Furthermore, the inequalities, or neutrally expressed differences, in accessing education and training and the benefits of education and training between social groups, are of special interest in life-course research. The following chapter provides explanations for this special interest by giving a short introduction to the theoretical approach and focus of empirical investigation of the life-course perspective.

⁽¹⁾ The separation of material and non-material benefits is, of course, artificial. While, for example, monetary outcomes can be comparatively easily labelled as a material benefit, the occupational position a person achieves is not only a material and sometimes (e.g. compared to a position occupied before) not even a material benefit, but can also be a non-material one – expressed, for example, in achieving higher social prestige.

3. Approach and focus of investigation

The individual life course can be observed from very different viewpoints and with a great variety of social theories in mind. For the purpose of this research review, the following short definitions of life course and biography (according to Meulemann, 1990a) should be used:

- (a) the life course is defined as – and mostly determined by – a series of individual decisions between institutionally offered alternatives which an individual is forced to make at several specific points in history. Each decision influences the path through the institution and the future decision situation. The opportunities presented by social institutions open different pathways of one's individual life through society and its social structure. These generalised pathways are divided into typical patterns and several well-defined sequences. Changes between these pathways (in form of status passages or social mobility) are only possible at special historical transition points, leading from the exit of one sequence to the entrances of a limited number of new sequences. Although the historically observable individual life course is generally structured, and in main parts determined by social institutions, individual decisions between the opportunities offered at these transition points are equally important for its development;
- (b) Biography is the subjective interpretation and digestion of all life-events, from which decisions during the life course (and their results) are only one (though important) part. Moreover, biography is the self-perception of one's life history and is recognised by the individual as a single entity (in contrast to the clear-cut sequences of the pathways determined by social institutions). While individual biographies are structured by more or less the same patterns (due to the institutional design of life course), homogenous forms of self-perception and identification with social positions seem to be obvious. As a result, typical sociocultural milieus with common interests, experiences, feelings, knowledge, etc., will be

formed and have a major impact on social stratification, which itself influences the institutionalisation of life courses by offering opportunities at the transition points. The sociocultural milieus and their way of thinking of society are merely reflected in biographic reports on individual lifestyles or personal autobiographies, these being the most important sources for biographic research. As Roberts (2002, p. 1) mentioned, 'biographical research is an exciting, stimulating and fast-moving field which seeks to understand the changing experiences and outlooks of individuals in their daily lives, what they see as important, and how to provide interpretations of the accounts they give of their past, present and future.'

By using this differentiation, life-course research concentrates on the decision situation offered by institutions and its well-defined alternatives (which are mostly also guaranteed by law), while biography focuses on the individual (psychological) process of perceiving, assimilating, understanding and reconstructing reality. It has to be mentioned that other definitions and separations between life course and biography (if any at all) are available in literature and the authors of the studies presented here may not necessarily agree with this characterisation.

3.1. Life-course and biographical research

While talking about life-course and/or biographical research, one has to consider that most disciplines within the social sciences have some links to this kind of research. A number of examples concerning specific research questions on the relationship of education and individual life course will be presented in Chapter 4. In this chapter the focus lies on the historical development and its methodological implications of life-course and biographical research. Only a brief overview is possible and no systematic investigation of all theoretical perspectives should be considered (for further information:

Heinz, 1997; Ecarius, 1996; Mayer, 1990; Voges, 1987; Sørensen, 1986; Clausen, 1986; Elder, 1985; Kohli, 1978). However, the strong input of both economic and sociological thinking on the development of life-course and biographical research should be mentioned here.

As a result of World War II, social scientific research in Europe almost disappeared in the 1940s. Many economists and social scientists escaped to America, finding not only peace but also a continuously improving infrastructure for their research within an open-minded society. Stimulated by this 'brain-drain' from Europe (and other nations), the newer research areas of economics and sociology developed very quickly. One strong input for life-course research, the study of social change, came out of some of the early studies on city growth, industrial change, and migration in the US, which itself formed one of the most important sociological fields of research interest (for a brief overview and introduction see Sanderson, 1995). In general, this research tradition is mainly committed to a macrosociological perspective and strongly related to the macroeconomic view on long-term developments. Depending on the political position of the researchers as well as on membership of competing scientific schools different mixtures of scientific disciplines (e.g. political economy, socioeconomic research) and terms to describe and explain the phenomena under observation (e.g. modernisation, imperialism) have been developed. In the 1960s and the early 1970s, many research studies were conducted on the socioeconomic development of countries. Most had a comparative perspective and they were mainly based on (Neo-) Marxist or structural-functional theories.

Confronted with Karl Marx and his postulation of historical materialism (the first explicitly formulated theory of social change with class conflicts as its driving force, dominating theoretical thinking, at least in Europe, up to the midst of the 20th century) functionalism, the North American mainstream of sociological theory-building of this time, was criticised for its static and therefore conservative implications. As a reaction to this criticism, Parson (1966) linked his structural-functional theory to biological evolution theory. While the British social theorist Herbert Spencer failed to earn broad respect for his trial to connect sociological thinking on biological evolution theory only a short time after its revolutionary influence

at the end of the 19th century, Parsons reformulation had been recognised as a stimulating innovation. This paved the way for several theoretical and empirical works which were summarised under the label of 'modernisation theory' (although they never built one homogenous theoretical school; as an overview see Zapf, 1975).

What is common to these studies of social change (as well as for dependency theory or transformation theory) is the attempt to explain social development primarily with macrosociological variables (for an overview on these theories see Box 1). This is also true for macroeconomic modelling, especially those studies concerned with labour market development (including neoclassical theory, as well as Keynesianism; for an overview on labour market economy see Franz, 1991; Ashenfelter and Layard, 1986; Holler, 1986). Although micro theories of social action are not generally rejected, there are only weak ties to them within these studies. While most modernisation theorists (economists as well as sociologists) in functionalistic tradition argue in terms of social systems (sometimes using individuals only as puppets on the strings of norms and sanctions, which perfectly determine their behaviour), the majority of macroeconomists refer to the *homo oeconomicus* concept, describing human decisions as perfectly rational in terms of economic considerations. In further theoretical development, both kinds of oversimplification proved to be too weak as a satisfying explanation of social change.

Contrary to this, the second major line of research associated with life-course and biographical research focuses on individual development and has its roots in microsociological, ethnographical, psychological, and pedagogical theories (for an overview see Elder, 1991). Early works on family patterns and migration in Europe and the US considered the importance of personal history to explain individual decisions. To analyse this, a longitudinal approach to life history (Volkart, 1951, p. 593), including for example continuous qualitative life records, had been first developed by W. I. Thomas early after World War II. Although some research (especially on child welfare in the US) used these new methods, the popularity of such (qualitative) longitudinal studies stayed very poor until the mid-1960s. Other examples of the origins of life-course and biographical research at microanalytical level can be found in the theoretical

Box 1: Modernisation theories

The modernisation approach had been primarily evolved to explain underdevelopment by using the historical observable development patterns (and its causes) of advanced (western) societies as an analytical model. By using the label 'modernisation theory', several, sometimes competing, theories on sociocultural evolution have been summarised. Basically these theories are united by two assumptions (Sanderson, 1995; p. 212 et seq.).

First, development is postulated as a standardised, general transition from underdevelopment to modern society by several steps. Rostow (1960), for example, distinguished five stages of economic development: traditional society, the preconditions for take-off, take-off, the drive to maturity and mass consumption. As important influences for transition from one stage to another he assumed social patterns, political structures and value systems as preconditions for economic development. These variables had been measured on a national level (not mentioning regional or individual differences) and used for international comparisons.

Second, modernisation theories recognise development as an endogenous process of national societies, only determined by internal deficiencies or capacities. International networks and dependences had not been mentioned by this approach in its early formulations. Therefore it had been criticised by dependency theorists in the early 1970s, which put (economic) interconnections between developed and underdeveloped countries as the focus of its argument (Caporaso, 1980; Palma, 1981; Valenzuela and Valenzuela, 1978). Common to modernisation theories, dependency theory argues purely with macrosociological (e.g. migration balances of elites) or macroeconomic (e.g. terms-of-trade) variables.

More recent versions of modernisation (e.g. the concept of reflexive modernisation of Beck, 1994) try to avoid the disadvantages of those early approaches by integrating other concepts of social change (like dependency theory) and by using micro theoretical explanations to support their macrosociological (or macroeconomic) considerations. For actual development of modernisation theory and critical comments on the historical background see for example Berger (2000), Engerman et al. (2003), Tiryakian (1991).

More recent versions of modernisation (e.g. the concept of reflexive modernisation of Beck, 1994) try to avoid the disadvantages of those early approaches by integrating other concepts of social change (like dependency theory) and by using micro theoretical explanations to support their macrosociological (or macroeconomic) considerations. For actual development of modernisation theory and critical comments on the historical background see for example Berger (2000), Engerman et al. (2003), Tiryakian (1991).

reflections on generations (especially the work of Mannheim, 1952) and in the development of the cohort concept in demographic research (e.g. Ryder, 1965). The analysis of family-cycles (Glick, 1947) and of passage between different age groups (Gennep, 1960), and those parts of sociology which had been interested in different life-periods (e.g. the sociology of ageing, the sociology of youth) are further examples.

To connect the research lines on social change and on individual development, a third theoretical perspective was of great importance. Starting with the discussion on the 'open society' (Popper, 1966) and its opportunities for intergenerational mobility in the 1950s, inequality research reached another stage of investigation by asking how people get into their social positions (e.g. classes). Important steps were made through the analyses of status attainment processes within

societies (Blau and Duncan, 1967), the discussion on objective placement in classes and the meaning of collective judgements like prestige (Svalastoga, 1959), the differentiated analyses of occupational mobility (Rogoff, 1953) and the empirical definition of position structures as units for mobility research (Goldthorpe, 1980).

Starting with an understanding of intergenerational mobility through the use of mobility tables in cross-sectional surveys, the focus moved more and more to a consideration of intragenerational mobility and the influence of social institutions like school, family, the economic system and so to structuring the individual life course (see Mayer and Müller, 1986; Mayer et al., 1991). As a result, status passages, transitions and critical life-events during the occupational career came into the spotlight of analyses. Within this research tradition, individual qualification and the development of the educa-

tional system has been considered as one of the most important determinants of these processes. Hence, the individual development perspective has been strongly linked with the macroprocesses of social change as well as with the quickly developing microeconomic research on labour market development, which has increased following the ongoing labour-market crisis in Europe since the 1970s.

The first steps towards the institutionalisation of life-course and biographical research as a research field in its own right (in the US as well as in some European countries like Germany, the United Kingdom, the Netherlands and the Scandinavian states) can be found in the mid 1970s. For the first time, conferences were held and handbook articles and readers on this topic were published (Elder, 1975; Kohli, 1978). However, life-course and biographical research still remained strongly related to the sociology of age and family – studies on the transition within the educational and/or the occupational system continued to be exceptions to the norm. An increasing interest in topics like status passages during life course (for an overview see Levy, 1991) and the institutionalisation of standard biographies (Kohli, 1988) began to appear only at the beginning of the 1980s.

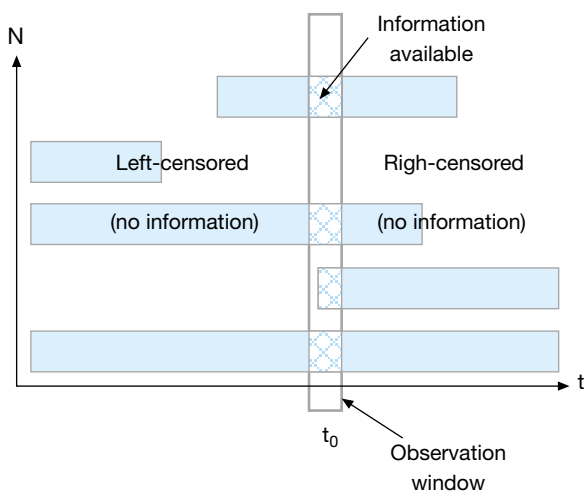
One important aspect of the growing popularity of life-course analysis within the context of educational and labour-market research in the early 1980s was the improvement in data quality and analysis techniques. As presented later, the major data sources for longitudinal research in Europe had been implemented no earlier than the beginning of the 1980s. In Germany, for instance, the interdis-

iplinary Special Research Unit 3, set up in 1980 at the Universities of Frankfurt/Main and Mannheim, initiated and developed over the next 12 years some of the most important data sources for life-course research to date. Examples of this work are the welfare surveys, the German socioeconomic panel (GSOEP), and the German life history study (GLHS) (Hauser et al., 1994). Today in Germany, not only scientific surveys but also process-produced data are available for life-course research on labour-market development. The Federal Institute for Employment Research (IAB) offers a data warehouse, which includes longitudinal data from the labour offices, the social statistics and several regular surveys (some of them in panel design) and tries to match this data to increase the informational basis on every case (Schwarzfärber, 2002). Similar developments can be found in other European countries (especially in the Netherlands, Scandinavia and the UK). Even in the US only a few comparable data sets can be found earlier than 1980 (e.g. the Michigan Panel Study of Income Dynamics started at the end of the 1960s).

Compared to a single representative cross-sectional survey (Figure 2), the claims put forward for the quality of the data of life-course research are obviously very high. A perfect data set should contain a complete sequence of information from the beginning to the end (which in many cases means from birth to death of a person). Cross-sectional surveys (as for example used in opinion polls) are only able to represent exactly the information valid at the time of data collection. It might tell us whether one person is employed or not and whether he (or she) has a university degree. In general, this kind of survey will not tell us anything about the individual historical development (past and future) and the circumstances under which this development has taken place. The data set is incomplete due to right and left censoring.

A data set is called left censored if information needed from the past of a single person's life course is missing. One simple solution to this problem is to ask for this kind of historical information during the interview, e.g. using questions like: 'when did you leave school?' or 'how long have you been employed?' (Figure 3). Although some elaborate techniques have been developed, the collection of retrospective information is strongly restricted by the respondent's ability to recall the facts required (Papastefanou, 1980). Due to the results of methodological studies, the use of retrospective data

Figure 2: **Cross-sectional design**



collection methods concerning central events in one's life (e.g. marriage, birth of child) seems to be possible (Blossfeld, 1985b). Questions regarding educational and employment history proved to be of reasonable validity too (Brückner, 1994; Dex, 1991; Mayer and Brückner, 1989). Nevertheless, the use of retrospective data collection is limited: subjective judgements and opinions especially seem to be strongly biased by an individual's attempt to 'streamline' their own behaviour and decisions (Schwarz et al., 1994; Schwarz and Sudman, 1994).

By using a single cross-sectional design another serious problem occurs related to the historical time of data collection. The information available at the time of observation is always right-censored (lack of future information) and may become obsolete at a future date due to social change (e.g. political decisions, new laws, and economic development). To measure these effects one needs comparative representative surveys at regular time intervals, which also try to capture the individual life history by additional retrospective questions (Figure 4). However, such analyses only allow population comparisons and are not able to follow individual development over time. Retrospective questions are necessary, but give no information on opinions or options facing the individual in the past. Therefore, in order also to investigate the reasons for individual decisions, panels should also include prospective questions, e.g. concerning future plans, problems, alterna-

tives, preferences, etc., which afterwards form the basis for explaining decisions taken.

To analyse the individual life course over time, a panel design is needed, for which the same persons are interviewed again at regular time intervals (Figure 5). Obviously, the technical requirements (and therefore the expenses) increase. In addition to the regular costs of representative surveys one has to control addresses and invest some extra time to find people who moved between the two dates of investigation. Additionally, some special problems associated with this kind of research design occur (for a brief overview see Blossfeld and Rohwer, 1995; p. 11 et seq.; detailed information can be found in Hsiao, 1986). From the viewpoint of life-course and biographical research, pure panel designs without any retrospective questions are limited because they only offer information for a series of discrete points on the time scale.

Only a panel-design with retrospective information included (Figure 6) will give the opportunity to investigate individual life courses and their continuous development. Even then, there is still one problem remaining: the attrition of the sample. While those previously sampled in panel design will be repeatedly interviewed, the number of participants declines as time goes by (panel mortality). Moreover, the data set stays representative for the original sampling process, ignoring the population change (due to migration and fertility) in the society under observation. There-

Figure 3: Retrospective design

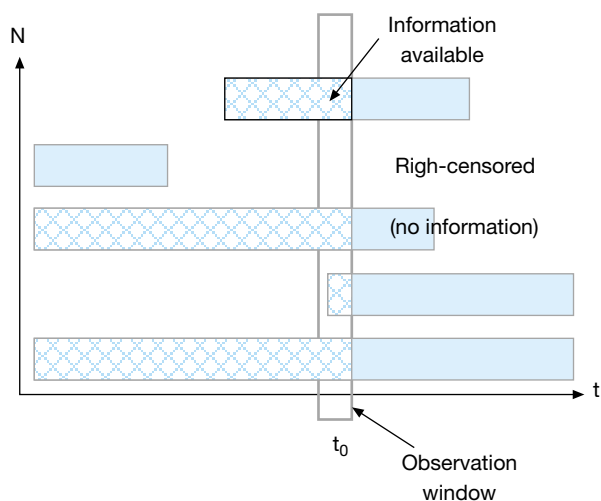


Figure 4: Comparative cross-sectional design with retrospective questions

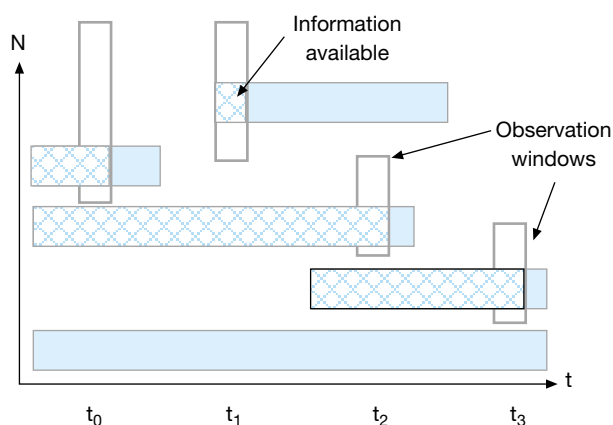
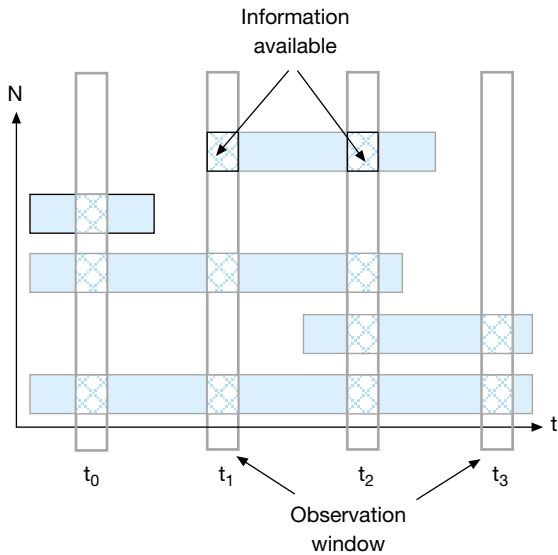


Figure 5: Panel-design



fore, additional sampling at each point of observation (or at least at some reasonable time intervals) is necessary to keep the information of the panel data representative (Figure 7).

Although some of the problems mentioned here are almost the same for life-course and biographical research, there is at least one important difference that makes it more difficult to collect adequate data for analyses in life-course than in biographical research. According to its interpretative approach, which tries to understand the individuals' percep-

tions of their own biographies and to analyse them in detail, biographical research uses qualitative, hermeneutic methods of analysis. The oral or written biographical material is generally interpreted by the researcher applying interpretation techniques of the so-called life-history method: 'A biographical study is the study of an individual and her or his experiences as told to the researcher or found in documents and archival material' (Creswell, 1998). In contrast to this, life-course research is interested in explanations of population development by using representative data sampling and quantitative analysis methods to draw conclusions. Obviously, most data collection problems listed above are closely related to the need for representative data sampling, which is seldom used in biographical research for its purpose of understanding instead of explaining.

Moreover, compared to common quantitative approaches, life-course research introduced time as the most important new variable. Time can be observed from three different points of view, which are strongly interrelated. From an individual perception, time means the process of ageing, while from a collective point of view time is primarily historical development. Both aspects are connected in the context of cohorts, which are defined by means of a common historical starting point for individuals (e.g. those people born in the same year form birth cohorts, staying at the same time in specific social institutions such as school). This interrelationship

Figure 6: Panel-design with retrospective questions (source population only)

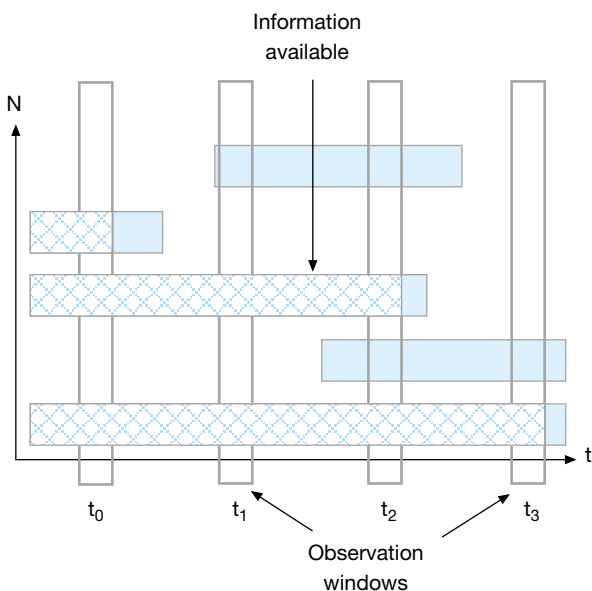
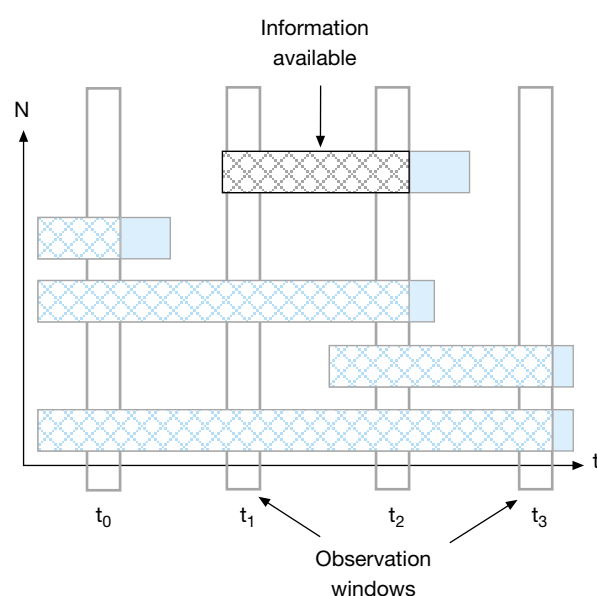


Figure 7: Panel-design with retrospective questions (additional sampling)



was discussed and presented in diagram form (Figure 8) by the demographer Lexis (1875) at the end of the 19th century. Nevertheless, most social scientific research concentrates only on one of these aspects. Life-course research offers the possibility of separating age, cohort and period effects by using specific statistical measures once these had been developed (Hagenaars and Cobben, 1978; Rogers, 1982; Mayer and Huinink, 1990, 1994) ⁽²⁾. Moreover, the computer equipment required for handling longitudinal data sets of adequate size did not become available before the beginning of the 1980s (for an early introduction see Tuma and Hannan, 1984).

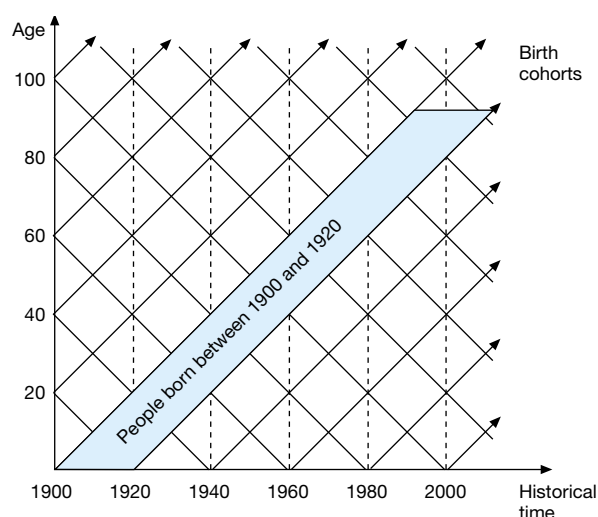
The central and commonly applied statistical method of life-course research is 'event history analyses' (for introduction see Yamaguchi, 1991; Blossfeld and Rohwer, 1995; Giele and Elder, 1998). Using these techniques requires a special data structure. First, as dependent variable (the event), a transition between discrete states has to be defined. In general, two clearly divided states (one initial and one destination state) are used. Secondly, the time axis is assumed to be continuous and – as analytical unit– the time span an individual spends on this axis until a change of states occurs (the episode or spell) will be used for analyses. Hence, a precise and clearly distinguishing definition of the two states and a permanent observation of dura-

tion time are needed. Thirdly, the transition must happen at an explicitly measurable point on the time axis and not as a gradual change from origin to destination state.

Right censoring can be handled adequately by using (non-parametric) survival analyses or a group of related parametric transition rate models, which additionally need the definition of a specific shape of time dependence for the transition rate. In contrast, left censoring is a serious problem in that transition rates depend on the duration in the original state (which commonly has to be assumed). Moreover, some other theoretical and methodological problems are experienced using such advanced statistical analyses (e.g. Bretagnolle and Huber-Carol, 1985; Hamerle and Tutz, 1989; Galler and Pötter, 1992).

With respect to these restrictions, event-history analysis can be done by using standard statistical software packages like SAS or SPSS. However, such procedures were not available in these programmes before the end of the 1980s and the capacity of personal computers for this kind of calculation was not sufficient before the mid-1990s. Hence, the improvement of life-course research was highly dependent on the technical development in statistical hard- and software. We have to consider life-course and biographical research as still a very young and fast developing new discipline, influencing (and being influenced by) a great variety of social sciences. Amongst these, economics and sociology seem to be the most important.

Figure 8: Lexis diagram



3.2. Relevance of life-course and biographical research for the investigation of education and training benefits

The objective of the last section was to describe briefly the development of life-course and biographical research and to give a short overview of the methodological implications directly related to this specific perspective. As outlined above, life-course and biographical research was not primarily developed to investigate the benefits of education or labour-market

⁽²⁾ A simultaneous consideration of all three effects within a single model is not even possible with advanced theoretical or statistical methods because of the tautological relationship between the three effects (see for more detail Descy and Tessaring, 2001; p. 322)

processes. Nevertheless, these research topics have made at least strong contributions to the development of life-course and biographical research as a specific scientific research field. In the following sections, the input of life-course and biographical research on the development of educational and labour market research is discussed. The main question is to examine the central contribution of life-course and biographical perspective for these research areas. Again, no complete overview or systematic introduction into these studies should be expected.

In the second half of the 20th century, education was one of the most important and sometimes most controversially discussed topics within European societies and a main source of new social movements. The most recent developments have emerged from the results of the PISA study, ranking the efficiency and competitiveness of national educational systems within OECD countries by measuring the performances of schoolchildren on comparable levels and within different subjects (OECD, 2001a, 2002a and b, 2003). While some European countries (especially Finland) did very well, others such as Germany and Luxembourg achieved only poor results, which initiated a political debate in these countries ⁽³⁾ (for the German results and reactions see Deutsches PISA-Konsortium, 2001, 2002; Adam, 2002; Terhart, 2002). Previous historical events (especially the 'Sputnik-Shock' 1957 and the Student-Movements at the end of the 1960s) also stimulated political discussion inside as well as outside of the parliaments in several countries all over Europe and finally led, to a greater or lesser degree, to deeply influential reforms and a restructuring of national educational systems.

Unsurprisingly, political controversies also encourage and support scientific research and therefore many different research institutions across the whole of Europe have produced studies and publications on educational topics. Among the most important issues investigated by this research are:

(a) the world wide expansion of education since

the 1950s. Not only in Europe but all over the world, an increasing number of young people are enrolled in education, with the greatest movement towards higher and higher levels of education. Research enquiries try to understand the reasons, as well as the results of this process for the world community, international relationships, nation states, and regional development (e.g. Boudon, 1974; Dore, 1976; Müller, 1998);

(b) equal access to education. One important point associated with the expansion of education is the question of whether there are equal opportunities for entering different levels of education and what are the criteria (e.g. ability, money, social status) used for selection. In Europe, the ideal of equal opportunities and selection focused strongly on ability is widespread, although the reality in most countries varies (e.g. Shavit and Blossfeld, 1993);

(c) right to follow individual aspirations. Particularly in contrast to the communist states of eastern Europe, which postulated the state's preferences on the use of individual education, the western world followed the principle of free decision-making within the educational system (excluding from this right the duty to attend schools). Therefore, not only personal abilities and performances but also individual aspirations and wishes were put into the focus of analyses (e.g. Duncan et al., 1971).

Undoubtedly, studies from the life-course and biographical perspective made some very important contributions to these (and of course some other) debates. By putting cohorts into the centre of analyses, the expansion of education proved to be one important source of inequality amongst generations and the increasing importance of education for status-attainment can be demonstrated (Mayer and Blossfeld, 1990). The question of equal opportunities cannot be addressed at any one particular point of the educational career, because the circumstances at its beginning and

⁽³⁾ Besides the great differences of the PISA results between the Member States, one has to consider important differences in the public and in the scientific reactions. By using the OECD database on press reaction (OECD, 2002a) and the number of published press reports in each country as an indicator, the range within the EU ranges from one article (Greece and Luxembourg) to about 600 in Germany. More than half of all articles collected for EU countries are from Germany. Belgium and Austria, with around 100 articles, are next. Therefore, the German reaction on PISA is not representative by far for the EU. Compatible data for the scientific debates on PISA are not yet available in Europe.

the process itself are important influences which have to be considered (Meulemann, 1990a). And finally, individual aspirations, as well as abilities and performance, are not stable parameters across time – they change because of personal and societal development.

As dependent variables, some very important transitions into, within and out of the educational system were analysed. The transition from school to university and from the educational to the occupational system was particularly examined. For independent variables – besides the operational definition of education (which in practise offers many difficulties, as discussed later) – some personal characteristics (e.g. gender, age, social status, occupation of parents) and structural aspects (e.g. school structure or system, region, class performances) were used. In general, a very broad spectrum of analyses – very similar to the one presented here – was used for life-course and biographical design in respect of education since the beginning of the 1980s and this changed at all events the scientific discussion on educational topics.

Compared with the tremendous amount of research on education, literature on vocational training and occupational careers seems to be rather small. While work is one of the central themes in sociology and economics, and labour-market processes attracted a great scientific attention following the labour-market crisis in Western Europe shortly after the first oil crisis in the 1970s, the benefits of education and training for the occupational life course are more or less marginal topics inside this field. Other contributors will accentuate this kind of research from a macro perspective in the third Cedefop report on VET-research. Therefore, only some short remarks on the development of social and economic research on work, employment, occupation, and the labour market with respect to the impact of life-course and biographical research are necessary here.

Again, three specific topics should be highlighted:

(a) entrance to the labour market. The increasing extent of youth unemployment has focused attention on the circumstances under which the transition from the educational to the employment system happens (e.g. Farvaque and Salais, 2002; Jahnukainen, 2001; Kortteinen

and Tuomikoski, 1998; Blossfeld, 1985a). The adaptability of the VET-system to economic needs, which underwent a great deal of investigation from an international comparative perspective, became an important research topic;

(b) unemployment and the chances of re-entering the labour market. The increasing number of unemployed people in Europe also led to the question of how to get them into work again (for the evaluation of active labour-market policy from a macroeconomic point of view see the contribution of Hujer et al. to this report). Moreover, to avoid long-term unemployment with its socio-psychological consequences (as demonstrated earlier by Jahoda et al., 1933; and re-confirmed by other analyses e.g. Jahoda, 1982; Kelvin and Jarrett, 1985) this topic became an important political issue. To develop adequate measures, scientists (especially economists) became involved in the political process (e.g. for the EU, the European Employment Strategy and the National Action Plans (NAP) for Employment: European Commission, 2000, 2003; for Germany also: Senatverwaltung, 1997);

(c) career-mobility and lifelong learning. One of the most important resources for the economy in developed countries is the skill level of the employed. Due to increasing worldwide competition, the pressure to increase individual competences and to adapt them to accelerating innovation cycles is growing both for individuals and companies. From an individual perspective, lifelong learning is increasingly becoming a premise for job security. However, the flexibility needed to acquire new skills also requires the individual to change jobs more often than before and to accept periodic phases of unemployment. According to the individualisation thesis of Beck (1994), 'patch-work' career patterns like this will take the place of family-like types of company memberships (for empirical research on the risks of this kind of job career see for example Andreß, 1989; Büchel, 1992; Felstead et al., 1997; Tuominen, 2000; van de Werfhorst, 2002).

The contribution of life-course and biographical research to these three topics (as for some others) is again very straightforward. As entrance, or re-entrance, to the labour market is a time-dependent transition (according to the dura-

tion in the educational system or whether or not employed), the use of longitudinal data and event history analyses proved to be the only adequate way of analysing these processes. Moreover, life-course and biographical research assumes time outside the employment system not only dependent on specific historical situations (e.g. labour-market imbalances due to business cycles) but also on individual experiences and skills assembled through the life course. Both effects can be separated and controlled for the analysis of cohort differentiation, which seems to be the right way to test the 'patch-work' career assumption of individualisation theory as an effect of structural social change.

In conclusion, both educational and labour-market research was productively influenced by the life-course and biographical perspective and its techniques of analysis. However, life-course and biographical research never became the leading force within this research field. Additionally, the mainstream of life-course and biographical research followed broader research interests other than the benefits of VET for work life. Nevertheless, a small but slowly growing group of European social scientists uses the increasing amount of appropriate data for this kind of analysis. An overview of the different theoretical assumptions, scientific perspectives and results of this work is presented in the following chapter.

4. Empirical evidence

4.1. Life-course and biographical research in Europe

Originating from national social research movements in the US and northern and central European countries (amongst them France, Germany, Norway, and the UK) empirical life-course research is increasingly starting to locate its insights in international contexts. Besides the progress made in several European countries to develop an internal professional framework of longitudinal empirical research, cross-national and international cooperation enables researchers to study country comparative issues. Current issues under investigation are societal trends, comparisons of different political systems and national differences in access to public goods, such as education. In contrast, the exploration of educational benefits in the life course has received less attention in European social research, not only in comparative but also in national contexts. Moreover, earlier research in countries with a comparatively long tradition of life-course analysis and of investigation into educational issues like Germany, the Netherlands and the UK, seems to be undergoing a shift in emphasis away from research into educational impact to a broader investigation of individual life chances under certain social conditions and developments – where education plays only a minor role. The reasons for this development may lie in difficulties regarding the definition and measurement of education (or, no less demanding, training, skills, abilities, qualifications, etc.) which make hypotheses on educational outcomes less attractive than the mere description of social situations and developments, using education as one explanatory factor among others. And indeed, specific educational benefits are hardly determinable by quantitative measurements, because cause(s) and effects are interrelated, leaving almost no possibility to arrange the effects in a testable causal order. Keeping the above in mind, this paper will attempt to provide an overview of the limited existing knowledge on the benefits of education, training and skills in an

individual life course. To be able to do so it is necessary to include several empirical works which give information on the benefits of education and training in the life course but which stem not primarily from life-course research as a scientific discipline. However, even these studies do at least take up a lifetime perspective and use longitudinal data for analysis. This section will initially give an introduction to the thematic interests, approaches, variables and methods utilised predominantly in the investigation of education and training benefits from a life-course perspective. Subsequently, the data employed for empirical analysis will be presented. Finally, various studies are listed and described along with the criteria developed in Chapter 2, Sections 4.1.1. to 4.1.6. and Section 4.2.

Before proceeding, one important factor needs to be addressed in order to understand the meaning of the term life-course perspective within the framework of research into the impact of education and training. As shown in Chapter 3, life-course research itself is not historically without precedence but has developed from the evolution and convergence of different theoretical approaches, faculties and empirical research areas. The range of theoretical approaches involved are, for example, human capital, segmentation and status allocation theories, gender and ageing theories, and theories of generational change. Faculties linked are economics, sociology, social psychology, developmental psychology and social demography. Empirical impacts come from mobility research, family cycle observations, qualification and career research, etc. Despite all their inherent differences this mix has one main thing in common: the investigation of dynamic processes. Life-course research is to be understood as an instrument to catch these dynamics, rather more as a perspective than an independent and united theory. Therefore, it is more an enlargement (mainly in an empirical sense) of other theoretical approaches than an alternative. In general, life-course and biographical research have recourse to one or other of these theoretical

approaches. In the following illustration of the main lines of investigation of life-course research into the benefits of education and training, the life-course perspective should be understood as lying transverse to theories of educational impact and outcome.

4.1.1. Monetary returns on education and training and life-time income

One of the most investigated benefits of education and training in social research is 'earnings as dependent variable' of education and training ⁽⁴⁾. As in all outcome oriented research into education and training, a good deal of the investigation of education and training benefits from a life-course perspective is dedicated to the measurement of individual monetary returns of education, training or skills. The term 'individual returns' refers to the private rate of return in terms of higher income resulting from prior individual investment in education and training ⁽⁵⁾. Empirical research, therefore, investigates the impact that education, training and skills have on income as one of the most important material benefits. In doing so, most of the outcome oriented education and training research, including life-course research, refers to human capital assumptions. In brief, human capital theory assumes a direct relation between the accumulation of education in terms of years or levels of education and the rise of current or life-time income (Mincer, 1997, 1964; Sweetland, 1996; Becker G., 1993, 1964). According to this theory, employees are paid solely for their productivity which on its part depends entirely on their qualifications achieved through education and training. Therefore, the basic hypothesis is that the more a person invests in his or her education the higher his or her productivity and the higher the individual rates of return in terms of higher income (Becker and Schömann, 1996).

The OECD defines human capital as follows: human capital refers to 'the knowledge, skills, competences and attributes embodied in individuals that facilitate the creation of personal, social and economic well-being.' (OECD, 2001b, p. 18).

The main critical point of the human capital approach is that it implies a labour market without any restrictions or discrimination and a rational individual who is perfectly informed about his or her options (Alewell, 1993; Franz, 1991; Katz and Ziderman, 1990; Sengenberger, 1987). On the other hand human capital research has proved to be (at least partly) successful in estimating income effects of education and training and in explaining variations in individual rates of return, e.g. regarding country-specific conditions (Asplund and Pereira, 1999). Moreover, recent developments show that vigorous efforts are being made to improve the original approach by considering several interceding factors that might have an impact on the relationship between education and training and income.

As early as the 1980s, Tuma (1985) developed an advanced human capital model, which had been modified from the life-course perspective. In her analysis of occupational careers she considered career courses based on ill-informed decisions and unbalanced labour-market conditions. She estimated a resulting risk of misallocation that could be corrected or compensated for by job-specific training received by the individual, which would again offer returns from investment in education, training or skills.

Analogue enhancements of the human capital approach can be viewed in the so-called filter and signal theories which assume individuals act under uncertainty and impaired transparency in the labour market. According to job-market filter and signal theories, educational credentials act as mere signals or filters in the job-match process (Spence, 1973; Arrow, 1973), separating individuals with higher ability (= higher educational level) from the rest. However, these signals can turn out to be wrong, because a higher educational level does not mean necessarily lead to higher productivity.

In summary, despite several attempts to advance human capital research in order to bring in the life-course perspective, only a small number of empirical investigations from this economic scientific school utilised longitudinal life-course

⁽⁴⁾ We speak of earnings instead of income, because earnings describes the payments someone receives from his or her employment (and which is influenced also by education and training), whereas income refers to the total money at the disposal of an individual, that is earnings plus money gained otherwise, e.g. rents, dividends, interest, etc.

⁽⁵⁾ Generally, the rate of return to education is defined as the extra income earned as a result of attaining one additional year or level of education (Harmon et al., 2001) and discounted to the time of entrance into the labour market.

data for the estimation of long-term educational returns. In contrast – maybe surprisingly – empirical studies which argue from a life-course perspective (see theoretical assumptions in Chapter 3) examining education and training benefits are based to a respectable degree on human capital assumptions of educational returns.

4.1.2. Education, training and labour-market participation

Apart from these income-oriented estimations of individual monetary returns from education and training, life-course research looks at a range of different facets of an individual's participation in the labour market which are viewed as beneficial outcomes of education and training. Among these are transitions from education and training to work and mobility between and within jobs, employment prospects, avoiding unemployment and reacquiring employment, obtaining qualification-adequate jobs, as well as participation in continuing education and training programmes. To sum up, any kind of labour-market events can be used (and have been used to a certain extent) as dependent variables in life-course and biographical research.

From a life-course perspective success or failure at different times in an individual's working history have an impact on present and later success or failure, not only regarding the further working career but also far beyond it. An individual's position in the labour market, for example, has an impact on that person's social status, not only in the present but also – and maybe more importantly – at the time of later status passages. Life-course research therefore deals with direct possible outcomes or benefits from education and training such as successful job entry after finishing education and training as well as with indirect, or later outcomes, which are mediated through these direct benefits. Access to continuing education and training for example is viewed as an indirect, later benefit of initial education and training, because it is assumed that education and training have a major impact on labour-market entry. This in itself determines the later occupational career and therefore the access to continuing education and training. The same could be said for other aspects of an individual's career. Of course the relationships are not as deterministic as purported here, many different factors of a person's educational and occupational career interfere with each

other. But the central principle of coherences should have become clear.

As the concrete subjects of investigation related to labour-market participation are manifold so are the applied approaches. Therefore, life-course research utilises a number of different labour-market related theories which range from status attainment approaches through segmentation theories and human capital to mere descriptive research. Applying the life-course perspective to educational outcomes or benefits related to the labour market only means that different time points in an individual's working history must be associated with important differences in the quantity and quality of these benefits. Therefore, despite all the differences in the theoretical approaches, life-course research points to the fact that neither individual behaviour nor social systems are static by nature. From this it follows that statements on a society or its subsystems can be made only with reference to certain points in historical time.

4.1.3. Education and transitions

From the life-course perspective, transitions have a special relevance for the individual working life history and are therefore highlighted here as a special case for bringing possible benefits to education and training. Successful transitions *per se* do not yield benefits to education and training, but the other way around: successful transitions follow (as a benefit) from education and training. The determination of life histories by institutional structures in modern societies produces a cycle of certain phases and transitions, which are of a very different character. These institutional structures are mainly defined by the educational and occupational system of a country which, through their organisation, account for the existence of sensitive and less sensitive phases in an individual's educational and occupational career (Blossfeld, 1989). Transitions (from school to work, to further education, etc.) in this sense are particularly sensitive or fixed phases, because they are more susceptible to internal and external influences (recessions, educational expansion, etc.). Periods between transitions, for example after the decision to pursue a certain job or training, are correspondingly less susceptible to change. As different life phases constitute an interrelated course where early phases can be seen as relatively formative

for later periods it is assumed that early transitions are of high importance for later states and transitions and are open only to limited correction, for example by further/continuing training.

Particularly in countries with a strong emphasis on formal qualifications, highly differentiated professions and a low permeability of occupational and educational systems, successful or unsuccessful transitions from education to training and/or the first job are believed to be essential for the whole further educational and occupational career of an individual (Mayer, 1996). An effective first placement on the labour market can therefore determine an accumulation of educational benefits such as high wages, a qualification-adequate job, good career prospects, etc. An ineffective job placement is likely to lead to an accumulation of disadvantages in the further life course. Blossfeld (1989) first formulated the thesis that once a disadvantage is experienced in the transition from education to training and/or to work it cannot be compensated for over the whole occupational career. Therefore, from the perspective of life-course research, transitions – especially those that occur in the early phases of the life course and the individual working career – are crucial for the analysis of educational benefits. The associated material and non-material returns are not only believed to constitute benefits in themselves but also to account for a good proportion of chances and benefits in the subsequent life course. Besides the outcomes of early transitions from education to training and/or work, the consequences of later transitions, upward mobility and generally all forms of mobility leading to the avoidance of unemployment are seen as important possible benefits of education and training in the life course. On the one hand, mobility in later career is likely to be determined by early transitions and therefore in terms of upward mobility it is as a rule an indirect beneficial outcome of education and training. On the other hand, different forms of training or continuing education on or off the job can lead to upward mobility as a direct benefit.

4.1.4. Generational differences in education and training benefits

Besides the impact of education and training on so-called ‘intra-generational’ mobility, as described in the previous section, life-course research has a special interest in inter-genera-

tional mobility. The social (upward) mobility between generations can be determined by comparing the occupational status of children with that of their parents (Hradil, 1997; Goldthorpe, 1980; Featherman and Hauser, 1978). It is assumed that there are large differences between generations regarding the allocation of life chances and risks and in gaining benefits from education and training. Through the comparison of successive generations or birth cohorts it becomes possible to follow social change, specifically the change of educational and occupational trajectories and how they are determined by institutional changes over historical time. A birth cohort consists of a group of people who are of homogenous age and therefore share the same significant life event(s) at almost the same historical date.

Therefore, the life-course perspective argues that different generations are confronted with different social and historical conditions and even birth cohorts which are only a few years apart from each other face these conditions in different (sensitive or less sensitive) phases of their life. According to this, people belonging to different generations or birth cohorts are exposed to very disparate chances and risks regarding their education, training and working career and therefore receive a very different quantity and quality of education and training benefits. Analytically, these differences can be assigned to three effects: the age of a person within a cohort, the cohort to which a person belongs and the framework conditions a person faces in a certain period of time (war, high unemployment, etc.) as a consequence of his or her belonging to a certain birth cohort (for a detailed description of age, cohort and period effects see Descy and Tessaring, 2001; Part 5, Sections 1.3.2.1. and 2.3.1.). Taking up again the thesis that a disadvantage once experienced during a particular life phase can hardly be compensated for over a whole (working) life, it becomes obvious that not only the individual’s fate is influenced – to whatever extent – by this, but also the fortune of whole generations or birth cohorts. Early life-course research confirmed the ‘entry-job’ thesis by demonstrating how the different education and training benefits for older and younger cohorts were determined by having been faced with quite different historical conditions such as

the post-war period, the economic boom in the 1950s and the beginning of educational expansion in the 1970s (Blossfeld, 1989). In the present day, studies into the effects of cohort and generational differences on the benefits of education and training constitute an important research line of life-course analysis. The increased attempts at cross-national comparisons of education and training benefits make it particularly essential to consider generational change. A separation of cross-national from historical comparison would, in any case, lead to misinterpretations of coherences in the analysis of educational and occupational pathways.

4.1.5. Social differences in education and training benefits

Besides cohort and generation specific differences regarding the gaining and utilisation of education and training benefits, social determinants of education and training benefits in respect of ascriptive attributes like family background, gender, ethnicity, etc., are important interest fields for life-course research – as for every empirical social science discipline. Gender and ethnicity have been recognised as outstanding factors in the access to and outcomes of education and training. Although there has been a certain equalisation of life-chances for men and women in many respects over the last 30 years, gender still matters in the utilisation of human resources like education and training. From a life-course perspective, gender differences in education and training benefits not only remain but increase and accumulate over the life courses of men and women. Family background is a further important factor in the analysis of differences in the attainment of education and training benefits. Generally, it is acknowledged that family background determines the chances of educational participation and attainment in a variety of different ways. From a static position, we see that children from families with a comparatively high income and social status usually have better chances to achieve higher levels of qualification and are over-represented in tertiary education and under-represented in the group of early school leavers or in lower vocational education. From a life-course perspective, it is assumed that these inequalities are carried further not only through the whole individual life course but also

by the reproduction of inequality via successive generations. Therefore, studies of family background and gender differences are often combined with studies of generational and cohort developments.

4.1.6. Subjective perception of educational benefits in the biography

Research into life-course perspective investigating education and training benefits as described show only the objective aspects of the impact of education, training or skills on several outcome variables. This view has been criticised because the individual perspective, and therefore the subjective meaning of learning and occupational biographies, is more or less ignored. As judgements on and subjective interpretations of the individual educational biography are likely to have important impacts on the working and life careers of individuals, they cannot be ignored from a life-course perspective. Compared to the demographic life-course perspective which focuses on the life course as a unit, the biographical perspective is subject oriented and concentrates on the differences in and specialities of individual learning and occupational pathways. Therefore, studies of subjectively perceived benefits in individual biographies are becoming increasingly interesting and help supplement rather objective life-course notions. Furthermore, in consequence of this subject oriented perspective, biographical research which is concerned with individual education and training benefits often includes resultant 'soft' or non-material beneficial aspects and thereby complements life-course research on 'hard' material education and training benefits.

The research topics presented here are viewed as the main lines of investigation of education and training benefit measurement from a life-course perspective in Europe. The next section outlines the empirical research conducted from one or more of these lines. Since studies follow their own logic according to their subject(s) of investigation, the classification chosen to subdivide this research is rather artificial. In order to give an overview of results from life-course research it seemed nevertheless appropriate to use such means. The description of studies as classified in Section 4.3. is therefore not to be understood as a scientifically derived categorisation but rather as a review tool.

4.2. Research design and data

The perspective of life-course and biographical research has some important implications for empirical methodology and data requirements (Chapter 3). As the focus of investigation is on the whole life course of individuals rather than on a single point in time, cross-sectional measurements do not serve the required purpose so a longitudinal design is needed. The term ‘longitudinal’ can be narrowed down to research, which allows a diachronic analysis of the incidence of conditions and events by collecting data for each item from at least two distinct time periods. Longitudinal research involves analysis of the same individuals, or more generally cases, over different time periods; and involves some comparison of data between and among periods (Menard, 1991; Ruspini, 1999; Mayer, 1987). In contrast to comparative-static cross-sections, longitudinal analysis can therefore control for cohort-, period- and age-effects that might have a substantial impact on the relationship between education and training and assumed outcomes. Furthermore, longitudinal data normally contains a broader spectrum of individual characteristics than cross-sections and therefore allows for a more reliable analysis of interactions.

There are a number of different designs in longitudinal analysis from which, for the purpose of life-course research, only three are of interest: prospective designs; retrospective designs and follow up designs.

While in surveys with a prospective design the same individuals are interviewed repeatedly in defined periods from one common starting point, retrospective studies collect data via life-history studies that cover the past life course of the respondents. Retrospective studies have the advantage that they provide very detailed and precise information (Blossfeld and Rohwer, 1995),

but are less reliable in comparison to prospective studies data on punctual events and do not offer the same strength for research on causal processes. Furthermore, they cannot include opinions or plans for the future. Therefore, retrospective surveys are often addressed as ‘quasi-longitudinal’ (Hakim, 1987; Ruspini, 1999). Follow-up studies can be considered as a specific form of prospective surveys concentrating on the pursuit of selected offset groups, in our case mainly school, training or programme graduates. A further central point for life-course research is to divide between panel data and cohort data.

Panel surveys trace individuals of different age at fixed points in time and thereby offer the possibility of exploring individual change, for example in educational attainment, job mobility, etc. Surveys with a cohort design can be considered as a specific version of panels that aim to give information on generational differences or the process of generational change. A cohort is defined as a group of people within a population who share the same significant life event(s) in a given period of time. Thus a cohort typically consists of people of the same age group, meaning that they share the same date of birth, year or period of years (e.g. 1920-25). Nevertheless, physical age is not the only criterion for constructing cohorts. School or job entry and other shared events can be used to form coherent cohorts as well. Whereas panel surveys trace individuals over time, the observation unit of cohort surveys is a group of people sharing the same life event(s). It should be emphasised that the distinction of panel and cohort surveys lies transverse to the other three categories which leads to four different longitudinal designs: prospective panel (PP) surveys, retrospective surveys based on individual data (R), prospective cohort (PC) surveys, retrospective cohort (RC) surveys. The design of follow-up studies does not essentially differ from other prospective data collections (Figure 9).

Figure 9: Prospective data designs

Longitudinal design	Observation unit/reference group	
	Individual	Cohort
Prospective	PP	PC
Retrospective	P	RC

Well-known PP are household panel surveys which are well established in most European countries. Among them the most reliable are presumably the British household panel survey (BHPS), the Dutch and the German socio-economic panel (SEP; GSOEP). However, the comparability of these data sets is limited because of variations of variable construction. A major step towards overcoming these problems was the invention of the European Community household panel (ECHP) in 1994. It has already become a unique basis for cross-sectional and periodical comparison of education and training benefits in 12 European countries.

An important example of retrospective surveys based on individual data (R) is the GLHS that also serves to exemplify retrospective cohort studies, because data has been collected for individuals belonging to subsequent birth cohorts. In the survey, about 8 000 persons belonging to cohorts of around 10 years apart (1919-21, 1929-31, 1939-41 up to 1971) were interviewed in great detail about their life courses. A further example of RCs is the Norway Survey (NORS) in which a cohort of people born between 1956 and 1958 was interviewed retrospectively. PC designs are best represented by the British National Child Development Study (NCDS) and the 1970 British Cohort Study (BCS70). In their detailed format and sample size the cohort studies in the UK provide a unique database for single cohort research in Europe. However, the great disadvantage of these surveys is that each of them covers only one cohort of individuals. Apart from the comparison of these two different data sets, no comparisons can be made regarding other cohorts.

In contrast to cross-sectional analysis of education and training benefits, which can

already draw on a substantial selection of harmonised databases, longitudinal research has no similar means of comparing education and training benefits in Europe. Apart from the ECHP, which contains only limited information on education, training and skill-related issues, no longitudinal survey on a European level exists. As already pointed out, the comparability of country specific data remains quite limited and results need to be treated very carefully. Table 1 contains the most important individual data sets utilised for life-course research in European countries.

Beyond this roughly presented differentiation of longitudinal data, a further more sophisticated classification is generally needed when dealing with empirical social research. When comparing results from studies of varying concept and research design we should if possible consider the following dimensions of alternative empirical methodologies:

- (a) data sources: survey/questionnaire – observation – written material – mix – register;
- (b) data analysis: quantitative – qualitative;
- (c) data collection: self-collected – secondary analyses;
- (d) sample: representative sample/non representative sample;
- (e) level of aggregate: regional – national – cross-national.

In the next section studies are presented which apply a life-course perspective in the analysis of education and training benefits. Due to the limited scope of this study, it is not possible to give a complete overview of empirical investigations. Nevertheless, a good number of national as well as cross-national and European studies are listed according to the dimensions proposed. In addition, selected studies are explained in more detail.

Box 2: Eurostat's ECHP and EPAG data set

The creation of the ECHP was a major step towards cross-European data comparability. 1994: launch by Eurostat (Statistical office of the European Union): parallel surveys were taken in 12 Member States
 Follow up: every year
 Restricted time frame: so far only three waves available
 As compensation the EPAG (European Panel Analysis Group) has produced a longer data set from three household panel surveys (Germany, the Netherlands, the UK)
 EPAG data set has been available since 1991, accessible through ISER (Institute of Social and Economic Research, UK)

Table 1: Longitudinal data sets for research into the impact of education and training in Europe

Survey	Country	Type	Aims	Sample	Time of measurement
British household panel survey (BHPS)	UK	PP	C	Representative sample of British households	annually, since 1991
National child development study (NCDS)	UK	PC	B	Cohort of people born from 3 to 9 March 1958	1965, 1969, 1974, 1981, 1985, 1999
Youth cohort study (YCS)	UK	PC	B	Representative sample of 10 cohorts aged 16+	regularly, since 1985
1970 British cohort study (BCS70)	UK	PC	B	Cohort of people born from 5 to 11 April 1970	1975, 1980, 1986, 1996, 1999/2000
Irish panel	IRL	PP	B	Representative sample of Irish households	annually, 1987-1995
Dutch socio-economic panel (SEP)	NL	PP	C	Representative sample of Dutch households	annually/ biannually since 1984
Brabant cohort study	NL	PC	A	Representative sample of a cohort of pupils who in 1952 were in the sixth grade	1952, 1983, 1993
OSA (Organisation for Strategic Labour Market Research) panel	NL	PP	B	Representative sample of individuals aged 16 to 64	regularly, 1985-1996
Explanation of socio-economic inequalities in health (GLOBE)	NL	PC	B	Cohort study, N= 18 973	regularly
German life history study (GLHS)	D	RC	B	Representative sample of cohorts born in 1929-1931, 1949-1951, 1954-1956, 1959-1961, 1971	retrospective
German socio-economic panel (GSOEP)	D	PP	B	Representative sample of the German population	annually, since 1984
Life chances, careers and delinquency of low level school leavers	D	PC	A	Representative sample of 1989 school leavers from German <i>Haupt- and Sonderschule</i>	1989-2001
Malmo study (MS)	S	PC	B	Original sample size 1 542 children at the age of 10	regularly, 1937-1988
Malmo longitudinal study of social assistance (MLS)	S	PP	C	Sample of all households receiving social assistance in Malmo	1995-1999
Evaluation through follow-up	S	PP	A	Original sample size 10 000 children at the age of 10 and 13	regularly, since 1961
Swedish level of living survey (LNU)	S	PP	B	Sample of about 6 000 individuals between ages 16 and 75	4 waves, 1968-1991
Norway survey (NORS)	NO	RC	B	Cohort of people born from 1956-1958	retrospective
Norway level of living survey (NLLS)	NO	PP	B	Sample of Norwegian adult population	5 waves, 1980-1995
Danish longitudinal database (DLDB)	DK	PP	B	Representative sample of the population in the age group 16-75 drawn from admin. registers	annually, 1976-1990
Zuercher longitudinal study: from school to middle adulthood (ZLSE)	CH	PC	A	394 school leavers in Switzerland	regularly, since 1978
Transitions from education to employment	CH	PC	A	National PISA 2000 sample leaving	2001-2003 annually 2004-2010 biannually

Panel study of Belgian households (PSBH)	B	PP	B	Representative sample of Belgian households	annually, since 1992
Luxembourg panel	L	PP	B	Representative sample of Luxembourgish households	annually, 1985-1995
Survey on class structure, consciousness and biography (ECBC)	E	R	C	Sample of 6 629 individuals, not fully representative regarding region and educational level	retrospective, 1991
Greek household panel	EL	PP	B	2 952 Greek households	every two years, 1988-
Hungarian household panel (HHP)	HU	PP	B	2 000 Hungarian households	annually, 1988-1997
European Community household panel (ECHP)	EU	PP	B	Representative sample of households in 12 Member States	annually, since 1994
Types:	PP = Prospective panel data; PC = Prospective cohort data; R = Retrospective individual data; RC = Retrospective cohort data.				
Aims:	A = Main objectives are the impact of education and/or training; B = Main focus is on other issues, but these are related to the impact of education and training; C = Focus is on other issues, but some education and training variables are included.				

4.3. Empirical Studies

Most of the existing studies referring to education and training benefits from a life-course perspective are naturally based on national data sets which have been carried out by statistical offices or large research institutes. The reason for this concentration on secondary analysis lies in the amount of capacity and financial resources needed for representative longitudinal investigation. Indeed, only a few European countries are even able to provide data material, which serves the demands of life-course analysis, amongst them primarily Germany, the Netherlands and the UK. About two thirds of relevant life-course studies on education and training benefits, therefore, draw on data from these countries ⁽⁶⁾.

Among the data sets used most for secondary analysis of education and training benefits are the British, Dutch and German representative Panels (BHPS, SEP, SOEP), the British cohort studies (NCDS, BCS70, YSC) and the GLHS. The Dutch cohort studies (Brabant, GLOBE) and Swedish

and Norwegian panel and cohort data (MS, MLS, NORS) are also often used for country specific analyses. In total, there are around 60 different usable studies dealing in the broadest sense with education and training benefits from a life-course perspective. Compared to cross-section analysis of individual data this might be a small number but even given this limitation the sheer amount of varying conceptual approaches, specific investigation interests, definitions of explanatory and depending variables, sample sizes and above all results makes it very hard to provide a comprehensive overview.

Given the heterogeneity of study concepts, selected national and cross-national works are classified according to the dimensions proposed in the previous parts of this report. Generally, education and training research from a life-course perspective is prevalent in the northern and western Member States while there is only little evidence from southern or eastern European countries. On this basis, any generalisation or attempt to compare results at European level must be handled with care ⁽⁷⁾. Furthermore, there

⁽⁶⁾ Even the oldest longitudinal panels (British household panel, German socioeconomic panel, and Dutch socioeconomic panel) all had their starting point in the mid-1980s. Therefore, the period of measurement is limited to at least 20 years and covers only a part of an individual's life course. Although the panels sometimes enclose records on educational and occupational histories, the amount of information collected in this retrospective section is limited and therefore concentrates on main life events.

⁽⁷⁾ The limited study material detected in the southern European countries might be also in part due to the fact that most of them still lack a working publication and communication system of research groups, communities, journals, databases and other dispersive media.

is a clear concentration on material benefits (primarily income and employment patterns) and there are few studies on non-material benefits.

4.3.1. Studies at national level

Life-course studies, which are concerned with individual education and training benefits on a national level, are of a very diverse character and cannot really be compared. The reason for this lies not only in the difficulty of comparing results from studies with different definitions of explanatory and dependent variables but in the entirely diverse research designs of these studies. Depending on the particular research lines and traditions existing in different Member States the focus of investigation varies to an extent that actually allows for no serious comparison of results at all. Table 2 shows selected national studies and areas of current research related to education and training benefits.

Studies related to human capital approaches measuring longer term rates of return from years in education, level of education or type of training can be found in most European countries (Steiner and Lauer, 2000; Brunello and Miniaci, 1999; Uusitalo, 1999; Chevalier, 1999; Hægeland, et al., 1999; Denny and Harmon, 1998; Curti, 1998; Hartog et al., 1993; Goux and Maurin, 1994; Pedersen et al., 1990). In contrast, other studies are not as widespread. Current research on individual work histories or labour-market participation over the life course is concentrated in Germany, Scandinavia and the UK. The explanatory factors related to education and training in this research are normally limited to the level and/or the number of years spent in educa-

tion and/or training (Müller and Shavit, 2000; Wolbers, 2000; Hujer and Wellner, 2000; Bryson and Lissenburgh, 1996; Hammarström, 1996; Becker and Schömann, 1996; Kettunen, 1994).

Few studies analyse dynamic factors such as income development or changes regarding educational returns over the life course. An example is the study of Steiner and Lauer (2000) who examined returns on education in Germany from 1984 to 1997 on the basis of the GSOEP and showed that rates of return are not constant over the life cycle, especially for women who experienced a substantially increased rate of return until 1994 and subsequently a continuing decline. An analysis of longitudinal data from France and Spain confirms this result, but also displays national differences. While in France educational returns already start to decline after five years of job tenure, in Spain returns do not decrease until 20 years of tenure. Unfortunately the authors of the article do not give any information on the data sets used for their analysis (in progress) (Barceinas-Paredes et al., 2001). Becker and Schömann (1999, 1996) estimate the long-term educational returns of further vocational education on the basis of the GLHS and the GSOEP and detect a tendency to lowering rates of further education returns in Germany but also continuing income growth resulting from participation in further education, especially for men. A very detailed analysis of the impact of further on-the-job and off-the-job training on the working career is provided by Pannenberg (1995). Besides the measurement of income development, he looks at individual job mobility as a possible benefit of education and training and finds that short (two to

Table 2: **National studies on education and training benefits from a life-course perspective**

Study	Data Source	Data analyses	Sample size*	Longitudinal design aggregate	Outcome variables**	Explanatory variables***	Benefit (result)****
Pannenberg (1995)	GSOEP (D)	secondary/quantitative	1965	PP national	OC, ID	FVET	material
Hillmert (2002)	GLHS (D)	secondary/quantitative	> 1 000/C	RC national	OC	LE, TQ	material (+/0)
Diewald and Sørensen (1996)	GLHS (D)	secondary/quantitative	2 323 SQ 45 % P2	RC regional PC	OC	LE	material (+)
Blossfeld and Timm (1997)	GSOEP (D)	secondary/quantitative	n.n. P11	PP national	M	LE, YE, FB	non-material
Born (2000)	SFB 186 (D)	self-collected/quantitative	2 130	RC national	OC	TQ	material

Becker (1998)	SOEP/GLHS (D)	secondary/quantitative	> 14 000/1 781	PP/R national	LEx	YE	non-material (+)
Becker and Schömann (1999)	SOEP/GLHS (D)	secondary/quantitative	3 075/2 171	PP/R	national ID	FVET	material (+)
Becker and Schömann (1996)	GLHS (D)	secondary/quantitative	> 1 000	RC national	ID	FVET	material (+/-)
Bender and Dietrich (2001)	Social insurance data	secondary and self-collected/quantitative	2 674	RC national	OC, UR	LE	material (+)
Bynner and Parsons (2001)	NCDS/BCS70 (UK)	secondary/quantitative	11 400/9 000 (10 % last) P37/P21	PC/PC national	UR	YE/S	material/non-material
Bynner et al. (2001)	NCDS/BCS70 (UK)	secondary/quantitative	11 400/9 000 (10 % last) P37/P21	PC/PC national	ID, OC, H	S	material/non-material
Dale and Egerton (1997)	NCDS (UK)	secondary/quantitative	11 193 P33	PC national	OC, FF, ID	LE/TQ/FB	material (+/-)
Payne (1995)	YCS (UK)	secondary/quantitative	n.n.	PC national	EC	LE, TQ	material
Schallberger and Spiess Huldi (2001)	ZLSE (CH)	self-collected/quantitative	1 706 SQ 23 % P21	PP (follow-up) national	OC, PD	LE/VET/TQ	material/non-material
Unwin and Wellington (2001)	MA (UK)	self-collected/quantitative and qualitative	120	PP (follow-up) national	non	VET/TQ/S	material/non-material (subjective)
Meyer (not concluded)	TREE/PISA (CH)	secondary and self collected	6 500	PP (follow-up) national	EC, OC	LE	material
Wolbers (2000)	OSA (NL)	secondary/quantitative	10 514 P14	PP national	UR	LE	material (+)
Skov (1998)	(DK)	self-collected/quantitative	5 100	PP (follow-up) national	EC	LE/VET	material
Koivuluhta (1999)	(FIN)	self-collected/quantitative	1 cohort of training leavers P16	PP (follow-up) regional	EC, OC	LE/VET/TQ	material/non-material
Nummenmaa (1996)	OSLM (FIN)	secondary	1 732 P10	PP (follow-up) national	EC, OC, PD	LE/VET	material/non-material (+/0)
Gash and O'Connell (2000)	(IRL)	self-collected/quantitative	n.n.	PP (follow-up) national	EC, OC, ID	LE	material (+)
Keogh and Downes (1998)	individual autobiographical summaries (IR)	self-collected/qualitative	114	R national	non	FVET	material/non-material
* Sample size	SQ:	survival quota of respondents (where available);					
	P:	period of measurement in years.					
** Outcome variables:	EC:	educational career;			M:	marriage;	
	FF:	family formation;			OC:	occupational career;	
	H:	health;			PD:	personal development;	
	ID:	income development;			R:	rate of educational return;	
	LEx:	life expectancy;			UR:	unemployment risk.	
*** Explanatory variables:	E:	general education;			S:	skills;	
	FB:	family background;			TQ:	type of qualification (subject);	
	FE:	further education;			VET:	vocational education or training;	
	FVET:	further vocational education/training;			YE:	years of education or training.	
	LE:	level of education or qualification;					
**** if possible							

seven days) as well as longer (one week to one month) training on-the-job increases the possibility of upward mobility significantly. Shorter training periods tend to have a more positive impact on in-company mobility whereas longer training programmes rather increase inter-company mobility. The medium-term income development of 'job-stayers' (1986-91) is positively affected by on-the-job training but this is not true for 'job-changers'. This might be due to the fact that on-the-job training is normally closely related to the requirements of the specific job. Off-the-job training after having become unemployed significantly reduces the risk of staying unemployed but only if programmes are medium-term (6 to 12 months). Long-term programmes (over 12 months) in contrast increase the risk of staying unemployed. A study by Fitzenberger and Prey (1999) shows that training-on-the-job also increases job stability (GSOEP 1984-97). Wolbers (2000) analyses the effects of educational level on unemployment risk and the chances of reemployment on the basis of the OSA Panel and finds a continuous decreasing unemployment risk with higher levels of education for the Netherlands (1980-94). Also the years of job experience have a decreasing impact on the probability of becoming unemployed. Furthermore, he concludes that higher qualified individuals have better chances of regaining employment than those unemployed without higher qualifications.

However, examined in detail, studies on educational returns and individual working careers reveal no sign of convergence of educational benefits across the European countries. For example, while Scandinavian countries especially have rather low rates of educational returns Ireland and the UK show high rates over time (Harmon et al., 2001; Asplund and Pereira, 1999). Central European countries are located somewhere in-between these two extremes. Some of them show a downward trend in rates of return (like Germany and Austria) whilst other remain stable or even show slight upward trends (Italy, Portugal) (Chevalier, 1999; Brunello and Miniaci, 1999; Goux and Maurin, 1994). Other education and training benefits however need not be distributed in the same way. The correlation between education and training and employment

for example is very strong in Belgium, Germany, the Netherlands and Scandinavian countries while it is moderate in Spain and the UK and much lower in Portugal (Hannan and Werquin, 2001). However, apart from these national differences there remain some European-wide general education and training benefits. These are:

- (a) the nearly universal material benefits of more education in terms of higher entry wages, higher wages throughout the working life, increased job opportunities and a reduced risk of becoming unemployed;
- (b) an indication of potentially high returns of more education for socially disadvantaged individuals who reached only a low level of education ⁽⁸⁾.

Beyond the investigation of educational return rates and other working career related education and training benefits, there is a continuing boom of particular transition and mobility research in many European countries. This can presumably be related to the worsening condition of the labour market for young education and training graduates and the unemployed in particular. National longitudinal data sets have been utilised widely to study the processes of transitions of young people from education and training to working life. See the first (Tessaring, 1998) and second (Descy and Tessaring, 2001) research reports of Cedefop for details. In the absence of a longitudinal survey at European level, national research nevertheless indicates some differences concerning the job-entry of education and training leavers (Liefbroer, 2002; Gash and O'Connell, 2000; Fabrizio, 2000; Koivuluhta, 1999; Bratberg and Nielsen, 1998; Breen, 1995; Arum and Shavit, 1995; Bynner, 1995). Transitions seem to be easier in Denmark, Germany, the Netherlands, and Austria than in southern European countries like Greece, Spain or Italy. In Belgium, France, Ireland and the UK young people also face serious difficulties in their transitions but take up an average position in the EU regarding youth unemployment rates. There is some evidence that countries with very well coordinated educational and occupational systems (well-defined occupational labour markets and a high standardisation of education and training systems) have the best transition rates. Nevertheless, only a small part

⁽⁸⁾ One should remember at this point the limitation of comparative research based on national surveys. The comparability is greatly impaired by use of different data sets, definition of variables and differences in estimated model specifications.

of transition research has been carried out from a life-course perspective. Most of the studies look at transition points separately, especially those from education and training to work or to further education and training, ignoring the fact that transitions are embedded in the framework of an individual's life history and can only be interpreted properly when considered independently. Furthermore, from a life-course perspective transitions, as sensitive phases (Blossfeld, 1989) in the life course, are of special relevance for the entire working career of an individual (Section 4.1.3). As most studies cover only the single transition points (cross-sections) or at most the first years of job tenure (follow-up), there is little to extract from them for further life-course analysis. One exception is the study of Schaeper et al. (2000) who have examined career development for up to eight years after the transition from VET to work in Germany. They find that successful career development depends directly on the occupation in which an individual is first trained and indirectly on the educational background of the individual. Bender and Dietrich (2001) confirm the long-term incidence of successful or less successful transitions from education and training to work. Furthermore, cohort differences have an important impact on the stratification of education and training benefits.

Studies that have examined the effect of cohort and generational differences on education and training benefits constitute an important research line in life-course analysis. One might say that life-course research has almost rediscovered the relevance of individual affiliation to a generation or age cohort as a social factor in determining one's opportunities in life (Mayer, 1987). Studies comparing the different benefits accrued through education and training resulting from different generational or cohort patterns focus mostly on age group differences of material (educational returns, labour-market participation, working life) and non-material (family formation, health) benefits. Generational differences have been intensively investigated in Germany, the Netherlands, Norway, Sweden, and the UK thanks to existing cohort data sources. Scandinavian cohort studies have emphasised health related benefits and often stem from medical research (Gridley et al., 1999; Veierød

et al., 1997; Hall et al., 1993). Life-course research in Germany, the Netherlands and the UK has concentrated more on material and other non-material benefits (Konietzka, 2002, 1999; Hillmert, 2002; Schrijvers et al., 2001; Sackmann, 2001; Born, 2000; Boockmann and Steiner, 2000; Becker, 1998).

Becker (1998), on the basis of GSOEP and GLHS data, looks at the education and life expectancy of successive birth cohorts while controlling for other social determinants, for example stratum. As well as confirming existing research that tends to show a causal link between higher educational attainment in Germany and an increase in average life span, Becker finds that the persistence of educational inequality throughout generations has contributed to the continuing variance in life expectancy regarding social stratum and class. Hillmert (2002), in an analysis of GLHS, found that over four birth cohorts from 1974 to 1992 the educational level of an individual became slightly less important as a factor in getting a first job. He also found that vocational qualifications continued to be more advantageous than general education in getting work in Germany. Based on the same data set, Mayer and Brückner (1995) and Mayer (1996), in a comparison of 1930 and 1960 birth cohorts, found that education and training levels were an increasingly important factor in getting a first job. They found an even closer link between the education and training level and job status in the later years (5, 10, 15) of the working career. Konietzka (2002) analysed differences in the transition from initial training to work of successive graduate cohorts and concluded that patterns of job entry have changed in mainly qualitative terms over time. Born (2000) used self-collected data ⁽⁹⁾ to examine how the choice of initial vocational training affected the life course of three subsequent female cohorts. She found that these choices determined women's working career and family life in all three cohorts. Different types of vocational qualifications of equal level are not equivalent in terms of educational benefits. According to Born, women tend to have VET qualifications that typically yield lower education and training benefits. Although she noted a slight

⁽⁹⁾ Data is collected in the framework of research projects (1988-1996) of the German special research unit Sfb 186 (*Sonderforschungsbereich*).

enhancement of former job concentration across the cohorts, the most frequently occupied jobs stayed the same. Bynner and Parsons (2001) compared the relevance of qualifications and basic skills of two birth cohorts (1958 and 1970) as protection against unemployment. They concluded that qualifications and skills are becoming increasingly important factors in determining the levels of unemployment in the UK. Unemployment rates at different ages were consistently higher amongst the more lowly qualified in the younger cohort than in the older cohort. Boockmann and Steiner (2000) showed declining educational returns from the 1925 to 1974 cohorts in Germany, especially for women.

There are also a considerable number of studies exploring how gender and family background affect the benefits gained from education and training (Lauer, 2002; Antoninis and Tsakloglou, 2001; Ermisch and Francesconi, 2000; Ganzach, 2000; Dale and Egerton, 1997). These studies are often combined with a cohort approach, searching for differences in the influence of background or gender on the connection between education and training and its material and non-material benefits and the development of this connection over time or over generations. A study by Antoninis and Tsakloglou (2001) in Greece indicates that 'the most well-off segments of the population' (p. 216) have the highest educational opportunities and benefits. As longitudinal data was not available to them Antoninis and Tsakloglou (2001) – based on two cross-sections from the Greek household survey (HBS 1993-94) – can only speculate on what effects this might have for the whole life course. However, they estimate that these could be even greater than their static results indicate (taking into account the different circumstances experienced by the offspring of well-to-do families and the less well-off throughout their working life).

Lauer (2002) examined the educational impact of family background, gender and cohort in France for the cohorts born between 1929 and 1968. Besides a general improvement in educational standards throughout the cohorts, she found that the parents' own educational performance had a significant effect on the school outcome and performance of their children. Also the impact of the father's occu-

pation was significant: children of senior managers had the best educational prospects whereas workers' offspring experienced the worst educational outcomes. The educational impact of family background, however, does not differ across gender. In France, women achieve better than men in secondary education. In post-secondary education, however, women have higher thresholds than men, which means that they are at a disadvantage. Payne (1997), using the YCS (UK) as her basis, investigated the consequences of the choice of different post 16 routes in the UK. She found that young women who leave full-time education at 16 are more likely than young men with similar characteristics to be without a full-time job or training. On the other hand, young women with above average GCSE⁽¹⁰⁾ results for this group have a better chance of securing a job than similarly qualified males. The study of Dale and Egerton (1997) is concerned with the benefits of education and training for highly educated women, based on the NCDS (UK). Women in this cohort (born in 1958) are less likely to have a degree level qualification and are more likely than men to be under-achieving in occupational terms. It is evident that both men and women show a considerable return on qualifications gained. However, women earn less than men at the same level of qualification.

With very few exceptions (e.g. Born, 2000; Dale and Egerton, 1997), quantitative studies treat education and training in the same way as they treat any other explanatory variable (e.g. work experience, family background, gender) in order to explain differences in the economic, social and private wellbeing of individuals. Therefore, measurements of education and training tend mainly to be limited to the level of graduation and the number of years in schooling or training. This creates a considerable gap in the field of life-course research, because too few cross-European comparisons can be made about differences in the type and quality of education and training and of qualifications and skills.

The analysis of individual learning biographies complements, therefore, the studies of the benefits of education and training described so far. The biographical perspective, which is concerned with the individual's perception of education and training benefits, is in general less often used

⁽¹⁰⁾ General Certificate of Secondary Education

than studies from a solely objective life-course perspective. However, there have been some very illuminating attempts to include the subjective perceptions of the benefits to be gained from education and training (Sauer-Schiffer, 2000; Rabe-Kleberg, 1994). Possibly the most outstanding are those carried out in Ireland and the UK (Unwin and Wellington, 2001; Bloomer and Hodkinson, 2000; Stone et al., 2000; Keogh and Downes, 1998). In contrast to the information collected quantitatively on material and non-material benefits, it is not possible to quantify or to make generalisations about how an individual might perceive the advantages to be gained through education. Therefore, results from biographical research are difficult to summarise from any general perspective. Moreover, this would be contrary to the entire intention behind the analysis of individual biographies, because it is precisely their individual differences that makes them worthwhile. Keogh and Downes (1998), for example, asked 114 participants of the Irish vocational training opportunities scheme (VTOS) to write down their learning biography and experiences during and after having taken part in the VTOS. Besides giving a record of their educational achievements, their stories document the transition between social exclusion and inclusion and 114 different ways of coping with this situation. While the document overall gives a very positive impression of the benefits gained from the VTOS programme in Ireland, quantitative research that measures the impact of compensation oriented vocational training schemes does, however, present a rather critical picture. This reveals the occasionally important difference between the subjectively perceived and objectively measured benefits of education and training. For this reason Schaeper et al. (2000) complement their quantitative analysis of working careers after VET (continuous and discontinuous) through biographical interpretations of the individuals concerned. They conclude that different subjective interpretations of discontinuous careers correlate with the profession and occupation a person has attained through VET. Amongst those with a lower level VET and profession, negative interpretations (discontinuity as threat) prevail, whilst positive interpretations (discontinuity as chance) figure more often amongst higher level occupations.

In this section various national life-course and

biographical studies on education and training benefits have been presented to give an impression of the numerical and thematic scope of possible lines of investigation. It should have become clear that any comparison of results on this level is nearly impossible and moreover inappropriate, not only because of differences in the quantity and quality of data material but also – and more importantly – due to the variety of different research questions and theoretical assumptions subsumed under the term ‘life-course research’. In order to compare the life course benefits gained from education, training and skills where different country specific conditions apply, a study would be needed which displays a corporate set of research questions or hypothesis based on a particular theory or set of theories. This would also need to be based on a prospective or retrospective survey conducted at a European level.

Such a study, however, does not exist at present. The few, limited studies that deal with cross-national and European comparisons are presented in the next section.

4.3.2. Cross-national studies

The lack of sufficient European longitudinal data limits cross-national life-course research into the benefits of education and training to a small number of studies, which are either based on:

- (a) European panel data;
- (b) corrected or harmonised national data;
- (c) data collected or reproduced within the framework of single cross-national projects.

A selection of relevant studies is shown in Table 3.

Studies which draw on data from the only available European longitudinal data set, the ECHP, cover a comparatively short period of time since the survey was first conducted in 1994 (Deding and Dall Schmidt, 2002; Pedersen and Dall Schmidt, 2002; Brunello, 2001). The limited period of coverage is also a reason for the fact that research has been limited only to measurements of short-term educational returns. It follows that the potential of the ECHP for comparative research into the benefits of education and training has not been fully exploited. As with most national panels it contains only limited information, focusing mainly on the time spent in education and training and on levels achieved. Employment prospects and the potential for

Table 3: Selected cross-national studies on education and training benefits from a life-course perspective

Study	Data Source	Countries covered	Data analyses	Sample size* aggregate	Longitudinal design	Outcome variables**	Explanatory variables***	Benefit (result)****
Brunello (2001)	ECHP	A, DK, FIN, F, D, I, P, UK, NL, B, IRL, EL, E	secondary/quantitative	≈130 000	PP cross-national	VET, R	YE	material (+)
Brunello and Comi (2000)	11 national data sets (G-SOEP, OSA, LFS, etc.)	A, CH, DK, FIN, F, D, I, N, P, UK, NL	secondary/quantitative	n.n.	PP****	Ex, R	YE	material (+)
Kieselbach et al. (2000)	Qualitative interviews; official statistics	I, F, E, FIN, UK, I, D, S	secondary and self-collected/quantitative and qualitative	qual.: 300	R	non	E, VET, FVET	material, non-material
Hillmert (2001)	BHPS, GLHS	UK, D	secondary/quantitative	≈ 7 000 (BHPS) Ø 800/C (GLHS)	PP/RC	OC	E, VET	material
Schömann (1994)	GLHS, PSSM	D, PL	secondary/quantitative	465/n.n.	RC/RC	R	E, VET	material (+)

* Sample size
P: survival quote of respondents (where available);
period of measurement in years.

** Outcome variable:
Ex: experience;
OC: occupational career;
R: rate of return;
VET: vocational education or training.

*** Explanatory variable:
E: general education;
FE: further education;
FVET: further vocational education/training;
LE: level of education or qualification;

**** if possible
***** different panel designs

S: skills;
TQ: type of qualification (subject);
VET: vocational education or training;
YE: years of education or training.

further education and training, mobility patterns and income growth are all possible areas of benefit that could be explored. Brunello (2001), for example, used the ECHP to investigate the relationship between educational attainment and training incidence ⁽¹⁾ and finds that across Europe training incidence is higher among individuals with more experience of education. He also discovered that this relationship varied significantly across countries and birth cohorts. Individuals had a higher training incidence in countries with a more educated labour force and a less stratified schooling system. The most significant finding from a life-course perspective was the strong disparity observed between the effect of previous and of current training on the growth of individual earnings. While current training has medium to strong positive effects on educational returns, previous training has very low positive and often negative effects. This result points to the possibility that much of the private returns to training is rather temporary. Furthermore – as might be expected – there is evidence that individuals with more education and limited labour-market experience enjoy higher private returns from recent training than those with the same experience and less education.

Most of the studies which use harmonised or adjusted national data look at the impact of the occupational and educational systems of two or more central European Member States in order to compare education and training (life-course) benefits (Hillmert, 2001; Sackmann, 2001; Brunello et al., 2001a; Kaiser and Siedler, 2000; Brunello and Comi, 2000; Müller and Shavit, 1998; Brauns et al., 1997). Brunello and Comi (2000) and Brunello et al. (2001a) investigated the relationship between education and earnings growth in 11 countries. They found evidence in all countries that education not only gave an initial advantage for entry into the job market but that this advantage was permanent and increased over time. Analysing this relationship in more detail, they showed that earnings growth generated through education was lower in countries with a higher level of corporatism (e.g. Denmark, Germany and Norway) and higher in countries which experienced both relatively fast labour productivity growth and relatively low educational attainment

(e.g. Italy and Portugal). When comparing educational systems, they found that countries with a more stratified system of secondary education (as in Germany and the Netherlands) had smaller differences in earnings growth through education than other countries. However, whether causal relationships exist is not explained.

Hillmert (2001) provides a more specific analysis of the effects of different educational and training systems. Using the BHPS and the GLHS, he investigated differences of education and training benefits in the life course through comparison of two completely different VET systems: the British ‘training-on-the-job’ version and the German dual system. He compared the life courses and working careers of different generations (both 1930-1970) by looking at the transition from education to employment position in the labour market at the time of job entry and the occupational career in the years after first employment. Contrary to general belief, he found that the two systems had many similar education and training outcomes. With regard to the transition into work the differentiation of successive education and training levels had increased. This meant that it became more and more difficult for people with low levels of education to enter the labour market successfully. Nevertheless, in both countries intermediate vocational – non-academic – qualifications were the most relevant for gaining direct entry into stable employment. In addition, the stability of the first employment showed a constant decline in both countries over subsequent cohorts. However, there were also expected differences: the correlation between the level of education and training and successful entry into the job market was generally higher in Germany than in the UK and this did not change over the cohorts. This seems to confirm the assumption that despite attempts to improve the traditional ‘training-on-the-job-learning’ in the UK through national VET programmes (NVQ and modern apprenticeship) there is still a lack of appropriate vocational qualifications for young people. On the other hand, there seems to be greater flexibility in the British system to get a job without having the exact qualifications needed for it.

Results from other studies also confirm the relevance of the education and training and occupational systems for the distribution of education and training benefits over the life cycle. Schömann

⁽¹⁾ Training incidence refers to the probability of taking part in training schemes and its frequency.

(1994), for example, compared the development of labour earnings over the life course in Germany and Poland and concluded that, despite very different political, occupational and educational systems, the impact of education and training on wage attainment throughout the life course was quite similar. Higher levels of education and training had a significant, positive impact both on initial wage levels and after subsequent changes of employer. Nevertheless, a deeper analysis showed some important differences between the two systems. In contrast to Germany, the level of education and training in Poland did not account for wage growth within the same job and after job changes within the same company. Also, the differences in starting wages based on qualifications are only half as high in Poland as in Germany. However, the study suffers from some comparability problems in respect of the design and collection of data material. To sum up, it is clear that comparative studies from a life-course perspective are still rare in Europe and that those which do exist are limited in their explanatory power and comparability due to the differences in the national surveys they depend on – even if corrected or harmonised.

This gap was partly closed by increased efforts to develop cross-national and international research projects. Within these projects additional data sets were produced or existing national data related to education and training and other social issues were integrated (Kieselbach, 2000; Sofer, 2000; Hannan, 2000; Blossfeld, 1999; McIntosh and Steedman, 1999; Furlong and Hammer, 2000). Although few European social research projects adopt a life-course perspective in particular, some recent projects do relate education and training to different aspects of current and future life success. The analysis of such projects does give more of a qualitative insight into the mechanisms of education and training and its benefits than by simply measuring the impact of education and training on the basis of qualifications achieved and the number of years spent in education and on quantitative outcomes such as higher income or job stability. The TSEr project Yuseder (Youth unemployment and social exclusion: dimensions, subjective experience and institutional responses in six European countries), for example, looks at the risk of and experience of unemployment and its relationship to the process of social exclusion. Besides the collection of empirical evidence on youth unemployment and

its determinants in each country, a qualitative analysis of 300 (50 per country) long-term unemployed people was conducted. As one important factor in the reduction of unemployment risk they identify the education and training undertaken by the individual. Research shows that youth unemployment is likely to have severe consequences for personal well being and health and that suicidal behaviour is more prevalent amongst the long-term unemployed. Therefore, investment in education and training indirectly safeguards young people from these non-material risks of social exclusion. Yuseder confirms that, depending on the labour-market situation and trends as well as on the educational system and its connection to the labour market, the possibility of young people reducing the risk of becoming unemployed through their participation in general or vocational education varies from country to country. Other projects which examine life course education and training opportunities and benefits are the European Commission project FAME (Vocational identity, flexibility and mobility in the European labour market), the TSEr project Newskills (New job skill needs and the low skilled), the Leonardo da Vinci project 'Dual Qualifications and Vocational Mobility', VTLMT (Education, Vocational Training and Labour-Market Transitions), PURE (Public funding and private returns to education), SEdHA (Socioeconomic determinants of healthy ageing) and the Globalife project funded by the German Volkswagen Foundation. As some of these projects have already been dealt with in the second Cedefop research report (Descy and Tessaring, 2001), only three comparatively unknown projects – in the context of research into the impact of education and training – are briefly discussed here. These are PURE, Globalife and SEdHA.

PURE, a recent European Commission project examined the national educational returns of 15 Member States not only with regard to wages but also to higher job opportunities. Its findings showed that the status and the trends of return rates were totally different for each Member State. Though the research was not entirely from a life-course perspective, results from (in part) longitudinal measurement point to several life-course relevant aspects (Section 5.1). The description and main conclusions of the project can be viewed in Box 3.

The Globalife project analyses the influence of globalisation on different life-course dimensions

in OECD-type societies. Central to the focus of this investigation is the increasing tension between the growing uncertainty of future life-course situations and peoples' natural need to make self-binding decisions and how they cope with this. Therefore, the analysis concentrates on the transition from youth to adulthood, on changes in career mobility, on forms of employment and unemployment over the life course and on the transition from employment to retirement. Due to its broad research approach it draws mainly on the secondary analysis of existing longitudinal data sets rather than on collecting new data. As there are numerous, different investigations of education and training benefits in the life course within the framework of Globalife, it is not possible to give a summary here. Nevertheless, important results are discussed in the next

chapter along with findings from the other studies and projects presented.

A project presently running on a European level which is concerned with the non-material benefits of education and training in the life course is SEdHA. The project aims to provide an analysis of socioeconomic differences in health expectancy among the elderly in different European countries, and to contribute to the explanation of these differences by looking at risk factors and the accumulation of health problems over the life course (Mackenbach et al., 1999). Since the explanatory variable 'socioeconomic status' is operationalised as educational level, it is mainly the impact of education on health that is measured. Besides several national surveys and longitudinal studies, the ECHP is used to improve the comparability of information. At present, no results have been published, but a first report is due soon.

Box 3: **PURE – Public funding and private returns to education**

Objective:

Study the impact of different systems of public funding and school differentiation on observable outcomes in the labour market.

Outcome:

Main outcome variables are level and dispersion of private educational returns and education-related inequality in earnings.

Method:

- (a) examine broad national data sets which contain individual-level information on wages and education;
- (b) link the observed patterns and trends to national educational systems and policies. Besides repeated cross-sections, a few longitudinal studies are also utilised.

Countries:

Austria, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the UK.

www.etla.fi/PURE; www.cordis.lu

5. Discussion of results

So far, studies which deal with the benefits of education, training and skills or which at least contain some information on education and training benefits in the life course, have been presented at national, cross-national and European level. Some results have already been indicated, but in a rather fragmentary way. This chapter, therefore, arranges and discusses the most significant results according to the research lines outlined in Section 4.1. However, the central result of this study already limits this intention since, up to this point, there is not a single study (or even survey) which would allow for a serious comparison of education and training benefits in the life course of individuals or cohorts on a European level. The establishment of the ECHP has been a major step in this direction but as yet it covers too limited a period of time and only provides information on the number of years spent in education, training and skills acquisition, on levels achieved and on formal degrees acquired.

5.1. Individual monetary returns on education and training

As already indicated at several points in this report, the studies reviewed are of very different character in terms of concepts, specific research interests, definitions of explanatory and dependent variables, sample sizes, etc. Many of the studies, especially those concerned with educational return rates, do not display a genuine life-course concept as it was described in Chapter 3. Instead, they take up other approaches first (e.g. human capital) and then add a longitudinal lifetime perspective (e.g. through the investigation of lifetime earnings) as an enhancement of this approach. For the purpose of gathering information on impact research into education and training, it was nevertheless unavoidable that all these 'borderland' studies be included in our review, because otherwise there would have been almost nothing to revise. The life-course approach is itself – as explained earlier – a perspective that enhances

other theories on the impact of education and training. Studies of this kind (even if they do not display the life-course approach in detail) therefore contribute a great deal to the understanding of the impact and benefits of education and training in the individual life course.

As pointed out in Section 4.1.1, educational benefits are often defined and measured in terms of individual monetary returns in the life course. In the tradition of the human capital approach, studies assume a direct relationship between the accumulation of education, training and skills and the rise of current and lifetime income (Steiner and Lauer, 2000; Brunello and Miniaci, 1999; Goux and Maurin, 1994). The general relevance of skills and qualifications acquired through education and training for individual income development is confirmed by several studies on income development and lifetime income. Most of the national and cross-national studies also show a direct correlation between education and training, continuing education and training and the gaining of higher rates of monetary returns throughout the life course (Becker and Schömann, 1999; Asplund and Pereira, 1996; Pannenberg, 1995; Schömann, 1994).

As regards the level of private returns on education and training, there seem to be differences among European countries. Scandinavian countries, for example, display rather low average rates of educational returns, whereas Ireland and the UK are the opposite and central European countries are located somewhere in-between. Some of them, such as Austria, Germany and Switzerland, show a downward trend in rates of return; others remain stable or even show slight upward trends, such as Italy or Portugal (Harmon et al., 2001; Asplund and Pereira, 1999). The conclusion of Asplund and Pereira (1999) from a European comparison of educational returns is that there are few general trends and that these are rather confusing to interpret given the difficulty of identifying any general tendencies. Moreover, due to the lack of sufficient cross-national surveys, the results from national studies need to be interpreted very carefully. Data, measurement

and estimation differ to the extent that comparability can be seriously questioned. The general problem of comparability is shown very clearly if we consider that estimations based on the same kind of data differ significantly between studies due to their different model specifications, the addition of control variables, etc.

There is evidence that education and training regarding earnings complement each other. The incidence of training is higher amongst individuals with more education (Brunello, 2001). Both education and training affect the earnings of individuals in the short term and the long term (Pischke, 2000; Fougère et al., 2001; Arulampalam et al., 1995). However, the direct effect of training on earnings growth seems to weaken after a few years and can even show negative growth without an investment in further training. This suggests that training has primarily a temporary impact on monetary returns and that qualifications and skills become outdated within a few years (Brunello, 2001). However, the monetary impact of participation in continuing training programmes seems to be hard to determine. Depending on the definition of training, measurements and data material, national return rates differ strongly between the studies and results are difficult to interpret. There is some evidence that in countries with a high standardisation of initial training systems, the monetary benefits of continuing VET seem to be lower than in countries with no such system (Hujer and Wellner, 2000). However, further research utilising a unique database is needed to throw light on this rather tentative conclusion.

Rates of educational returns do not seem to be constant over the life cycle, especially for women. Though returns clearly rise in the early years of an individual's working career, the increase slackens in mid career and then stagnate and decline completely in the years leading to retirement. Assuming that productivity decreases with age, the results are compatible with the human capital approach which claims a direct link between individual productivity and rates of return (Steiner and Lauer, 2000).

There is a correlation between higher levels of education and training and higher incomes, but also a higher variance in income. At this level, job experience is a further factor influencing the rates of individual returns, because it acts as an additional

selectivity mechanism and therefore reduces variance (Asplund and Pereira, 1999; Lauer and Steiner, 1999).

Studies that investigate differences of educational returns with regard to types of education, qualification and skills are still rare and exist only at a national level. The impression is that returns on different types of qualification depend heavily on the inherent structure of the educational and occupational system of a country. The return rates for VET qualifications, which particularly depend on traditional structures and values, differ from those for general educational qualifications. In countries with a traditionally high degree of institutional standardisation of their training system and a clear differentiation of general and vocational education, individual return rates to VET seem to be much higher than in countries which show a rather low degree of standardisation and differentiation in education and training. For the UK, as an example of the latter, there is evidence that individuals who participate in Youth Training Schemes (YTS) after compulsory school age receive significantly lower wages than those who leave school at the age of 16 with no further training. These differences cannot be explained by a simple delay in returns as a result of the extra years training and the opportunity costs incurred. Rather, they seem to be stable over time (Green et al., 1994). Therefore, from an individual (life-course) perspective it can be more beneficial not to invest in further formal qualifications even if the opposite is true from a macrosocial perspective. This leads us back to the weaknesses of human capital theory as described in Section 4.1.1, because this approach only explains differences in structural circumstances in rational terms and completely ignores traditional and cultural explanations for these differences. Furthermore, this approach sees the benefits of education and training simply in terms of monetary returns. It disregards other beneficial aspects that are not as easily quantifiable, such as the different patterns of individual career prospects or non-material benefits, e.g. the gaining of higher social prestige.

In summary, it has to be pointed out that to explain life course benefits just in terms of human capital rates of monetary return is ultimately very limited. Despite several refinements of estimation techniques, too many dynamic and unpredictable

factors cannot be anticipated or estimated. Human capital rates of return ignore structural differences resulting from traditional factors that produce inequalities in the access to and outcomes of education and training, both within and between European countries. Last but not least, it can be questioned whether these studies have a value apart from pure scientific interest. As they assume a balanced situation, which cannot be found in reality, any recommendations for policy and practice must, by their very nature, be limited.

5.2. Education, training and labour market participation

Another group of studies deals with the different dimensions of an individual's occupational career. These, generally speaking, look at his or her participation in the labour market and are either largely descriptive or based on one or more labour-market theories (Section 4.1.2.). The diversity of topics covered and of theoretical approaches and methods makes it very hard to compare results from these studies, especially from a European perspective. Nevertheless, some key generalities are summarised here.

There is strong evidence that higher qualifications and skills significantly reduce the danger of spending a considerable part of one's working life in unemployment. Evidence also shows that the value of education and training and continuing education and training affects not only one's current career but also that it has accumulative effect over the whole working life (Bukodi and Robert, 2002; Noguera et al., 2002; Becker and Schömann, 1999). As basic education and training determine access to higher and continuing education and training to a considerable extent, individuals with higher educational and vocational degrees have much better working career opportunities.

However, research also indicates national differences regarding the link between education and training and career prospects over the life course. In countries with a high standardisation of training systems and an emphasis on well-defined vocational qualifications, adequate employment and successful working careers are strongly dependent on specific vocational qualifications. This link is not as strong in countries with less

well-integrated education and employment systems and less vocational specialisation (Liefbroer, 2002; Klijzing, 2000; Blossfeld and Mayer, 1998). In systems fostering high standards of vocational qualification, the differentiation between the unqualified and vocationally qualified constantly increases over the working life, with there being hardly any opportunity to compensate for this (Antoninis and Tsakoglou, 2001). On the other hand, the material benefits of education and training in terms of employability, the avoidance of unemployment and career development are generally higher in countries with specific vocational education (Shavit and Müller, 2000).

Upward mobility and individual career development seem to be increasingly bound to the participation in continuing VET and lifelong learning opportunities (Becker and Schömann, 1999), as do increased job stability and labour market flexibility. In both cases this leads to higher income and improved career prospects (Fitzenberger and Prey, 1999). For Germany in particular, completed and certificated participation in further VET supports upward mobility and income growth but this might not be equally true for other countries with less formalised and structured education and training systems (Becker R., 1993). As access to further VET is strongly determined by educational levels, the selective mechanisms which operate to qualify for further training tend to lead to a cumulative increase of educational inequality over the life course (Schömann and Becker, 1995; Becker R., 1993).

Earlier studies (Meulemann, 1990b) sometimes found that additional qualifications had a negative overall effect on subsequent job status because employers possibly considered the acquisition of additional qualifications in other fields of study to be inconsistent or because they were uncertain about the value of additional skills and flexibility. However, more recent research has rejected this finding. This might indicate a constantly growing need for individuals to adapt to new skill requirements of the labour market and to the necessity for lifelong learning. Double qualifications, in the sense of acquiring two entirely different vocational or university degrees, do not result in easier access to jobs or the achievement of a higher job status at a later date.

The importance of initial and continuing education and training for participation in the labour

market is also clearly shown by looking at the other side of the coin: the continuing and cumulative disadvantages of unskilled people or those with no formal education and training in the life course (Solga, 2002; Stone et al., 2000; Bynner, 1995; Dietz and Matt, 1994). Nevertheless, research shows that a direct linear relationship between disadvantages experienced in education, training and labour-market participation on the one hand and problems of individual development (e.g. delinquent behaviour) on the other hand, contrary to popular belief, does not exist (Schumann and Mariak, 1995; Böttger, 1998; Matt et al., 1998).

5.3. Education, training and transitions

As pointed out in Section 4.1.3 transition periods (between education and training, education/training and employment, etc.) are of special interest for life-course research, because the life course – in contrast to an individual biography – is in principle merely made up of successive transitions. In particular, the degree of success achieved in the transition to the first job is considered to be a formative element for the whole later career and life path.

In general, research shows the beneficial impact of education and training on the success of the transition from education and training to work. The very low skilled in particular have major disadvantages compared to other young people who at least have some kind of formal education or training (Bynner, 1994; Heinz, 1999; Starrin et al., 2000).

However, clear national differences are also apparent (Starrin et al., 2000). Transitions seem to be comparatively easy in Denmark, Germany, the Netherlands and Austria but in southern European countries like Greece, Italy or Spain, direct entry in a stable position after completing education or training seems to be extremely difficult. In Belgium and Sweden, where the systems of education and training are decoupled and where there is an emphasis on the general education system, one can see a trend towards the polarisation of extremely highly and very poorly qualified people. In addition, young people experience the trap of companies demanding a high level of qualification but at the same time reducing their

offers of on-the-job training. Due to the lack of work experience and job related skills, it has become more and more difficult to gain a first job (Rantakeisu et al., 2000). In contrast, Germany has always been known as a country that eases the transition from education to work by the dual system, which combines theory (in schools) and practice (workplace) in a differentiated VET system. However, due to a worsening labour-market situation and job cutbacks the dual system has experienced a serious crisis. Companies have reduced their offers of training or do not take on apprentices (Kieselbach, 2000).

‘The Swedish education system is almost diametrically opposed to its German counterpart: in Sweden, education is not so tailored towards the requirements of the labour market, whereas in Germany the system is too adjusted to short-term demands by the industry and thus compels young people to decide on a particular vocational training too early.’ (Kieselbach, 2000, p. 37).

In southern European countries such as Greece and Spain the lack of coordination between the educational system and the labour market accounts for many of the problems of youth unemployment. In both countries the youth unemployment rate is three times higher than the overall rate of unemployment. Despite their limited job prospects, university degrees in Greece are overvalued, because they are traditionally connected with high social esteem for the family. In contrast, vocational training is regarded as being of minor value, which leads to a mass of unskilled university graduates in a labour market demanding specific vocational qualifications. Spain currently tries to challenge its high youth unemployment by a system reform that aims to improve the adjustment of demand and supply. The decision either to go to university or to choose a vocational strand is still mainly determined by financial opportunities and social class. However, people with a university degree are more likely to become unemployed than those with intermediate level qualifications because of an early and continuing decrease in jobs requiring high qualifications. A high level of qualification alone, therefore, does not improve the individual’s opportunities on the labour market (Lemkow et al., 2000; Sokou et al., 2000).

From a life-course perspective, these results are of relevance in several different ways. As

already pointed out, it is assumed that individual life trajectories are entirely determined by the educational and occupational system. As has been shown, the education and training system and its relationship to the labour market has a major impact on the success or failure of young people's transition to their first (stable) job. But as far as is known from studies of working careers, the impact of education and training, and consequently of its system, goes far beyond this. Through the link between occupational factors, unemployment and employment and social in-/exclusion, the educational system contributes to the quality and quantity of educational benefits throughout the entire life course (Müller et al., 2002). This is also supported by the findings of the Yuseder project (Starrin et al., 2000), which show that countries with a poorly coordinated education and training system not only display low transition rates but also often provide few possibilities for further education or training. In addition, people with lower qualifications and low-income jobs typically have fewer chances of getting access to further education. This is likely to result in an accumulation of disadvantages and benefits in equal measure throughout the life course not only in, but also between, European countries.

5.4. Generational and cohort differences in education and training benefits

From a life-course perspective differences between successive generations and birth cohorts in the benefits they gain from education and training are of special interest, because social change over historical time becomes tangible when using a life-course approach (Section 4.1.4).

Throughout Europe there are clear generation and cohort effects in the attainment of education and training benefits. Subsequent birth cohorts display different education and qualification structures and are each faced with different opportunities in entering the job market due to economic, social and political developments (Brunello et al., 2001b; Bynner and Parsons, 2001; Bender and Dietrich, 2001; Bynner, 1998; Hægeland et al., 1999).

Generally older cohorts possess lower average levels of qualification and also had less difficulty in entering the labour market (Bynner, 1998). Due to the international economic turndown from the early 1980s onwards, the labour-market situation has changed and increasing job competition has become prevalent. The pressure of general educational expansion has made it more and more difficult for young people to position themselves successfully on the labour market. A heightened significance of qualifications and skills as protection against unemployment is found in most of the studies reviewed. The younger the cohorts the more important higher levels of education and training become (Bynner and Parsons, 2001; Mayer, 1996).

The results of research into the monetary returns on education and training are not uniform. Whilst in Germany a significant decline in return rates can be observed across generations and cohorts, especially for women (Steiner and Lauer, 2000; Boockmann and Steiner, 2000), research from Norway indicates a trend towards higher return rates of education and training (Hægeland et al., 1999). An important question is how these differences can be explained. The usual explanation that the increased participation of women in the labour force and in their educational attainment is responsible for these differences seems questionable given that these were European-wide developments, which obviously had not led to a decline in educational returns across successive cohorts in all countries.

5.5. Social differences in education and training benefits

Besides generational aspects, there are two further central factors which help explain differences in education and training benefits in the life course: family background and gender. Children from low-income households or with less well-educated parents tend to be disadvantaged in their access to education, training and further education and training (Lauer, 2002). In most countries their disadvantages accumulate rather than decline over the life course (Bynner, 1995).

Despite numerous training and reintegration programmes for the low skilled and unemployed,

current educational systems still seem to foster educational inequality. However, there are also differences between countries as regards the depth and extent of this discrimination. Educational inequality related to family background seems to be stronger in those countries where traditional class structures survive, and where hierarchical education and training systems prevail and counterbalancing programmes are rare (Schnabel, R. and Schnabel, I.; 2002; Antoninis and Tsakoglou, 2001; Tsakoglou, 1993, 1997). On the other hand, financial transfers in public education, the promotion of reemployment programmes and other forms of intervention have high distributional effects for educational equality in these countries (Magoula and Psacharopoulos, 1997).

In a review of studies concerned with the conditions and consequences of being 'not in education, employment or training' (NEET) at age 16-18, Coles et al. (2002) find that NEET is strongly related to poor family background. Not being in education, employment or training, together with other related factors, is very likely to lead to material as well as non-material problems throughout the later life course: experience of unemployment, involvement in drug or alcohol misuse, poor health, parenting at an early age and involvement in crime. There is also evidence of lower earnings throughout the life course even when the person is in work. Many of those unemployed at the age of 18 have few or no qualifications and this significantly impacts on any later earnings if employment is obtained. Persistent offending amongst 18-30 year olds correlates very strongly with having been excluded from school, having no or low qualifications and regular drug and alcohol misuse. Evidence on persistent offenders confirms that an accumulation of risk factors leads to social exclusion.

In comparison to other socially disadvantaged groups, women have been able to catch up with men in education and training both in respect of levels as well as of types of qualification in the last 20 years. However, they have not been able to convert their education and training achievements into higher and better-paid jobs as successfully as men. Highly qualified women are still more likely than men to be under-achieving in terms of their occupation. Also women earn less than men at the same level of qualification (Dale and Egerton, 1997).

Research shows that there is not only a male-female segregation according to the allocation of occupational levels (vertical) but also for different types of vocations located on the same formal level (horizontal). Men typically hold occupations with higher educational benefits than women (income and job status). Moreover, as these vocations are typically attributed to male characteristics women have fewer opportunities to access these jobs. Occupational fields related to male characteristics (accountancy, law, computing, etc.) lead to higher material educational benefits than fields associated with female characteristics (humanities, education, social sciences, etc.) (Born, 2000; Dale and Egerton, 1997)

Women also do not often have the same chances of participating in continuing education and training programmes due to family commitments or because they are employed in parts of the (segmented) labour market where there are fewer possibilities to access continuing education and training and higher career options.

5.6. Non-material benefits of education and training and subjective biographical perception

Findings regarding non-material benefits of education and individual learning biographies complete the rather 'objective' social research presented so far. The biographical research summarised in Section 5.6.2 is often concerned with the non-material benefits of education as discussed in Section 5.6.1.

5.6.1. Non-material benefits of education and training

As explained earlier, non-material benefits are comparatively hard to define and even harder to measure. Therefore, life-course research mostly concentrates on the 'hard facts', the material benefits of education. Nevertheless, there are also some beneficial non-material aspects that are more or less agreed upon, such as health and the quality of life. However, with the exception of a few health studies, empirical measurements have to rely mostly on subjective judgements about personal wellbeing, quality of life and other rather 'soft' issues.

A number of life-course research studies display a positive correlation (not necessarily causality) between education, training and skills on the one hand and, for example, health, quality of life, family formation, reduction of criminal behaviour and avoidance of social exclusion on the other (Blackwell and Bynner, 2002; Schuller et al., 2002; Hammond, 2002; Preston and Hammond, 2002; Bynner et al., 2001; Lasheras et al., 2001; Hullen, 1998, 2000; Becker, 1998; Dale and Egerton, 1997; Frenzel, 1995; Blossfeld and Huinink, 1990). Education is in general one of the most important determinants of health inequalities. Becker (1998), for example, confirms the enduring impact of education on life expectancy on the basis of GSOEP and GLHS data. As education structures the life course, it is responsible for the distribution of socioeconomic opportunities. On the one hand the trend to higher qualifications has led to an increase in the average life span of European populations, on the other hand the persistence of educational inequalities in society contribute to the persistence of variance in life expectancy between the social classes. The educational level of the individual and of the family determines to a large extent their standard of living and quality of life.

There is also an indirect connection between education and behaviour for health and mortality risks (Lasheras et al., 2001; Marmot and Wilkinson, 1999; Nehru and Dhareshwar, 1993). As the increase of (lifetime) earnings, the enhancement of social status, etc., are direct effects of education and training, these may also lead to the reduction of indirect effects such as health risks and criminal behaviour. Education is also seen as an important condition for the formation of cultural capital like personal development, social participation and dealing with institutional demands (Becker, 1998). This in turn is central for the anticipation and processing of critical life events and coping with stressors which can affect the quality of life, self-consciousness and health.

There is evidence that men and women with higher qualifications are the most distinctive in terms of their marital arrangements. In comparison to lower vocationally qualified groups they are the least likely to have formed partnerships and to have had children by the age of 33. Also there is a strong relationship between the level of educational qualification and age at birth of the

first child for both men and women, with the most highly qualified delaying parenthood the longest. There is some indication that the most highly qualified women may be more likely to choose not to have a child (Huinink, 2000; Dale and Egerton, 1997). However, for Germany there is some evidence that the increasing educational attainment of women has led them to delay getting married but has not caused a general decrease in marriage overall. Contrary to general belief, the likelihood of women getting married seems not to have been affected by the increasing participation of women in the educational system (Blossfeld and Huinink, 1990). Life-course research needs to be considered alongside an individual's own subjective biographical interpretation before these results can be interpreted as advantages or disadvantages of education and training. Nevertheless, the well-discussed processes of macro- demographic change (birth decline, ageing societies) (will) also have a revertive impact on the individual level.

5.6.2. Subjective biographical perception of educational benefits

Biographical research studies complement the objective, rather quantitative life-course perspective through subjective, qualitative insights of individual biographical interpretation (Section 4.1.6). The individual perception of education and training benefits is entirely related to the persons' educational and occupational biography and is therefore more dependent on individual interpretations and self-construction than on objective circumstances. However, biographical range is influenced by the structural limitations of the life course. The acquisition of non-material benefits is often placed within biographical contexts, because it is more difficult to find rational objective explanations for their definition as 'benefits'. Non-material benefits are not primarily objective constructs but are merely the result of subjective judgements.

Compared to life-course research, there are few studies concerned with the benefits of education and training from a biographical perspective. In addition, since the analysis of individual biographies aims to identify the special, unique characteristics of each single person, it is – strictly speaking – not possible to give any summary of results. The aim of this kind of research is rather to come to a reasonable under-

standing or interpretation of life courses and their differences. In comparison to the mere quantitative, objective life-course perspective, the central question is 'why' not 'if'. Therefore, individual interpretations are hard to generalise. However, the most outstanding outcome of biographical

research is presumably the discrepancy between objective events and their subjective interpretation. The same kind of experience, for example a interruption in the working career, is perceived in quite different ways depending on the individual biographical background (Schaeper et al., 2000).

6. Conclusions and recommendations

The purpose of this report was to provide an overview of life-course research as regards education and training benefits in Europe. After outlining the main problems involved in defining and measuring the benefits of education and training, the theoretical background of the life-course perspective was comprehensively explained. The synthesis of the two fields covered, namely research into the benefits of education and training and the life-course perspective, was done by explaining the special interest life-course research has in the analysis of education and training benefits for the individual and by showing how the life-course perspective enriches research into the impact of conventional education and training. After having set out the main lines of investigation, selected national and cross-national life-course studies, which provide empirical evidence on individual education and training benefits, were presented and their different approaches, use of data and conclusions were reviewed. Finally, the main results of the studies were summarised and an attempt was made to compare them from a European or at least a cross-national perspective. However, the different studies offer different definitions of education and training, a wide range of education and training benefits, heterogeneity in data quantity and quality and above all an enormous diversity of research questions. A serious comparison of results, which would allow for conclusions and recommendations to be made about the impact of country specific conditions, is therefore simply not possible. Our conclusion will offer a cautious attempt to address some general trends, but its focus will be on recommendations for further research rather than on implications for policy and practice.

As regards the individual's monetary returns on education and training throughout the life course, the studies reviewed indicate differences between countries in average return rates as well as in upward and downward trends. The consequences of these differences are hard to estimate. Some studies claim that there is higher mobility across national borders, particularly of highly educated

people. They suggest that countries with a continuing downward trend in educational return rates ought to increase their investment in education and training. Hence, these studies indicate substantial individual and social benefits to be gained from policies aimed at lowering the number of early school leavers and from providing socially deprived groups with the opportunities and incentives to continue education and training (Asplund, 2003). In comparison with cross-sections, longitudinal investigations highlight different context dependencies of human capital configuration. Human capital allocation is not a static characteristic of a society but is a process of acquisition and allocation in the individual life course and through historical change. However, as estimations of individual rates of returns are based on simple human capital assumptions of 'input' and 'output', results must be treated carefully. In addition, return estimations stem from national data sets in which the quantity and quality of data material is very different. A comparison on a European level would actually need a unique database. Results from studies dealing with a broader concept of education and training benefits, including different aspects of an individual's changes of status over the life course, are even harder to review for their general trends and recommendations, because they display very different approaches, focal points, empirical methods and measurements.

Moreover, since the majority of these studies do not aim to evaluate the education and training system of one or more countries but rather generally try to reveal how the individual life course is determined by education and training, or education and training systems, policy and practice implications are hard to derive. Nevertheless, these studies should not be underestimated within the framework of research into the impact of education and training, because they demonstrate the relevance that education and training has for the whole individual life course by showing that participation in education and training have an increasing and cumulative effect on occupational career and personal develop-

ment (Bukodi and Robert, 2002; Noguera et al., 2002; Becker and Schömann, 1999). These studies confirm what has been identified already in early life-course research (e.g. Featherman and Shavit, 1990): educational policy and practice have a major impact on the individual life course. The connection between the education and training system and the labour market, for instance, is a main factor in determining the entry into the job market and, as a consequence, later career development. Empirical life-course research also shows how the still existing selectivity of continuing education and training, as regards educational level, gender and family background and other social factors, and how this contributes to the persistence and accumulation of social discrimination throughout the life course. This means that simply increasing the opportunities for continuing education would not necessarily improve an individual's opportunities for participating in the labour market. On the contrary, this might lead to quite undesirable side effects such as the further polarisation of educational and occupational opportunities. Our recommendations would be to increase target group orientation and to provide permanent evaluation and quality controls. Furthermore, subsidised continuing education and training must be more than a mere social sop or a simple cure-all for problem groups, but must, as a matter of course, be integrated into a system of economic and labour-market policy (Allmendinger, 1994). Life-course research also shows the 'wider' or non-material benefits of education and training, especially for health, life expectancy, personal development and family formation, all of which also accumulate throughout the life course. As regards this – already repeatedly mentioned – accumulation effect of education and training and further education and training throughout the life course, the central policy recommendation from life course and biographical research would be to improve the participation in education and training of socially deprived groups. This would ease transitions between education and training, initial education and training and higher education, education and training and work. It would also facilitate vertical and horizontal mobility and actively foster the participation of the lower qualified in continuing education programmes. The life-course perspective also points to the necessity of devising specific, national solutions to policy

development in education and training, because different education and training systems do not simply exist as a matter of fact, but have developed over time due to particular historical and structural realities. However, life-course research as a rule does not provide evidence on the impact of particular education and training programs but restricts its education and training variables to levels achieved and to the number of years spent in education (or, at most, to types of qualifications). Therefore, suggestions as to how improvements could be achieved cannot be offered but this needs to be demanded of evaluative research.

However, the suggestions made above should be treated carefully. From studies, which draw on long-term prospective panels or retrospective analyses, we have learned that it becomes increasingly difficult over time to ascribe a specific effect to initial education and training or to a particular education and training programme. A variety of other factors, such as life experience, personal attitudes, family and social background, can all interfere with education and represent either conditions or impacts. Furthermore, most studies are based on national surveys that are difficult to compare because their definitions and the quality and quantity of their empirical work vary so much. In Europe longitudinal research has been concentrated in Germany, the Netherlands, the UK and a few Nordic Member States, whilst there is only a weak database for life-course investigations in southern and eastern European countries. The rapid economic advancement of these countries over the last few years would, however, make these the most interesting ones to assess for the impact of education and training over time. Increased efforts are therefore needed to produce comparable longitudinal data sets in Europe and to include southern and eastern European countries in particular. The ECHP will presumably be the most appropriate and most used data source for research into education and training benefits from a life-course perspective over the coming years. However, as the panel contains only limited information on education, training and skills a European cohort study, which focuses on aspects related to education and training, would be an essential addition long-term European research into the impact of education and training.

List of abbreviations

BCS70	1970 British cohort study
BHPS	British household panel survey
ECHP	European Community household panel
EPAG	European panel analysis group
GLHS	German life history study
GSOEP	German socio-economic Panel
IAB	Federal Institute for Employment Research
LNU	Swedish level of living survey
MLS	Malmo longitudinal study of social assistance
MS	Malmo study
NCDS	National child development study
NORS	Norway survey
PC	Prospective cohort
PP	Prospective panel
PURE	Public funding and private returns to education
R	Retrospective
RC	Retrospective cohort
SEdHA	Socioeconomic determinants of healthy ageing
SEP	Dutch socio-economic panel
SOEP	Socio-economic panel
VET	Vocational education and training
VTLMT	Education, vocational training and labour-market transitions

Annex – List of data and information sources

National and cross-national electronic catalogues

Acronym	Resource	Available from Internet [cited 15.07.2003]
BIBSYS	Online Library System of Norwegian University Libraries	www.bibsys.no/english
BVB	<i>Bibliotheksverbund Bayern</i>	www-opac.bib-bvb.de
COPAC	Union Catalogue of UK and Ireland	www.copac.ac.uk/copac
FoDokAB	<i>Forschungsdokumentation zur Arbeitsmarkt- und Berufsforschung</i>	---
FORIS	<i>Forschungsinformationssystem Sozialwissenschaften</i>	Access limited
GBV	<i>Gemeinsamer Bibliotheksverbund</i>	www.gbv.de
IBSS	International Bibliography of the Social Sciences	---
IBZ	<i>Internationale Bibliographie der Zeitschriftenliteratur</i>	www.asu.edu/lib/resources/db/ibz.htm
KOBV	<i>Kooperativer Bibliotheksverbund Berlin- Brandenburg</i>	www.kobv.de
KVK	Karlsruhe Virtual Catalog	www.ubka.uni-karlsruhe.de/kvk
LIBRIS	The union catalogue of Swedish libraries	http://www.libris.kb.se
LitDokAB	<i>Literaturdokumentation zur Arbeitsmarkt- und Berufsforschung</i>	---
OLC	Online Contents	www.gbv.de
SOLIS	<i>Sozialwissenschaftliches Literaturinformations-system</i>	Access limited
WISO	<i>Literarnachweise für Wirtschafts- und Sozialwissenschaften</i>	http://www.wiso-net.de

Cross-national and national databases

Acronym	Resource	Available from Internet [cited 15.07.2003]
ACROSS	Educational issues across Europe	www.b.shuttle.de/wifo/across/=start.htm
CESSDA	European social science data archives	www.nsd.uib.no/Cessda
CORDIS	Community research development information service	www.cordis.lu
EHRD	Human resource development in Europe	www.b.shuttle.de/wifo/ehrd/=portal.htm
IDEAS		http://ideas.repec.org
LLL Base	Lifelong learning base	www.b.shuttle.de/wifo/lll/=base.htm
OECD Ed	OECD education database	www.oecd.org/scripts/cde/fbase
SSRN	Social Science Research Network	http://www.ssrn.com/
VET Bib	Cedefop VET bibliographical database	http://libserver.cedefop.eu.int:4505/ALEPH

Online-bibliographies of professional organisations/institutes

Acronym	Resource	Available from Internet [cited 15.07.2003]
CSL	Centre for Longitudinal Studies, UK	http://www.cls.ioe.ac.uk
ISER	Institute for Social and Economic Research, UK	http://www.iser.essex.ac.uk
ECASS	European centre for the analysis in social science	http://www.iser.essex.ac.uk/ecass/
EPAG	European panel analysis group	http://www.iser.essex.ac.uk/epag
Eurydice	Information network of education in Europe	http://www.eurydice.org
FORUM	Forum for research in education and training	http://www.theknownet.com
MZES	Mannheim centre for social research in Europe	http://www.mzes.uni-mannheim.de
MPIB	Max-Planck-Institute for human development	www.mpib-berlin.mpg.de
DIPF	German institute for international educational research	www.dipf.de
FIBS	Institute of education and socio-economic research and consulting	www.fibs-koeln.de
ZEW	Centre for European economical research	www.zew.de
CRWBL	Centre for research on the wider benefits of learning	www.learningbenefits.net
ECSR	European consortium for sociological research	---
CREST	Center for research in economics and statistics	www.crest.fr/presentation/Apresentation.html
CLS	Centre for labour market and social research, Denmark	http://www.cls.dk
CIM	Centre for research in social integration and marginalisation, Denmark	http://www.hha.dk/eok/CIM/
IAB	Federal institute for employment research	www.iab.de
IZA	Institute for the study of labour	www.iza.org
ROA	Research centre for education and the labour market	www.fdewb.unimaas.nl/roa
WZB	Social science research center berlin	www.wz-berlin.de/
Cedefop	European centre for the development of vocational training	www.cedefop.eu.int
DFES	Department for education and skills	www.dfes.gov.uk

National and cross-national electronic data archives and statistical offices

Acronym	Resource	Available from Internet [cited 15.07.2003]
ADPSS	<i>archivio dati e programmi per le scienze sociali, Milano, Italia</i>	www.ifdo.org/org_archives/arc_bfr.htm
BASS	Belgium archive for social science	http://logi.rspo.ucl.ac.be
BDSP	<i>Banque de données socio politiques</i>	http://195.221.54.130/bdsp/
CIS	<i>Centro de investigaciones sociológicas</i>	www.cis.es
DDA	Danish data archive	www.dda.dk
ESRC	UK data archive	www.data-archive.ac.uk/
ESSDA	Estonian social science data archive	http://sys130.psych.ut.ee/esta
Eurostat	Statistical office of the European Communities	http://europa.eu.int/comm/eurostat

FSD	Finish social science data archive	www.fsd.uta.fi/english/index.html
IFDO	International federation of data archives	www.ifdo.org
NSD	Norwegian social science data services	http://www.nsd.uib.no
SDB	Social data bank, Greece	http://www.ekke.gr/databank/
SIDO	Swiss information and data archive service for the social sciences	http://www.sidos.ch
SSD	Swedish social science data service	http://www.ssd.gu.se
ZA	<i>Zentralarchiv für Europäische Sozialforschung</i>	http://www.gesis.org/ZA

Programme- and project bibliographies

Acronym	Resource	Available from Internet [cited 15.07.2003]
CATEWE	Comparative analysis of transitions from education to work in Europe	www.mzes.uni-mannheim.de/projekte
FAME	Vocational identity, flexibility and mobility in the European labour market	www.itb.uni-bremen.de/projekte/fame
Globalife	Life course in the globalisation process	http://alia.soziologie.uni-bielefeld.de/~globalife
ISSP	International social survey programme	http://www.issp.org/public.htm
Newskills	New job skill needs and the low skilled	http://158.143.98.51/homepage/tser
SEdHA	Socioeconomic determinants of healthy ageing	http://www.eur.nl/fgg/mgz/
STT	Schooling, training and transitions: an economic perspective	www.b.shuttle.de/wifo/across/p-st.htm
TSER	Targeted socio-economic research programme	http://www.cordis.lu/tser/home
Youth Marginalisation	Youth unemployment and processes of marginalisation on the Northern European periphery	www.b.shuttle.de/wifo/across/p-yo.htm
Yuseder	Youth unemployment and social exclusion	www.ipg.uni-bremen.de/YUSEDER

References

- Adam, K. *Die deutsche Bildungsmisere: PISA und die Folgen*. München: Propyläen, 2002.
- Alewell, D. *Interne Arbeitsmärkte*. Hamburg: Steuer- und Wirtschaftsverlag, 1993.
- Allmendinger, J. *Lebensverlauf und Sozialpolitik: die Ungleichheit von Mann und Frau und ihr öffentlicher Ertrag*. Frankfurt/Main: Campus, 1994.
- Andreß, H. J. Instabile Erwerbskarrieren und Mehrfacharbeitslosigkeit. Ein Vergleich mit der Problemgruppe der Langzeitarbeitslosen. *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung*, 1989, Vol. 22, No 1, p. 17-32.
- Antoninis, M.; Tsakoglou, P. Who benefits from public education in Greece? Evidence and policy implications. *Education Economics*, 2001, Vol. 9, No 2, p. 197-222.
- Arrow, K. J. *Social choice and individual values*. Second edition. New Haven: Yale University Press, 1973.
- Arulampalam, W.; Booth, A. L.; Elias, P. *Work-related training and earnings growth for young men in Britain*. Colchester: ISER, 1995 (Working papers, No 18).
- Arum, R.; Shavit, Y. Secondary vocational education and the transition from school to work. *Sociology of Education*, 1995, Vol. 68, p. 187-204.
- Ashenfelter, O.; Layard, R. (eds) *Handbook of labor economics* (3 Vol.) Amsterdam: North Holland, 1986.
- Asplund, R. *Public funding and returns on education*. Ely, UK: PJB Associates, 2003 (New perspectives on learning.– Briefing paper 29).
- Asplund, R.; Pereira, P. T. *Returns to human capital in Europe: a literature review*. Helsinki: Taloustieto Oy, 1999.
- Barceinas-Paredes, F. et al. The screening versus human capital hypotheses: evidence from France and Spain. In: Asplund, R. et al. (eds) *Public funding and private returns to education. PURE Final Report*, 2001, Part II, p. 96-99.
- Baumert, J. *Bildungsverläufe und psychosoziale Entwicklung*. Berlin: MPI – Max Planck Institute for Human Development, 2002.
- Beck, U. *Risk society: towards a new modernity*. London: SAGE, 1994.
- Becker, G. *Human capital: a theoretical and empirical analysis with special reference to education*. New York: National Bureau of Economic Research, 1964.
- Becker, G. *Human capital*. Third edition. Chicago, IL: University of Chicago Press, 1993.
- Becker, R. Berufliche Weiterbildung und Berufsverlauf. In: Meier, A.; Rabe-Kleberg, U. (eds) *Weiterbildung, Lebenslauf, sozialer Wandel*. Berlin: Luchterhand, 1993.
- Becker, R. Bildung und Lebenserwartung in Deutschland: Eine empirische Längsschnitt-untersuchung aus der Lebensverlaufsperspektive. *Zeitschrift für Soziologie*, 1998, Vol. 27, No 2, p. 133-150.
- Becker, R.; Schömann, K. Berufliche Weiterbildung und Einkommensdynamik: Eine Längsschnittstudie mit besonderer Berücksichtigung von Selektionsprozessen. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 1996, Vol. 48, No 3, p. 426-461.
- Becker, R., Schömann, K. Berufliche Weiterbildung und Einkommenschancen im Lebensverlauf: Empirische Befunde für Frauen und Männer in West- und Ostdeutschland. In Beer, D. et al. (eds) *Die wirtschaftlichen Folgen der Aus- und Weiterbildung*. Munich: Hampp, 1999.
- Bender, S.; Dietrich, H. *Unterschiedliche Startbedingungen haben langfristige Folgen: der Einmündungsverlauf der Geburtskohorten 1964 und 1971 in Ausbildung und Beschäftigung – Befunde aus einem IAB Projekt*. Nuremberg: IAB, 2001 (Serie Werkstattbericht No 11).
- Berger, J. Modernization theory and economic growth. In: Schelke, W. et al. (eds) *Paradigms of social change: modernization, development, transformation, evolution*. Frankfurt: Campus, 2000, p. 31-47.
- Blaney, D. L.; Inayatullah, N. Neo-modernization? IR and the inner life of modernization theory. *European Journal of International Relations*, 2002, Vol. 8, Issue 1, p. 103-138.
- Blossfeld, H. P.; Timm, A. *Das Bildungssystem als Heiratsmarkt. Eine Längsschnittanalyse der Wahl von Heiratspartnern im Lebenslauf*. Bremen: Sonderforschungsbereich 186 der

- Universität Bremen, 1997 (Sfb-Arbeitspapier, No 43).
- Bjørnåvold, J.; Tissot, P. Glossary. In: Bjørnåvold, J. *Making learning visible: identification, assessment and recognition of non-formal learning in Europe*. Luxembourg: Office for Official Publications of the European Communities, 2000, p. 199-221 (Cedefop Reference Series).
- Blackwell, L.; Bynner, J. *Learning, family formation and dissolution*. London: Centre for Research on the Wider Benefits of Learning, Institute of Education, 2002.
- Blau, P. M.; Duncan, O. D. *The American occupational structure*. New York: Wiley, 1967.
- Bloomer, M.; Hodkinson, P. *Moving into further education: the voice of the learner*. London: Further Education Development Agency, 1997.
- Bloomer, M.; Hodkinson, P. Learning careers: continuity and change in young people's dispositions to learning. *British Educational Research Journal*, 2000, Vol. 26, No 5, p. 583-596.
- Blossfeld, H.-P. *Berufseintritt und Berufsverlauf. Eine Kohortenanalyse über die Bedeutung des ersten Berufs in der Erwerbsbiographie*. Frankfurt/Mannheim: 1985a (Sfb3-Arbeitspapier, No 161).
- Blossfeld, H.-P. *Zur Repräsentativität der Sfb-3-Lebensverlaufsstudie. Ein Vergleich mit Daten aus der amtlichen Statistik*. Frankfurt/Mannheim: 1985b (Sfb3-Arbeitspapier, No 163).
- Blossfeld, H.-P. *Kohortendifferenzierung im Karriereprozess. Eine Längsschnittstudie über die Veränderung der Bildungs- und Berufschancen im Lebenslauf*. Frankfurt am Main: Campus, 1989.
- Blossfeld, H.-P. *Bildung, Arbeit und soziale Ungleichheit im Globalisierungsprozess*. Bielefeld: Faculty of Sociology, 1999 (Globalife Working Paper Series No 1).
- Blossfeld, H.-P.; Hannan, M.T.; Schömann, K. Die Bedeutung der Bildung im Arbeitseinkommensverlauf. Theoretische Ansätze im Lichte der Ergebnisse einer Längsschnittuntersuchung. In: Lüdeke, R. (eds) *Bildung, Bildungsfinanzierung und Einkommensverteilung I*. Berlin: Duncker und Humblot, 1993.
- Blossfeld, H.-P.; Huinink, J. Bildung, Karriere und das Alter bei der Eheschließung von Frauen. In: Felderer, B. (ed.) *Bevölkerung und Wirtschaft*. Berlin: Duncker & Humblot, 1990, p. 539-553.
- Blossfeld, H.-P.; Mayer, K.U. Berufsstruktureller Wandel und soziale Ungleichheit. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 1998, Vol. 43, No 4, p. 671-696.
- Blossfeld, H.-P.; Rohwer, G. *Techniques of event history modeling. New approaches to causal analysis*. Hillsdale, NJ: Lawrence Erlbaum Associates, 1995.
- Böttger, A. *Gewalt und Biographie. Eine qualitative Analyse rekonstruierter Lebensgeschichten von 100 Jugendlichen*. Baden-Baden: Nomos 1998.
- Boockmann, B.; Steiner, V. *Cohort effects and the returns to education in West Germany*. Mannheim: ZEW – Centre for European Economic Research, 2000 (Discussion Paper No 00-05).
- Born, C. Erstausbildung und weiblicher Lebenslauf. *Zeitschrift für Soziologie der Erziehung und Sozialisation*, 2000, No 3 (Beiheft), p. 50-65.
- Boudon, R. *Education, opportunity, and social inequality*. New York: John Wiley, 1974.
- Bratberg, E.; Nilsen, O. A. *Transition from school to work: search time and job duration*. Bonn: IZA – Institute for the Study of Labor, 1998 (Discussion Paper No 27).
- Brauns, H.; Müller, W.; Steinmann, S. *Educational expansion and returns to education: a comparative study on Germany, France, the UK and Hungary*. Mannheim: MZES – Mannheimer Zentrum für Europäische Sozialforschung, 1997 (Working Papers I, No 23).
- Breen, R. *The persistence of class origin inequalities among school leavers in the republic of Ireland, 1984-1993*. Paper presented to the ESF workshop: Transitions in youth: comparisons over time and across countries. Oostvoorne, The Netherlands, 22-25 September, 1995.
- Bretagnolle, J.; Huber-Carol, C. Sous-estimation des contrastes due à l'oubli de variables pertinentes dans le modèle de Cox pour les durées de survie avec censure. *Comptes Rendus de l'Académie des Sciences*, 1985, Serie I, Vol. 300, p. 359-362.
- Brückner, E. Erhebung ereignisorientierter Lebensverläufe als retrospektive Längsschnittrekonstruktion. In: Hauser, R.; Ott, N.; Wagner, G. (eds) *Mikroanalytische Grundlagen der Gesellschaftspolitik. Bd. 2: Erhebungsverfahren, Analysemethoden und Mikrosimulation*. Berlin: Akademie Verlag, 1994, p. 38-69.

- Brunello, G. *On the complementary of education and training in Europe*. Bonn: IZA – Institute for the Study of Labor, 2001 (Discussion Paper No 309).
- Brunello, G.; Comi, S. *Education and earnings growth. Evidence from 11 European countries*. PURE project, 2000.
- Brunello, G.; Comi, S.; Lucifora, C. *The returns to education in Italy. A new look at the evidence*. Bonn: IZA – Institute for the Study of Labor, 2001a (Discussion Paper No 130).
- Brunello, G.; Comi, S.; Lucifora, C. Education, earnings growth and cohorts. In: Asplund, R. et al. (eds) *Public funding and private returns to education PURE – Final report*, 2001b, p. 22-34.
- Brunello, G.; Miniaci, R. The economic returns to schooling for Italian men. An evaluation based on instrumental variables. *Labour Economics*, 1999, No 6, p. 509-519.
- Bryson, A.; Lissenburgh, S. *The returns to graduation*. Department for Education and Employment, Research Studies RS15. London: HMSO, 1996.
- Büchel, F. *Die Qualität der Wiederbeschäftigung nach ununterbrochener und nach 'perforierter' Langzeitarbeitslosigkeit*. Nürnberg: IAB, 1992 (BeitrAB 162).
- Bukodi, E.; Robert, P. *The effect of the globalization process on the transition to adulthood in Hungary*. Bamberg: Department of Sociology, Bamberg University, 2002 (Globalife working paper Series, No 27).
- Bynner, J. *Basic skills and labour market entry*. Paper presented to the ESF workshop: Determinants of individual success in transitions to the labour market. Seelisberg, Switzerland, 16-19 September 1994.
- Bynner, J. Skills and disadvantage in labour-market entry. In: Haubrich, K.; Reubel, F. (eds) *Berufsstart benachteiligter Jugendlicher in Europa. Konzepte zur beruflichen Integration im regionalen Kontext*. München: DJI, 1995 (Arbeitspapier No 2).
- Bynner, J. Education for what? *Education and Training*, 1998, Vol. 40, No 1, p. 4-5.
- Bynner, J.; Parsons, S. Qualifications, basic skills and accelerating social exclusion. *Journal of Education and Work*, 2001, Vol. 14, No 3, p. 279-291.
- Bynner, J. et al. *Improving adult basic skills: benefits to the individual and to society*. London: HMSO, 2001 (DfEE Research Report RR251).
- Caporaso, J. A. Dependency theory: continuities and discontinuities in development studies. *International Organization*, 1980, Vol. 34, Issue 4, p. 605-634.
- Chevalier, A. et al. *The returns to education in the UK*. In: Asplund, R.; Pereira, P. T. (eds) *Returns to human capital in Europe: a literature review*. Helsinki: Taloustieto Oy, 1999.
- Clausen, J. *The life course. A sociological perspective*. Englewood Cliffs: Prentice Hall, 1986.
- Creswell, J. W. *Qualitative inquiry and research design. Choosing among five traditions*. London: Sage, 1998.
- Coles, B. et al. *Literature review of the costs of being 'not in education, employment or training' at age 16-18*. London: DfEE – Department for Employment and Education, 2002. (Research Brief, No 347)
- Curti, M. Does economic stagnation effect unemployed workers, even when re-employed? *International Journal of Manpower*, 1998, Vol. 19, No 7, p. 410-423.
- Dale, A.; Egerton, M. *Highly educated women: evidence from the National Child Development Study*. London: DfEE – Department for Employment and Education, 1997. (DfEE Research Studies, RS25).
- Deding, M.; Dall Schmidt, T. *Differences in income inequality across Europe – Market driven or ...?* Colchester: EPAG – European Panel Analysis Group, 2002 (Working Paper, No 37).
- Denny, K.; Harmon, C. *Measuring the economic return to education: evidence from the Irish school leavers' survey 1990-1995*. Dublin, Department of Economics, University College, 1998.
- Descy, P.; Tessaring, M. (eds) *Training and learning for competence: second report on vocational training research in Europe: synthesis report*. Luxembourg: Office for Official Publications of the European Communities, 2001 (Cedefop Reference series, 6).
- Desjardin, R. The effects of learning on economic and social well-being: a comparative analysis. *Peabody Journal of Education*, 2001, Vol. 76, No 3 and N 4, p. 222-246.
- Deutsches PISA-Konsortium (ed.) *PISA 2000 – Basiskompetenz von Schülern und Schülerinnen im internationalen Vergleich*. Opladen: Leske + Budrich, 2001.

- Deutsches PISA-Konsortium (ed.) *PISA 2000 – Die Länder der Bundesrepublik im Vergleich*. Opladen: Leske + Budrich, 2002.
- Dex, S. (ed.) *Life and work history analyses. Qualitative and quantitative developments*. London: Routledge, 1991.
- Dietz, G.-H.; Matt, E. Begrenzte Handlungsspielräume bei der Berufsfindung. Der Übergang von Haupt- und Sonderschülern in das Berufsbildungssystem. *Zeitschrift für Berufs- und Wirtschaftspädagogik*, 1994, No 5, p. 510-524.
- Diewald, M.; Sørensen, A. Erwerbsverläufe und soziale Mobilität von Frauen und Männern in West- und Ostdeutschland: makrostrukturelle Umbrüche und Kontinuitäten im Lebensverlauf. In: Diewald, M.; Mayer, K.U. (eds) *Zwischenbilanz der Wiedervereinigung*. Leverkusen: Leske und Budrich, 1996.
- Dore, R. *The Diploma disease: education, qualification, and development*. Berkeley: University of California Press, 1976.
- Duncan, O. D.; Haller, A. O.; Portes, A. Peer influences on aspirations. A reinterpretation. In: Blalock, H. M. Jr. (ed.) *Causal models in social sciences*. Chicago: Aldine-Atherton, 1971, p. 219-224.
- Ecarius, J. *Individualisierung und soziale Reproduktion im Lebensverlauf. Konzepte der Lebenslaufforschung*. Opladen: Leske + Budrich, 1996.
- Elder, G. H. Age differentiation and the life course. *Annual Review of Sociology*, 1975, Vol. 1, p. 165-190.
- Elder, G. H. (ed.) *Life course dynamics. Trajectories and transitions 1968 – 1980*. Ithaca UA: Cornell University Press, 1985.
- Elder, G. H. Lives and social change. In: Heinz, W. R. (ed.) *Theoretical advances in life course research*. Weinheim: Deutscher Studien Verlag, 1991, p. 58-86.
- Engerman, D. C. et al. (eds) *Staging growth: modernization, development and the global Cold War*. Amherst: University of Massachusetts Press, 2003.
- Ermisch, J.; Francesconi, M. Educational choices, families and young people's earnings. *Journal of Human Resources*. 2000, Vol. 35, No 1, p. 143-176.
- European Commission. *The Lisbon European Council – An agenda of economic and social renewal for Europe*. Contribution of the European Commission to the special European Council in Lisbon, 23-24 March 2000, Brussels: European Commission, 2000 (Doc 00/7).
- European Commission. *NAP: National Action Plans on Employment 2002*. Actual Versions for each Member State can be found on this EU-Website: http://europa.eu.int/comm/employment_social/news/2002/may/naps2002_en.html [cited 11.07.2003]
- ETF – European Training Foundation. *Glossary of labour-market terms and standard and curriculum development terms*. Turin: ETF 1998.
- Fabrizio, B. *Educational performance and educational returns at entry into the Italian labour market*. Bamberg: Department of Sociology, 2000 (Globalife working paper Series, No 10).
- Farvaque, N.; Salais, R. *Implementing allowances for young people in difficulty in France: enhancing capabilities or increasing selectivity?* Ninth International Congress, Geneva 12-14 September 2002. Geneva: BIEN – Basic Income European Network, 2002 Available from Internet: <http://www.etes.ucl.ac.be/bien/Files/Papers/2002FarvaqueSalais.pdf> [cited 11.07.2003]
- Featherman, D. L.; Hauser, R. M. *Opportunity and change*. New York: Academic Press, 1978.
- Featherman, D. L.; Shavit, Y. Human development and society: a transactional relationship. *Human Development*, 1990, Vol. 33, p. 171-178.
- Felstead, A.; Krahn, H.; Powell, M. *Contrasting fortunes across the life course: non-standard work among women and men in Canada and the United Kingdom*. Leicester: CLMS – Center for Labour Market Studies, 1997 (Working Paper No 17) Available from Internet: http://www.clms.le.ac.uk/publications/wkpapers/working_paperNo17.pdf[cited 11.07.2003].
- Fitzenberger, B.; Prey, H. Berufliche Weiterbildung und die Stabilität der Beschäftigung. Eine Evaluation auf Basis des Sozioökonomischen Panels 1999. In: Beer, D. et al. (eds) *Die wirtschaftlichen Folgen der Aus- und Weiterbildung*. Munich: Hampp, 1999.
- Fougère, D.; Goux, D.; Maurin, E. Formation continue et carrières salariales. Une évaluation sur données individuelles. *Annales d'Économie et de Statistique*, 2001, No 62, p. 49-70.

- Franz, W. *Arbeitsmarktökonomik*. Berlin: Springer 1991.
- Frenzel, H. J. Bildung und Partnerwahl. *ZUMA Nachrichten*, 1995, Vol. 19, No 36, p. 61-87.
- Furlong, A.; Hammer, T. *Youth unemployment and marginalisation in northern Europe*. Oslo: Nova, 2000.
- Galler, H. P.; Pötter, U. Zur Robustheit von Schätzmodellen für Ereignisdaten. In: Hujer, R.; Schneider, H.; Zapf, W. (eds) *Herausforderungen an den Wohlfahrtsstaat im strukturellen Wandel*. Frankfurt am Main: Campus, 1992, p. 379-405.
- Ganzach, Y. Parents' education, cognitive ability, educational expectations and educational attainment: Interactive effects. *British Journal of Educational Psychology*, 2000, Vol. 70, p. 419-441.
- Gash, V.; O'Connell, P. J. *The Irish graduate labour market: a six year follow-up survey of third level graduates from 1992*. Dublin: ESRI – Economic and Social Research Institute, 2000.
- Genep, A. V. *The rites of passage*. Chicago: University of Chicago Press, 1960.
- Giele, J. Z.; Elder, G. H. Jr. (eds) *Methods of life course research: qualitative and quantitative approaches*. London: Sage 1998.
- Glick, P. C. The family cycle. *American Journal of Sociology*, 1947, No 12, p. 164-174.
- Goldthorpe, J. H. *Social mobility and class structure in modern Britain*. Oxford, Clarendon Press: 1980.
- Goux, D.; Maurin, E. Education, expérience et salaire: tendances récentes et évolution de long terme. *Economie et Prévision*, 1994, Vol. 116, p. 155-178.
- Green, F.; Hoskins, M.; Montgomery, S. *The effects of training, further education and YTS on the earnings of young employees*. Leicester: Faculty of Social Science, 1994. (Discussion Paper, No 10).
- Gridley, G et al. Is there a healthy worker effect for cancer incidence among women in Sweden? *American Journal Industrial Medicine*, 1999, Vol. 36, p. 193-99.
- Hagenaars, J. A.; Cobben, N. P. Age, cohort and period: a general model for the analysis of social change. *Netherlands Journal of Sociology*, 1978, No 14, p. 59-91.
- Hægeland, T.; Klette, T. J.; Salvanes, K. G. Declining returns to education in Norway? Comparing estimates across cohorts, sectors and over time. *Scandinavian Journal of Economics*, 1999, Vol. 101, No 4, p. 555-576.
- Hakim, C. *Research design. Strategies and choices in the design of social research*. London: Allen and Unwin, 1987.
- Hall, E. M.; Johnson, J. V.; Tsou, T.-S. Women, occupation and risk of cardiovascular morbidity and mortality. *Occupational Medicine: State of the Art Reviews*, 1993, Vol. 8, p. 709-719.
- Hamerle, A.; Tutz, G. *Diskrete Modelle zur Analyse von Verweildauer und Lebenszeiten*. Frankfurt: Campus, 1989.
- Hammond, C. *Learning to be healthy*. London: Centre for Research on the Wider Benefits of Learning, 2002 (Research Brief, No RCB07).
- Hammarström, M. *Varför inte högskola?: En longitudinell studie av olika faktorerers betydelse för studiebegåvade ungdomars utbildningskarriär*. Göteborgs: Institutionen för pedagogik, 1996. (Göteborg studies in Educational sciences, No 107)
- Hannan, D. F. *Education, vocational training and labour market transition (VTLMT) amongst lower level school leavers in 4 European countries*. Dublin: ESRI, 2001 (ESRI report).
- Hannan, D. F.; Werquin, P. Education and labour market change: the dynamics of education to work transitions in Europe. A review of the TSER programme. In: Descy, P.; Tessaring, M. (eds) *Training in Europe: second report on vocational training research in Europe 2000: background report*. Luxembourg: Office for Official Publications of the European Communities, 2001, Vol. 3, Part 5, p. 91-135 (Cedefop Reference series, 3008).
- Harmon, C.; Walker, I.; Westergaard-Nielsen, N. *Returns to education in Europe*. In: Asplund, R. et al. (eds) *Public funding and private returns to education. PURE Final Report*, 2001, Part I, p. 13-21.
- Hartog, J.; Pereira, P. T.; Vieira, J. A. C. *Changing returns to education in Portugal during the 1980s and early 1990s : OLS and quantile regression estimators*. Mimeo, 1993.
- Hauser, R.; Ott, N.; Wagner, G. (eds), *Mikroanalytische Grundlagen der Gesellschaftspolitik*. Berlin: Akademie Verlag, 1994.
- Heinz, W. R. (ed.) *Theoretical advances in life course research*. Weinheim: Dt. Studien-Verlag, 1997.

- Heinz, W. R. *From education to work: cross-national perspectives*. Revision of papers delivered at a conference at the University of Toronto, April 1996. Cambridge: University Press, 1999.
- Hillmert, S. *Ausbildungssysteme und Arbeitsmarkt. Lebensverläufe in Deutschland and Großbritannien im Kohortenvergleich*. Wiesbaden: Westdeutscher Verlag, 2001.
- Hillmert, S. Stabilität und Wandel des 'deutschen Modells': Lebensverläufe im Übergang zwischen Schule und Beruf. In: Wingens, M.; Sackmann, R. (eds) *Bildung und Beruf. Ausbildung und struktureller Wandel in der Wissensgesellschaft*. Weinheim, München: Juventa, 2002.
- Holler, M. J. *Ökonomische Theorie des Arbeitsmarktes*. Darmstadt: Wissenschaftliche Buchgesellschaft, 1986.
- Hradil, S.; Immerfall, S. (eds) *Die westeuropäischen Gesellschaften im Vergleich*. Opladen: Leske + Budrich, 1997.
- Hsiao, C. *Analysis of panel data*. Cambridge: Cambridge University Press, 1986.
- Huinink, J. Bildung und Familienentwicklung im Lebenslauf. *Zeitschrift für Erziehungswissenschaft*, 2000, Vol. 3, No 2, p. 209-227.
- Hujer, R.; Caliendo, M.; Zeiss, Ch. *Macroeconomic evaluation of active labour-market policy – a case study* (in this volume).
- Hujer, R.; Wellner, M. Berufliche Weiterbildung und individuelle Arbeitslosigkeitsdauer in West- und Ostdeutschland: eine mikroökonomische Analyse. *Mitteilungen für Arbeitsmarkt- und Berufsforschung*, 2000, No 3, p. 405-417.
- Hullen, G. *Lebensverläufe in West- und Ostdeutschland. Längsschnittdatenanalysen des deutschen Family and Fertility Surveys*. Leverkusen: Leske + Budrich, 1998.
- Hullen, G. *The effects of education and employment on marriage and first birth*. Paper in the framework of the FFS Flagship conference 'Partnership and fertility – a revolution', Brussels, 29-31 May 2000.
- Jahoda, M. *Employment and unemployment. A social-psychological analysis*. Cambridge: Cambridge University Press, 1982.
- Jahoda, M.; Lazarsfeld, P. F.; Zeisel, H. *Die Arbeitslosen von Marienthal. Ein sozio-graphischer Versuch über die Wirkungen langandauernder Arbeitslosigkeit*. Frankfurt am Main: Suhrkamp, 1933.
- Jahnukainen, M. Social Exclusion and dropping out of education. In: Visser, J; Daniels, H; Cole, T. (eds) *Emotional and behavioural difficulties in mainstream schools*. Amsterdam: Elsevier, 2001, Vol. 1, p. 1–12.
- Kaiser, L.; Siedler, T. *Exits from unemployment spells in Germany and the United Kingdom*. Colchester: EPAG – European Panel Analysis Group, 2000 (Working paper, No 7).
- Katz, E., Ziderman, A. Investment in general training: the role of information and labour mobility. *Economic Journal*, 1990, Vol. 100, p. 1147-1158.
- Kelvin, P.; Jarrett, J. E. *Unemployment. Its social psychological effects*. Cambridge: Cambridge University Press, 1985.
- Keogh, H.; Downes, T. *VTOSpells Success*. Dublin: Department of Education and Science, 1998.
- Kettunen, J. The effects of education on the duration of unemployment. *Review of Labour Economics and Industrial Relations*, 1994, Vol. 8, No 2, p. 331-352.
- Kieselbach, T. (ed.) *Youth unemployment and social exclusion: a comparison of six European countries*. Bremen: University of Bremen, 2000 (Psychology of Social Inequality Series, Vol. 9, Yuseder Publication, No 1).
- Klijzing, E. *Globalization and the changing role of education in the process of entry into the labour market: a cross-national comparison of five countries*. Bielefeld: Faculty of Sociology, 2000 (Globalife Working paper, No 12).
- Kohli, M. Erwartungen an eine Soziologie des Lebenslaufs. In: Kohli, M. (ed.) *Soziologie des Lebenslaufs*. Darmstadt/Neuwied: Luchterhand, 1978, p. 9-31.
- Kohli, M. Normalbiographie und Individualität. Zur institutionellen Dynamik des gegenwärtigen Lebenslaufregimes. In: Brose, H. G.; Hildenbrand, B. (eds) *Vom Ende des Individuums zur Individualität ohne Ende*. Opladen: Leske + Budrich, 1988, p. 33-53.
- Koivuluhta, M. *Ammatti – intressit ja ura: pohjoiskarjalaisen ammattikoulutetun ikäluokan seuranta vuosina 1975-1991*. Joensuu: Joensuun yliopisto, 1999.
- Konietzka, D. Die soziale Differenzierung der Übergangsmuster in den Beruf. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 2002, Vol. 45, No 4, p. 645-673.

- Konietzka, D. Berufliche Aus- und Fortbildung in der Lebensverlaufsperspektive. Ein Vergleich des Ausbildungsverhaltens sechs westdeutscher Geburtskohorten. *Zeitschrift für Pädagogik*, 1999, Vol. 45, No 6, p. 807-831.
- Kortteinen, M.; Tuomikoski, H. Miten työttömät selviytyvät? [How do the unemployed survive?] *Yhteiskuntapolitiikka*, 1998, Vol. 63/1, p. 5–13.
- Lasheras, C. et al. Effects of education on the quality of life, diet, and cardiovascular risk factors in an elderly Spanish community population. *Experimental Aging Research*, 2001, Vol. 27, p. 257-270.
- Lauer, C.; Steiner, V. Returns to human capital in Germany: review of the empirical literature. In: Asplund, R.; Pereira, P. T. (eds) *Returns to human capital in Europe: a literature review*. Helsinki: Taloustieto Oy, 1999.
- Lauer, C. *Family background, cohort and education. A French-German comparison.*, Mannheim: Centre for European Economic Research, 2002 (ZEW Discussion Paper, No 02-12).
- Lemkow, L. et al. Youth unemployment and social exclusion in Spain. In: Kieselbach, T. (ed.) *Youth unemployment and social exclusion: a comparison of six European countries*. Bremen: University of Bremen, 2000 (Psychology of Social Inequality Series, Vol. 9, Yuseder Publication, No 1).
- Levy, R. Status passages as critical life course transitions. A theoretical sketch. In: Heinz, W. R. (ed.) *Theoretical advances in life course research*. Weinheim: Deutscher Studien Verlag, 1991.
- Lexis, W. *Einleitung in die Theorie der Bevölkerungsstatistik*. Strassburg: Trübner, 1875.
- Liefbroer, A. *Transition from youth to adulthood in the Netherlands*. Bamberg: Department of Sociology, 2002 (Globalife working paper, No 22).
- Mackenbach, J. P. et al. *Socioeconomic determinants of healthy aging. From description to explanation (SEdHA)*. Rotterdam: Erasmus University, Department of Public Health, 1999. (Unpublished proposal submission form).
- Magoula, T.; Psacharopoulos, G. *Schooling and monetary rewards in Greece: contributions to a debate*. Athens: University of Economics and Business, 1997 (Discussion Paper, No 90).
- Mannheim, K. The problem of generations. In: Kecskemeti, P. (ed.) *Essays on the sociology of knowledge*. London: Routledge and Kegan Paul, 1952 (German original from 1928).
- Marmot, M; Wilkinson, J. (eds) *The social determinants of health*. Oxford: Oxford University Press, 1999.
- Matt, E.; Prein, G.; Schumann, K. F. Delinquenz und Berufsbildung. Illegale Drogen als Risiko beim Übergang in das Erwerbsleben. In: Heinz, W. R. et al. (eds) *Was prägt Berufsverläufe? – Lebenslaufdynamik und Institutionenpolitik. Beiträge zur Arbeitsmarkt- und Berufsforschung*. Nürnberg: IAB (215), 1998, p. 169-215.
- Mayer, K. U. Lebenslauforschung. In: Voges, W. (ed.) *Methoden der Biographie- und Lebenslauforschung*. Opladen: Leske und Budrich, 1987.
- Mayer, K. U. *Lebensverläufe und sozialer Wandel*. Opladen: Westdeutscher Verlag, 1990.
- Mayer, K. U. Ausbildungswege und Berufskarrieren. In: Bundesinstitut für Berufsbildung (ed.) *Forschung im Dienst von Praxis und Politik*. Bielefeld: Bertelsmann, 1996.
- Mayer, K. U.; Blossfeld, H. P. Die gesellschaftliche Konstruktion sozialer Ungleichheit im Lebensverlauf. In: Berger, P. A.; Hradil, S. (eds) *Ungleichheit und Lebensverlauf*. Göttingen: 1990 (Sozialen Welt, No 7).
- Mayer, K. U.; Brückner, H. *Lebensverläufe und gesellschaftlicher Wandel. Konzeption, Design und Methodik der Erhebung von Lebensverläufen der Geburtsjahrgänge 1954-1956 und 1959-1961*. Berlin: Max-Planck-Institut für Bildungsforschung, 1995 (Materialien aus der Bildungsforschung, No 48).
- Mayer, K. U.; Henz, U.; Maas, I. *Social mobility between generations and across the working life: biographical contingency, time dependency and cohort differentiation – results from the German life history study*. Berlin: Max-Planck-Institut für Bildungsforschung, 1991.
- Mayer, K. U.; Huinink, J. Age, period, and cohort in the study of the life course: a comparison of classical A-P-C analysis with event history analysis or farewell to LEXIS? In: Magnusson, D. (ed.) *Data quality in longitudinal research*. Cambridge: Cambridge University Press, 1990.
- Mayer, K. U.; Huinink, J. Lebensverläufe und gesellschaftlicher Wandel: von der Kohortenanalyse zur Lebensverlaufsanalyse. In: Hauser, R. et al. (eds) *Mikro-analytische Grund-*

- lagen der Gesellschaftspolitik Bd. 1: *Ausgewählte Probleme und Lösungsansätze*. Frankfurt: Campus 1994, p. 92-111.
- Mayer, K. U.; Müller, W. The state and the structure of the life course. In: Sørensen, A. B.; Weinert, F.; Sherrod, L. R. (eds) *Human development and the life course*. Hillsdale: Erlbaum 1986, p. 217-245.
- McIntosh, S.; Steedman, H. *Low skills: a problem for Europe*. Luxembourg: Office for Official Publications of the European Communities, 1999. (Project Final Report Series - TSER Area 2).
- Menard, S. *Longitudinal research*. Newbury Park: Sage Publications, 1991.
- Mertens, L. *Labour competence: emergence, analytical framework and institutional models*. ILO (Cinterfore/ILO), 1999.
- Meulemann, H. Schullaufbahnen, Ausbildungskarrieren und die Folgen im Lebensverlauf. Der Beitrag der Lebenslaufsforschung zur Bildungssoziologie. In: Mayer, K. U. (ed.) *Lebensverläufe und sozialer Wandel*. Opladen: Westdeutscher Verlag, 1990a.
- Meulemann, H. Studium, Beruf und der Lohn von Ausbildungszeiten. *Zeitschrift für Soziologie*, 1990b, Vol. 19, No 4, p. 248-264.
- Meulemann, H. Stichwort Lebenslauf, Biographie und Bildung. *Zeitschrift für Erziehungswissenschaft*, 1999, Vol. 3, No 2.
- Meyer, T. *Forschungsprojekt TREE: Transitionen zwischen Erstausbildung und Erwerbsleben in der Schweiz*. Bern: ABF – Amt für Bildungsforschung, 2002.
- Meyer, W. *Individuelle Erwerbchancen in Ostdeutschland. Auswirkungen des wirtschaftsstrukturellen Wandels*. Wiesbaden: Deutscher Universitätsverlag, 1997.
- Mincer, T. The production of human capital in the life cycle of earnings. *Journal of Labor Economics*, 1997, Vol. 15, No 1, p. 27-46.
- Mincer, J. *Schooling, experience and earnings*. New York: National Bureau of Economic Research, 1974.
- Müller, W. Mobilitätsforschung und Arbeitsmarkttheorie. In: Knepel, H.; Hujer, R. (eds) *Mobilitätsprozesse auf dem Arbeitsmarkt*. Frankfurt: Campus, 1985, p. 17-40.
- Müller, W. Erwartete und unerwartete Folgen der Bildungsexpansion. In: Friedrichs, J.; Lepsius, M. R.; Mayer, K. U. (eds) *Die Diagnosefähigkeit der Soziologie*. Opladen: Westdeutscher Verlag, 1998, p. 81-112.
- Müller, W.; Gangl, M.; Scherer, S. Übergangsstrukturen zwischen Bildung und Beschäftigung. In: Wingens, M.; Sackmann, R. (eds) *Bildung und Beruf*. Weinheim: Deutscher Universitätsverlag, 2002.
- Müller, W.; Shavit, Y. Bildung und Beruf im institutionellen Kontext. Eine vergleichende Studie in 13 Ländern. *Zeitschrift für Erziehungswissenschaft*, 1998, No 1, p. 501-533.
- Müller, W.; Shavit, Y. *Vocational secondary education*. London: Routledge, 2000.
- Nehru, V.; Dhareshwar, A. A new database on physical capital stock: sources, methodology and results. *Revista de Analisis Economico*, 1993, Vol. 8, No 1, p. 37-59.
- Noguera, C.; Golsch, K.; Bonmati, A. *Globalization and occupational mobility in adult male job careers in Spain*. Bamberg: Department of Sociology, 2002 (Globalife working paper, No 35).
- Nummenmaa, A.-R. *Koulutus, sukupuoli ja elämäntilanne*. Nuoruudesta aikuisuuteen yhteiskunnallisessa muutoksessa. Helsinki: Työministeriö, 1996 (Työpoliittisia tutkimuksia, 149).
- OECD. *Knowledge and skills for life. First results from PISA 2000*, Paris: OECD, 2001a.
- OECD. *The well-being of nations: the role of human and social capital*. Paris: OECD, 2001b.
- OECD. *Knowledge and skills for life. First results from PISA 2000. PISA in the news in ... Dec. 2001 – Jan 2002*. Paris: OECD 2002a (available for the following EU-countries: Belgium, Denmark, Germany, Greece, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal, Finland, Sweden, the UK)
- OECD. *Programme for international student assessment (PISA)*. PISA 2000 Technical report, Paris: OECD, 2002b.
- OECD. *Reading for change. Performance and engagement across countries. Results from PISA 2000*. Paris: OECD, 2003.
- Palma, G. Dependency and development: a critical overview. In: Seers, D. (ed.) *Dependency Theory*. London: Pinter, 1981, p. 20-89.
- Pannenberg, M. *Weiterbildungsaktivitäten und Erwerbsbiographie. Eine empirische Analyse für Deutschland*. Studien zur Arbeitsmarktforschung Vol. 8. Frankfurt/M.: Campus, 1995.

- Papastefanou, G. *Zur Güte von retrospektiven Daten. Eine Anwendung gedächtnis-psychologischer Theorien und Ergebnisse einer Nachbefragung*. Frankfurt: Sfb 3-, 1980. (Working paper No 29).
- Parson, Talcott *Societies: evolutionary and comparative perspectives*. Englewood Cliffs: Prentice-Hall, 1966.
- Payne, J. *England and Wales Youth Cohort Study: options at 16 and outcomes at 24: a comparison of academic and vocational education and training routes*. Sheffield: DfEE, 1995.
- Payne, J. *Options at 16 and outcomes at 24. A comparison of academic and vocational education and training routes*. Sheffield: DfEE, 1997 (Youth Cohort Report, No 35).
- Payne, J. *Routes at sixteen: trend and choices in the nineties*. London: DfEE – Departement for Employment and Education, 1998 (Research Brief, No 55).
- Payne, J. *Young people not in education, employment or training: data from the England and Wales Youth Cohort Study*. Sheffield: DfEE, 2000.
- Payne, J. *Work-based training for young people: data from the England and Wales Youth Cohort Study*. Sheffield: DfEE, 2001 (Research Report)
- Pedersen, P.; Dall Schmidt, T. *Search activity and re-employment – a European perspective*. Colchester: EPAG – European Panel Analysis Group, 2002 (Working paper, No 34).
- Pedersen, P. et al. Wage differentials between the public and the private sectors. *Journal of Public Economics*, 1990, Vol. 41, p. 125-145.
- Pfeiffer, F. Training and individual performance: evidence from microeconomic studies. In: Descy, P.; Tessaring, M. (eds) *Training in Europe: second report on vocational training research in Europe 2000: background report*. Luxembourg: Office for Official Publications of the European Communities, 2001, Vol. 3, Part 5, p. 7-41 (Cedefop Reference series, 3008).
- Pischke, J. et al. *Changes in wage structure, family income, and children's education*. Chicago: JCPR – Joint Center for Poverty Research, 2000 (Working Papers, No 208).
- Popper, K. R. *The open society and its enemies*. Princeton: Princeton University Press, 1966.
- Preston, J.; Hammond, C. *The wider benefits of further education. Practitioner views*. London: Institute of Education, 2002.
- Rabe-Kleberg, U. Frauen auf dem Weg zur Bildungsbiographie? *Frauenforschung*, 1994, Vol. 11, No 4, p. 5-16.
- Rantakeisu, U. et al. Youth unemployment and social exclusion in Sweden. In: Kieselbach, T. (ed.) *Youth unemployment and social exclusion: a comparison of six European countries*. Bremen: University of Bremen, 2000 (Psychology of Social Inequality Series, Vol. 9, Yuseder Publication, No 1).
- Roberts, B. *Biographical research*. Buckingham: Open University Press, 2002.
- Rogers, W. L. Estimable functions of age, period, and cohort effects. *American Sociological Review*, 1982, Vol. 47, p. 774-787.
- Rogoff, N. *Recent trends in occupational mobility*. Glencoe: The Free Press, 1953.
- Rostow, W. W. *The stages of economic growth: an non-communist manifesto*. New York: Cambridge University Press, 1960.
- Ruspini, E. Longitudinal analysis: a bridge between quantitative and qualitative social research. *Quality and Quantity*, 1999, Vol. 33, No 3 (Special issue).
- Ryder, N. B. The cohort as a concept in the study of social change. *American Sociological Review*, 1965, Vol. 30, p. 843-861.
- Sackmann, R. Generationsspezifische Arbeitsmarktchancen im internationalen Vergleich. In: Berger, P. (ed.) *Die Erwerbsgesellschaft*. Opladen: Leske + Budrich, 2001.
- Sanderson, S. K. *Macrosociology. An introduction to human societies*. New York: Harper Collins, 1995 (Third edition).
- Sauer-Schiffer, U. *Biographie und Management. Eine qualitative Studie zum Leitungshandeln von Frauen in der Erwachsenenbildung*. Münster: Waxmann, 2000.
- Schaeper, H.; Kühn, T.; Witzel, A. Diskontinuierliche Erwerbskarrieren und Berufswechsel in den 1990ern: Strukturmuster und biographische Umgangsweisen betrieblich ausgebildeter Fachkräfte. *Mitteilungen für Arbeitsmarkt- und Berufsforschung*, 2000, No 1, p. 80-99.
- Schallberger, U.; Spiess Huld, C. Die Zürcher Längsschnittstudie von der Schulzeit bis zum mittleren Erwachsenenalter. *Zeitschrift für Soziologie der Erziehung und Sozialisation*, 2001, Vol. 21, No 1, p. 80-89.
- Schnabel, R.; Schnabel, I. *Family and gender still matter. The heterogeneity of returns to educa-*

- tion in Germany. Mannheim: ZEW, 2002 (Discussion Paper, No. 02-67).
- Schömann, K. *The dynamics of labour earnings over the life course. A comparative and longitudinal analysis of Germany and Poland*. Berlin: Ed. Sigma, 1994.
- Schömann, K.; Becker, R. Participation in further education over the life course: a longitudinal study of three birth cohorts in the federal republic of Germany. *European Sociological Review*, 1995, Vol. 11, No 2, p. 187-208.
- Schrijvers, C. T. M. et al. De achtergronden van sociaal-economische gezondheidsverschillen: resultaten uit het GLOBE onderzoek. In: Stronks, K.; Hulshof, J. (eds) *De kloof verkleinen*. Assen: Koninklijke Van Gorcum, 2001.
- Schuller, T. et al. *Learning, continuity and change in adult life*. London: Centre for Research on the Wider Benefits of Learning, 2002.
- Schumann, K. F.; Mariak, V. Benachteiligung Jugendlicher im Bildungssystem und auf dem Arbeitsmarkt als Weichenstellung für eine kriminelle Karriere – ein Mythos? In: *Das Jugendkriminalrecht als Erfüllungshilfe gesellschaftlicher Erwartungen?* Dokumentation des Symposiums an der kriminologischen Forschungsstelle der Universität zu Köln, 1995, p. 178-189.
- Schwarz, N. et al. Cognitive and communicative aspects of survey measurement. In: Borg, I.; Mohler, P. (eds) *Trends and perspectives in empirical social research*. Berlin: de Gruyter, 1994.
- Schwarz, N.; Sudman, S. *Autobiographical memory and the validity of retrospective reports*. New York: Springer, 1994.
- Schwarzfärber, H. P. Das Data Warehouse der BA. Information im Rahmen des Workshop zur Evaluation der Arbeitsförderung. In: Deeke, A.; Wiedemann, E. (eds) *Evaluierung aktiver Arbeitsmarktpolitik und Datengrundlagen*. Report of a workshop at the Federal Institute of Labour 9 November 2001. Nürnberg: IAB, 2002 (Werkstattbericht No 2).
- Senatsverwaltung für Arbeit, Berufliche Bildung und Frauen. *Innovation, Beschäftigung, Wachstum und Wettbewerb. Strategien zur Halbierung der Arbeitslosigkeit*. Berlin: Senatsverwaltung, 1997 (Kurzfassung des Berliner Memorandums).
- Sengenberger, W. *Struktur und Funktionsweise von Arbeitsmärkten*. Die Bundesrepublik Deutschland im internationalen Vergleich. Frankfurt: Campus, 1987.
- Shavit, Y.; Blossfeld, P. *Persistent inequality: changing educational attainment in thirteen countries*. Boulder: Westview Press 1993.
- Skov, P. *Unges fremtid – meget afgøres tidligt*. Copenhagen: Danmarks Pædagogiske Institut – DPI, 1998.
- Sørensen, A. B. (ed.) *Human development and the life course. Multidisciplinary perspectives* Hillsdale: Erlbaum, 1986.
- Sofer, C. *Schooling, training and transitions: an economic perspective (STT)*. University of Orleans, 2000 (Final report).
- Solga, H. 'Low education' as a social stigma. A sociological explanation for the decreasing employment opportunities of the low educated. *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 2002, Vol. 54, p. 476-505.
- Sokou, K. et al. Youth unemployment and social exclusion in Greece. In: Kieselbach, T. (ed.) *Youth unemployment and social exclusion: a comparison of six European countries*. Bremen: University of Bremen, 2000 (Psychology of Social Inequality Series, Vol. 9, Yuseder Publication, No 1).
- Spence, M. Job market signalling. *Quarterly Journal of Economics*, 1973, Vol. 87, p. 355-374.
- Starrin, B. et al. *International debate on social exclusion*. In: Kieselbach, T. (ed.) *Youth unemployment and social exclusion: a comparison of six European countries*. Bremen: University of Bremen, 2000 (Psychology of Social Inequality Series, Vol. 9, Yuseder Publication, No 1).
- Steiner, V.; Lauer, C. Private Returns to Education in Germany. *Beiheft der Konjunkturpolitik (Applied Economics Quarterly)*, 2000, Vol. 51, p. 71-101.
- Stone, V.; Cotton, D.; Thomas, A. *Mapping troubled lives: young people not in education, employment or training*. London: DfEE – Departement for Employment and Education, 2000. (Research Brief, No 181).
- Svalastoga, K. *Prestige, class and mobility*. Gylndental: Svenska Bokfoerlag, 1959.
- Sweetland, S. R. Human capital theory. Foundations of a field of inquiry. *Review of educational research*, 1996, Vol. 66, No 3, p. 341-360.

- Terhart, E. *Nach PISA. Bildungsqualität entwickeln*. Hamburg: Europäische Verlagsanstalt, 2002.
- Tessaring, M. *Training for a changing society: a report on current vocational education and training research in Europe*. Second edition. Office for Official Publications of the European Communities, 1998. (Cedefop Reference).
- Tessaring, M.; Tissot, P.; Descy, P. *Glossary of technical terms in education, training and labour market research in Europe*. Thessaloniki: Cedefop, 2003 (Working document).
- Tiryakian, E. A. Modernisation: exhumetur in pace. Rethinking macrosociology in the 1990's. *International Sociology*, 1991, Vol. 6, No 2, p. 165-180
- Tsakloglou, P. Aspects of inequality in Greece: measurement, decomposition and inter-temporal change: 1974, 1982. *Journal of Development Economics*, 1993, Vol. 40, p. 53-74.
- Tsakloglou, P. Changes in inequality in Greece in the 1970s and the 1980s. In: Gottschalk, P.; Gustafsson, B.; Palmer, E. (eds) *Changing patterns in the distribution of economic welfare: what happened during the 1980s?* Cambridge: Cambridge University Press, 1997.
- Tuma, N. B.; Hannan, M. T. *Social dynamics. Models and methods*. Orlando: Academic Press, 1984.
- Tuma, N. B. Effects of labour market structure on job-shift patterns. In: Heckman, J. J.; Singer, S. (eds) *Longitudinal analysis of labour market data*. Cambridge, MA: Cambridge University Press, 1985.
- Tuominen, E. *The active years of the life course and pension provision in transition. Changes in the duration of employment during the life span in recent decades. The Finnish example*. The Year 2000 International Research Conference on Social Security. Helsinki, 25-27 September 2000. Helsinki: ISSA – International Social Security Association, 2000. Available from Internet: http://www.issa.int/pdf/helsinki2000/topic2/2_Tuominen.PDF [cited 16.07.2003].
- Unwin, L.; Wellington, J. *Young people's perspectives on education, training and employment*. London: Kogan Page, 2001.
- Uusitalo, R. *Essays in economics of education*. Helsinki: Department of Economics, 1999 (Research reports, No 71).
- Valenzuela, J.; Valenzuela, A. Modernization and dependency: alternative perspectives in the study of Latin American underdevelopment. *Comparative Politics*, 1978, Vol. 10, No 4, p. 535-557.
- van de Werfhorst, H. G. *Systems of educational specialization and labour market outcomes in Norway, Australia, and the Netherlands*. Oxford: Nutfield College, 2002. Available from Internet: http://www.nuff.ox.ac.uk/users/werfhorst/ED-LM_NOAUSNL.pdf [cited 16.07.2003]
- Veierød, M. B.; Thelle, D. S.; Laake, P. Diet and risk of cutaneous malignant melanoma: a prospective study of 50 757 Norwegian men and women. *International Journal of Cancer*, 1997, Vol. 71, p. 600-604.
- Voges, W. (ed.) *Methoden der Biographie- und Lebenslaufforschung*. Opladen: Westdeutscher Verlag, 1987.
- Volkart, E. H. *Social behavior and personality: contributions of W. I. Thomas to theory and social research*. New York: Social Science Research Council, 1951.
- Wolbers, M. H. The effects of level of education on mobility between employment and unemployment in the Netherlands. *European Sociological Review*, 2000, Vol. 16, No 2, p. 185-200.
- Yamaguchi, K. Event history analysis. In: Bickman, L.; Rog, D. J. (eds) *Applied social research methods series*. London: Sage, 1991.
- Zapf, W. (ed.) *Theorien des sozialen Wandels*. Königstein/Ts: Athenäum et al., 1975.