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BENEFITS AND COSTS OF VOCATIONAL EDUCATION AND TRAINING

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Vocational education and training (VET) has grown in many countries in recent decades. According to Eurostat statistics, more students take part in vocational than general/academic upper secondary education tracks in Europe. And yet, the discussions about the benefits of such programmes are highly controversial. The European Commission and their advisers hold that Vocational Education and Training is vital for Europe's future competitiveness and innovation. The Commission sees it as an essential part of its education policy and tries to push Member States to strengthen the provision of VET.[1] Others, in contrast, argue: Europe has too much vocational training at the expense of general education. Vocational education was appropriate for the manufacturing age, but with the scientific, technological and communication revolution since then, jobs have become more knowledge intensive; they require more analytical and communication skills. In this new world, education with an emphasis on general competences is more efficient than vocational qualifications that are too narrow and too specific. Krüger and Kumar (2004) explicitly conclude that it is because of the now outdated emphasis on vocational education in Europe that up to the 1970s Europe had similar or higher economic growth rates than the US while since then the rates of growth in Europe are smaller than in the US.

What is the evidence of benefits and costs of VET that gives rise to such contrary assessment? In this contribution, two issues are addressed.

First, what do we know about the individual and social returns to VET on the labour market? Second, what is the contribution of VET to educational and social inequality? Needless to say: both issues are crucial. To relate them is interesting because benefits and costs in the two dimensions might differ.[2]

Various other aspects of VET must be neglected, such as how different forms of education might influence competences of individuals in everyday life, or their values, attitudes, civil engagement or political participation; also the pedagogical questions, such as whether the direct application of the teaching content in practice facilitates learning. Do students understand an idea or problem more easily when it is taught in connection with practical application rather than in an abstract theoretical way or are students motivated to try harder when they see the immediate practical utility. Also, the focus will be on initial education and training and neglect recurrent education in later stages of life.

1. VET AND ITS VARYING ARRANGEMENTS IN NATIONAL EDUCATIONAL SYSTEMS

By VET one usually understands the particular form of tracks in the education and training systems which have an applied, practical and job task driven orientation in their curriculum in contrast to courses of study with an overwhelmingly general, academic orientation. Borderline cases of vocational tracking include such arrangements as in US high schools where — without clearly separated lines of study programmes — vocational subjects can be chosen as part of a broader curriculum that allows a cafeteria-like mix of general/academic and vocational subjects. Vocational tracking exists in most systems of education, but in highly varying ways. Dimensions which characterize vocational tracks and make them different from general ones include:

- the extent to which the curriculum indeed focuses on vocational rather than general subjects;[3]
- the extent to which teaching and learning is theoretical or includes practical elements in workshops or in real firm-based workplaces. This partly overlaps with the distinction of school-based systems and dual school-firm training arrangements; but also school-

based systems can vary in the emphasis of and forms of practical application;
- the extent to which the subject contents are job or occupation specific: are teaching and training focused on knowledge and skills that closely match work tasks in narrowly defined jobs or occupations or are they oriented towards broader work fields; the particular selection of occupations or occupational fields for which curricula are offered are also likely to affect the returns observed for vocational qualifications;
- the kind and extent of employer or worker organization involvement in designing and controlling vocational tracks;
- the stage in the educational career at which general/vocational tracking occurs;
- the extent to which students in vocational tracks are selected or self-selected in terms of cognitive and non-cognitive individual abilities and school success in the pre-track stages;
- the extent to which the system allows for track mobility and progression pathways from vocational tracks to various kinds of higher level tertiary education.

Existing VET systems vary a lot in these dimensions, and the character of vocational tracks differs depending on how the dimensions combine. The different varieties of VET institutions influence both who is attracted to vocational education and how it affects labour market outcomes and has consequences for social equality. Besides the varying arrangements of vocational tracking in the system of education and training, variations in the consequences of vocational tracking may also depend on their interaction with various institutional arrangements in the labour market that may be related to or exist independently of arrangements of vocational tracking, such as various measures of employment protection or the degree of labour market segmentation prevailing in a country along occupational or firm internal organizational lines (Maurice et al. 1982). A plurality of institutional arrangements both in education and training is thus likely to affect outcomes of vocational tracking. To understand potential consequences we need a micro-level theory that models how education and training affects labour market outcomes. The role of education and training should be most pronounced in the early work career when school leavers enter the labour market. At this

point the association between education and training and labour market outcomes is most direct and less disturbed by other intervening factors that come to play a role in later stages of the work career, such as (learning) experience or performance in preceding jobs or other more or less contingent circumstances.

The theoretical models that are most useful to understand school leavers' integration into the labour market are matching models.[4] When applied to labour markets such models try to explain how job candidates with particular characteristics are matched to jobs employers want to fill. Both workers and employers attempt to reach an optimal solution. Workers strive to obtain the jobs that promise the best possible returns on what they have to offer — returns in terms of wage, status, security or other aspects of job quality. Employers try to recruit those applicants they rate as most productive and least costly for the work the job requires. For employers and workers education plays an important role in this matching process. Education signals to employers how productive an applicant might be in a job and how costly it might be to train the applicant to perform well on the job. For school leavers educational qualifications are a particularly important signal because employers do not have many other signals they can use easily for rating these inexperienced workers.

The costs of training for a given job can differ a lot depending on the extent the school leavers' skills obtained in education and training enable them to perform almost immediately in a job without much further training. In addition, what counts is how reliably and validly the training costs and the future performance of the workers can be estimated from the signals the workers' qualifications and diplomas represent for employers. This affects the costs of insecurity and non-perfect information that occur in hiring new workers. Both factors, the economy of training and the signalling capacity of qualifications, can be expected to influence the integration of school leavers into the labour market in several ways:

- the more labour market entrants have ready-made skills, the better the job returns in their first employment should be because of fewer training costs for the employer. Wages should be higher and workers with such skills should have a lower risk to obtain only unskilled work;

- the more reliably and validly job-relevant skills and competences are signalled by education and training credentials, the shorter the search time for the first job should be. The quality of the worker-job match should be higher and job hopping in the early work career until satisfying matches are found should be lower;
- on the aggregate level: the risks of unemployment should be distributed less unequally on the shoulders of young labour market entrants rather than on those of the adult, experienced workers. Both aspects influence the competitive position of school leavers against experienced workers – the outsiders against the insiders in the market (Lindbeck and Snower 1988).

All in all: if vocational education really trains the skills required in particular jobs and if employers can rely on the respective qualification signals, then the entry into the labour market should be *smoother* for school leavers with vocational qualifications than for those with general qualifications at a similar level. However, these general mechanisms are likely to lead to different results in countries with arrangements of vocational education that vary with respect to the characteristics described before. The higher the weight is that vocational elements have, the more practical training is, the more concrete workplace experience it provides, the more occupation specific it is, the more labour market organisations are involved in its design, development and control, the stronger its benefits for labour market integration will be. In this respect the German dual system and the similar arrangements in Austria, Switzerland or Denmark combine most of the elements fostering integration. These systems evidently have the additional advantage that apprentices have a foot in the door of a firm, even though their contract is strictly limited to the apprenticeship training period.[5] The Dutch system, too, has many of these elements, because in the Netherlands vocational training is highly occupation specific, the schools give a lot of weight to practical exercise, and training includes a considerable part of in-firm, workplace stages. Vocational education in other countries, such as Sweden, has fewer of these elements, and countries like Italy and other countries in the South of Europe have almost none. Also, varying forms of (self-)selectivity of students into vocational education and their public perception will affect the students' future position in the labour market. While in France students selected into vocational tracks appear to be seen as failures in a

demanding general education, in Germany students in vocational tracks encounter a clearly more positive public recognition (Brauns 1998).

2. EMPIRICAL EVIDENCE ON LABOUR MARKET RETURNS OF VOCATIONAL EDUCATION AND TRAINING

Short Term — The Transitions from School to Work

Much research in recent years has studied the transition from school to work in different countries. One advantage of an internationally comparative approach is that one can study whether returns vary with differences in the institutional arrangements or other contextual conditions or whether returns are more or less constant in spite of variations in institutional and contextual conditions. Therefore, I briefly summarize the results found in one of the very rare internationally comparable databases which include some reasonable distinctions between vocational and general qualifications: data from the European Labour Force Survey with information for each of the years 1992–1997 for each of the 12 countries shown in Figure 1 below.[6] In analysing this data, a multi-level model design has been used to examine how different indicators of a more or less smooth transition from school to work are influenced by individual resources (such as different kinds and levels of qualifications and work experience) and by conditions of the institutional context (essentially the structuring of labour markets along occupational lines (OLM) or firm internal lines (FLM)) as well as macro-structural conditions prevailing in the various observation years in the different countries (such as business cycle variations and variations in demographic age group proportions, the level of educational expansion and the proportions of professional jobs existing in the economy).[7]

Figure 1 shows — for the case of workers with upper secondary qualifications and relating to the first ten years of their labour market participation — descriptive evidence on unemployment rates and their variation between countries. Countries differ hugely in the extent of unemployment and in the way in which unemployment risks evolve in the first ten years after labour market entry. In Austria, Denmark, Germany, and the Netherlands, levels of unemployment tend to be relatively low and risks of unemployment do not differ much between labour market

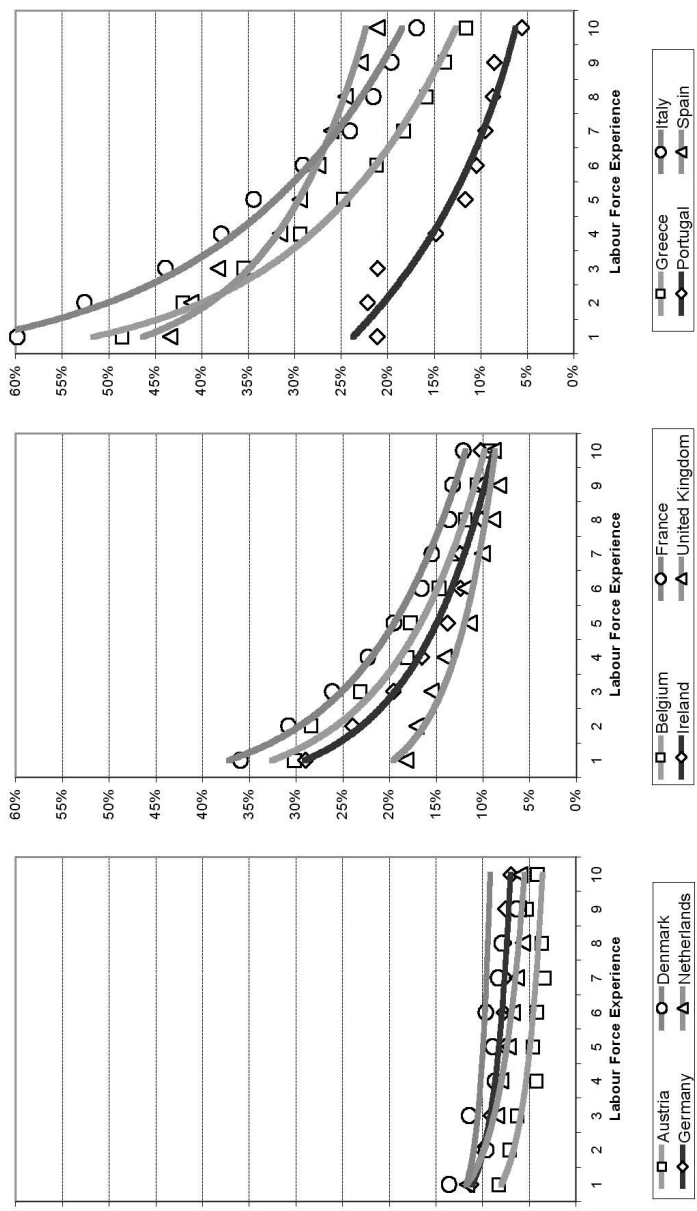

Figure 1: *Unemployment Rates by Country and Years of Labour Force Experience, ISCED 3 leavers**

* Strong differences between countries in the extent to which labour market entrants have higher unemployment risks than more experienced workers (Source: Gangl: 2003a: 116).

entrants and more senior workers (i.e. workers who have a minimum of ten years of work experience). In all other countries, unemployment risks are much higher at labour market entry, and they only gradually

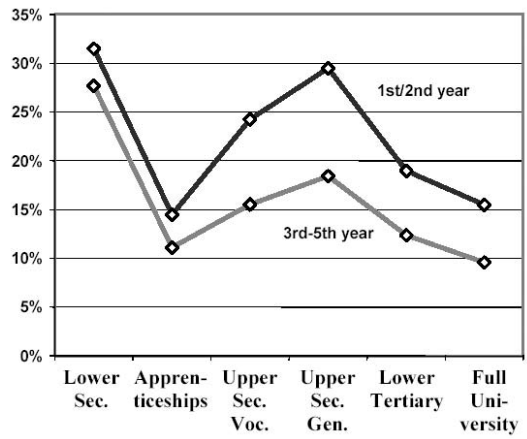

Figure 2: Unemployment rates by level and type of education and labour force experience (expected probabilities from model)
Source: Gangl (2003b: 177)

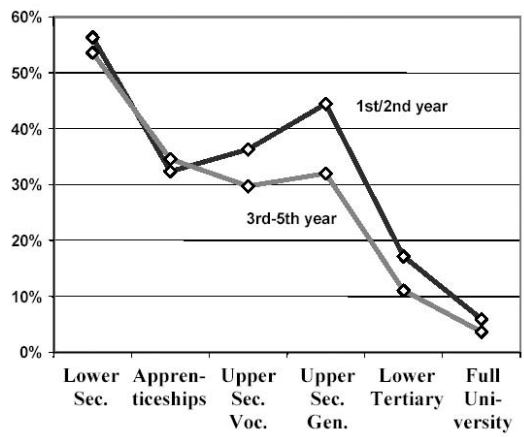

Figure 3: Experience effects on labour market outcomes, by level and type of education: % in low-skilled employment (expected probabilities from model).
Source: Gangl (2003b: 177)

converge with the level of unemployment among workers with a higher seniority (which, depending on the general level of unemployment, varies between countries). In most countries in Southern Europe, young people face the greatest difficulties in becoming integrated into the labour market.

Figures 2 and 3 now indicate how unemployment rates and the risks of being employed in a low skilled job vary between individuals with different kinds and levels of education, controlling for all other variables in the model. In the first and second year after labour market entrance — that is, in the very stage of transition from school to work — former apprentices clearly run a lower risk of unemployment (figure 2) and are less likely to end up in low skilled jobs (figure 3) than labour market entrants with school-based upper secondary vocational qualifications, and the latter do better than entrants with upper secondary general qualifications. However, over the following few years of early working life (the 3rd–5th year) workers with school-based vocational and especially those with general qualifications make more progress than former apprentices and partly catch up. Thus, while on average all vocational qualifications appear to facilitate the transition from school to work, those with a strong practice base (such as apprenticeships) seem to be more efficient at this stage than essentially school-based programmes.

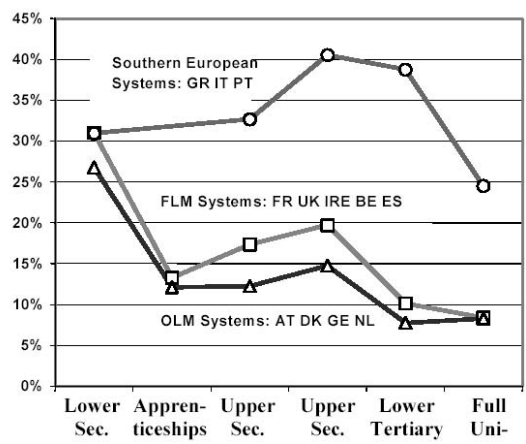

Figure 4: Macroinstitutional differences in the labour market outcomes: Unemployment rate (expected probabilities from model)
Source: Gangl (2003b: 180)

Controlling in Figure 4 for labour force experience and the macro-structural conditions, one finds marked differences between OLM systems and FLM systems, especially those in Southern Europe. The OLM systems tend to have less unemployment in early working life than the FLM systems. The specific pattern in the South likely results from the rather weak truly vocational components in the so-called vocational programmes of these countries combined with the high degree of *employment protection* prevailing in these countries. As Breen (2005) and Wolbers (2007) show, unemployment in the countries of Southern Europe is extremely high because these countries have high employment protection and at the same time lack ready-to-use and reliably signalled vocational qualifications. The interaction of both factors makes employers especially hesitant to hire non-experienced school leavers because employment protection makes a later dismissal of non-fitting hires costly, and the lack of ready-to-use and reliably signalled qualifications makes training costs high and worker performance hard to predict. In Germany and other countries with similar training systems, unemployment is low in spite of a high level of employment protection, because training costs are low and worker fit and performance better to foresee. In several countries in the middle group of Figure 1 there is less employment protection, notably in the UK and Ireland, and therefore the signalling capacity of education is not of such importance in an employers' decision to hire, because he can easily dissolve the contract. Thus, systems of education and training that teach specific skills with a strong work-based element provide a preventive to youth unemployment by offsetting the negative effects of extensive employment protection. The ratio of youth to adult unemployment is lowest in countries where the educational system sends clear signals about a job seeker's potential productivity and where workers are well prepared for the job.

Various studies from individual countries and other comparative work[8] are in line with these findings. For instance, with detailed longitudinal data for Sweden, the Netherlands and the UK, Korpi *et al.* (2003) look at indicators of precariousness in the school to work transition and initial working life. They find that the higher the level of education is, the less precarious is the transition from school to work. However, at each level vocational programmes do either better or equally well than general programmes: search time for a first job is clearly shorter and the risk of becoming unemployed is slightly lower for graduates from voca-

tional tracks than for graduates from general tracks; but there are no clear differences in reemployment chances, once unemployed. Comparing Sweden and the Netherlands there is some indication that the Dutch vocational programmes do better than the Swedish ones, but the study does not allow assessing whether this is due to the higher degree of occupational specificity or to the more intensive practice-based components in the Dutch programmes.

Conclusion. Vocational education of different varieties appears beneficial for the individual integration into the labour market. This is a stable result, found in many studies for many countries. But there are not only individual, but also social benefits. Vocational education reduces the social costs of high levels of youth unemployment. As we know, high levels of extended unemployment in this early and sensitive stage of life can have high immediate costs — need for welfare support, costs of various forms of deviant behaviour — but also appears "to do durable damage to young people" (Ryan 2001: 49) and to have long-term cost such as lacking development of positive work habits or long-term dependence on the social budget.

Long-term Returns to Vocational Qualifications

What is beneficial in the short term must not in all respects be beneficial in the long run. The literature on the changing skill demands overwhelmingly provides evidence that both technological and organizational changes in firms tend to require more analytical, problem-solving and communication skills than routine cognitive or routine manual work skills, even though in some areas also new routine jobs emerge.[9] One claim often made in literature is that workers with vocational, practically oriented training are less able to adapt to changing skill requirements than workers who have received training in general cognitive and analytical competencies. One reason for these assumptions is that workers with a general/academic education have learned better how to learn. Another expectation holds that training for the particular skills of narrowly defined occupations limits the transferability to other tasks. In changing environments highly specific skills are also more likely to become obsolete. Rather than being an asset, as in the transition from school to work, vocational qualifications may become a liability. Workers with a narrow skill profile will run higher risks to become unemployed,

and when unemployed, they may encounter more difficulties to find new employment. Career progress either through within-firm promotion or through outside moves is less likely to occur, because workers with a narrow skill profile may need more costly additional training.

What is the empirical evidence concerning these assertions? For several reasons mentioned before, the long-term consequences of vocational qualifications are more difficult to assess than its effects in the stage of the transition from school to work. To the best of my knowledge, no large-scale comparative longitudinal study has yet addressed how workers with general or vocational qualifications differ in their career development. We depend on single country studies, which have a similar design that allows comparison. Three recent studies — one for Denmark, one for Germany, and one for the Netherlands — satisfy these requirements reasonably well: all three countries have a great deal of occupation specific vocational training, and if this is a liability we would expect higher risks of unemployment, more downward and less upward mobility among vocational graduates than among graduates from general/academic courses of study at a similar level. Because of the low level of employment protection in Denmark, this case is of particular interest. It represents a scenario where the market mechanisms can play out in rather unconstrained ways, and thus effects on unemployment risks and career mobility should be particularly marked in Denmark.

The Danish study by Grunow and Leth-Sørensen (2006) looks at such indicators in work careers of men up to age 40[10]: (1) the risks of becoming unemployed, (2) the chances to find new employment once unemployed, (3) the risks of job moves with at least 5% salary loss and (4) the chances of job moves with at least 10% salary gains (see column headings in table 1). The study controls for a lot of between-individual heterogeneity and labour market conditions that can be expected to affect these outcomes (see note to table 1). The figures entered into the table have been rescaled in such a way that negative figures always indicate a less positive outcome than the outcome for the reference group (graduates with lower secondary education and a short (mostly up to two years) occupational qualification), while positive figures indicate the reverse.

Graduates with only lower secondary general education without any vocational qualification do worse in all indicators than their colleagues who have at least a short vocational qualification, with one

Table 1: *Education effects on work related mobility in men's mid-career in Denmark 1981–1999*

	From empl. to unempl.	Unempl. to empl.	Move with 5% salary loss	Move with 10% salary gain
Lower sec. without occ. qualification	–0.43**	–0.22**	–0.18**	–0.01
Lower sec. with short occ. qual. (ref)				
Lower sec. with middle occ. qual.	0.78**	–0.04	0.33**	0.20**
Upper sec. without occ. qual. (ref)	0.12	–0.39**	0.30**	0.27**
College/university degree /long voc. educ.	1.25**	–0.00	0.70**	0.69**

Note: with controls of birth cohort, time trends, LF experience, # previous jobs, firm tenure, wage in previous (present) job, establishment size, ind. sector, previous unemployment history.
Source: Grunow/Leth-Sorensen (2006), tables 6.1–6.3

No explanation of "**" in note to table. What does # refer to in notes?

exception: a short vocational qualification does not foster the likelihood of job moves with salary gains. The two groups with either middle vocational qualification or upper secondary general education do better than the reference group in avoiding job moves with salary losses or achieving salary gains, but they do not really differ from each other. In terms of the two employability indicators, workers with middle vocational qualifications, in contrast, do better than workers with upper secondary general qualifications. Workers with tertiary level education — be it academic or a long (5 years) sequence of education and training along the vocational route — do always better than all others, except in finding new employment once unemployed. In this indicator, workers with short or middle occupational qualifications do similarly well as tertiary education graduates and better than graduates with only lower or upper level general secondary education.

All in all then, workers with vocational qualifications do at least as well or better (with respect to employability) in their work careers than workers with only general qualifications at a similar educational level. There is only one exception to this: A short vocational qualification does not help to improve the likelihood of job moves with salary gains.

The results for Germany (Kurz *et al.* 2006) and the Netherlands (Luijkx *et al.* 2006) largely confirm what has been found for Denmark. However, there the results refer to gains or losses in socio-economic status rather than salary. In Germany, the results look very much as

in Denmark.[11] In the Netherlands, however, workers with vocational qualifications do not have better job finding chances after a period of labour market exit than graduates with general qualifications, and in terms of upward moves they rather do worse. Again, the study does not allow identifying the reasons for the partly less positive results for the Netherlands. But at large, it appears that at least up to the middle of working life we observe a similarly positive relationship of vocational education and employability as in the labour market integration stage;[12] in terms of income gains or protection against losses there are only few differences compared to general qualifications; *only short vocational qualifications with a background of low general qualifications appear to have weaker returns in terms of salary or status gains*.

Economists intensively study wage returns to education, but almost never distinguish between general and vocational qualifications. Dominique Goux and Eric Maurin (1994) have looked at this distinction for France. *For the secondary level*, they find that the *wage returns for vocational qualifications are clearly lower than for general academic courses of study*. At the post-secondary level, in contrast, first cycle studies at vocational/technical institutes have clearly better long-term wage returns than the corresponding first cycle general studies at universities.

Recently, findings on the long-term consequences of the academic vs. the vocational split are also available for the UK from work carried out at the LSE Centre for the Economics of Education.[13] The British case is especially interesting because of its high variety of different kinds of vocational courses of study at different qualification levels, a rather high mobility of students between the vocational and academic streams, and also because of the diversity of the quality and reputation of the institutions providing training. One of the insights gained from the British educational laboratory is that the academic vs. the vocational distinction on the one hand and the levels distinction on the other hand are far too simple. Beyond these distinctions, also different types of vocational qualifications, employer vs. government driven courses of study, and particular sequences of academic and vocational study episodes are associated with varying returns. There are significant gender differences in the payoffs of qualifications attained in this labyrinth. Some pathways are better for women, others better for men. And returns vary depending on whether the general or vocational qualifications charter for particular

occupational or labour market segments and depending on the position of a given segment in the wage structure. In the most recent study, Andrew Jenkins and colleagues (2007) are therefore cautious in their conclusion, but they summarize:

> There are high returns to academic qualifications across the board, substantial returns to higher level vocational qualifications and smaller but nonetheless significant returns to some but by no means all intermediate and lower level vocational qualifications. (Jenkins *et al.* 2007: 47).

If we can link these results on wage returns for France and the UK with what we found before for Denmark, Germany and the Netherlands, one *general conclusion* might be *that vocational qualifications appear to produce the lowest, or even no or negative wage or status) returns when they are gained at a low level of the educational hierarchy*,[14] while at higher levels vocational qualifications have at least the same or better returns than general ones. If this is true, it would also mean that vocational qualifications are a mixed blessing for the group of low achievers in general tracks for which the vocational track is often offered as the better alternative. And this leads to the issues of:

3. INEQUALITY OF EDUCATIONAL OPPORTUNITIES

Vocational tracks are usually used more often by students with weaker cognitive abilities and school performance. Partly connected with it, but partly also independently, children of lower class origin and poorer social background use more often vocational tracks as well. How then does vocational education affect inequality or equality of educational opportunities? It entails both costs and benefits. To see this, imagine the contra-factual situation where vocational tracks would not exist. Do vocational tracks provide qualifications to students who otherwise would drop out without a qualification or would these students obtain a general qualification at the same level or even at a higher level? If the availability of vocational tracks holds students in education and training who otherwise would drop out, it contributes to a more equal distribution of education and reduces the number of educational losers. For some

time I took this to be an essential contribution of vocational education and training because countries with attractive vocational programmes tended to have lower drop-out rates after compulsory education. They had higher retention rates of students at the upper secondary level, where vocational programmes are usually offered. This was especially true for the German speaking countries or the Netherlands who, with their large sector of vocational training, were for a long time among the countries with the highest retention rates at the upper secondary level in Europe. However, meanwhile other countries without such a pronounced emphasis on vocational education (such as the Scandinavian countries, Ireland or some of the Baltic States) have even higher retention rates. Thus, there are other means to prevent early dropout. In educational systems like Germany's, vocational programmes may still play a retention role, but it is not the case that high retention rates could not be achieved by other means, and perhaps with even better results. For instance, it is well known that in countries with the dual system it is especially difficult for

Table 2: *Educational choice after obtaining the Abitur by parental social class, education and students' Abitur grade point average: predicted values in %, based on multinomial logistic regression*

	High class / education background		Low class / low education background	
	Abitur grade 1. Quintile	Abitur grade 5. Quintile	Abitur grade 1. Quintile	Abitur grade 5. Quintile
Men				
University	57	77	35	59
U. of applied sciences	12	9	13	12
Vocational training	29	13	50	28
Labour Market	1	1	2	1
Women				
University	54	73	29	51
U. of applied sciences	7	8	8	11
Vocational training	39	19	62	38
Labour Market	0	0	0	0

Source: Müller *et al.* 2009; data from Higher Education Information System (HIS) Panel of secondary education graduates eligible for higher education 1983, 1990, 1994 und 1999; N = ca 30.000; Model Predictions for students with general and subject specific maturity certificate in year 1999, who have not previously obtained vocational training.

immigrants to find apprenticeship places. Comparisons to other countries show that immigrants are less handicapped in well designed school-based systems of upper secondary education.

On an even more critical line, the availability of the vocational option may 'entice' in a socially selective way individuals to participate in vocational programmes who are talented for more demanding and more promising courses of study which they would choose if the vocational option did not exist; in other words, this is the *diversion* argument:[15] inequality in attaining higher, tertiary education is higher and talents are not fully developed due to the fact that individuals from lower class families go for an objectively less advantageous vocational option, because under the constraints and resources in which they choose, this appears rational for them.

Table 2 illustrates this argument with data on post-secondary educational choices of German Abitur graduates. In Germany, such graduates have essentially four options: studying at a university or University of Applied Sciences (Fachhochschule), undertaking vocational training or entering into the labour market without obtaining further qualifications. Table 2 shows predicted values from a multinomial logistic regression model, in which the ~~set~~ Abitur educational choices are predicted based on information of the students' Abitur grades, parental education and class position, and several control variables.

The very best students (5th quintile in Abitur grade) of lower class and educational background are clearly less likely to choose university studies than their counterparts from better-off families; instead they are more likely to enter vocational training. In fact, excellent Abitur graduates from the working classes make similar educational choices as the very weak students with high class/education background.

Studying educational choices– controlling for performance in the preceding educational stage as is done in table 2 by controlling for Abitur grades — is a way to implement the crucial distinction between primary and secondary social disparities in educational attainment This distinction has been emphasized by Boudon (1974) and has since then become a core element in much of the theoretical and empirical work on the generation of educational inequality. Making this distinction is not only essential because the mechanisms generating primary and secondary disparities are very different and thus also require different measures to reduce such disparities. This distinction is also a precondi-

tion to meaningfully discuss the diversion phenomenon. Diversion presupposes secondary disparities since differences in educational choice related to students' abilities or performance are not part of what is generally understood as diversion, i.e. that regardless of their abilities and performance students' educational choices vary by class or other conditions of their social background and that such background related differences in choice depend on the alternatives available in the educational system.

However, whether secondary disparities, as observed, e.g., above, among German Abitur graduates are indeed a result of diversion and the extent to which they are due to diversion is difficult to prove. We cannot make an experiment and we rarely have quasi-experimental situations where we can observe how a clear cut change in the set of educational alternatives (or a variation between educational systems with different sets of alternatives) affects the background relatedness of students' educational choices.[16]

Beyond direct empirical tests the potential role and the mechanisms of diversion might be studied through theoretically and empirically-based simulation. In their recent work, Maaz (2006) and Becker and Hecken (2008) show that the class- and ability-related differences in educational choices (again studied for the case of Abitur graduates in Germany) can on the whole be accounted for by three elements of a rational action model that in its essence was proposed in the leading early work of Boudon (1974) and that, among others, Erikson and Jonsson (1996) and Breen and Goldthorpe (1997) have further developed. These three elements include (1) the varying expectation to succeed when choosing tertiary studies (this largely explains the choice differences between the ability groups, but also some of the class differences); (2) differences in the capacity to bear the costs of education that vary by class; and (3) by the loss aversion mechanism: the middle classes draw particular benefits from tertiary studies because they are instrumental for securing the status or class level of the family in the children's generation and thus protect against status loss, while working class families can achieve status maintenance already through vocational education.[17]

Now, Hillmert and Jacob (2003) use parameters for these factors to simulate how rational Abitur graduates would choose in a system that had only the option of tertiary study and direct entry into the labour market, and how choices would differ in a system with an additional

vocational training option. They essentially find that in the second case fewer Abitur graduates directly enter the labour market, but, also, fewer opt for university studies, because for many students the intermediate vocational training option now promises the highest utility. The set of available alternatives evidently influences choices, but what is most relevant for the issue of diversion is the finding that especially many bright students from lower classes with low cost tolerance divert from the university to vocational training, while among classes with high cost tolerance it is only the very weak students who go for vocational training. In spite of a performance from which success in university education could be expected, students from a low class background divert from such studies if a vocational alternative is available.

This interesting study works out the diversion mechanism at a high level in the education and training system.[18] However, there is no reason why it should not also play a role at earlier bifurcation points in educational careers. Its effects are likely to be the more consequential the earlier they set in. For instance, we know from early work of Torsten Husén (1948) that students of the same initial ability and competence level make different gains in differently demanding educational environments.[19] Students who are selected early into less demanding tracks, such as vocational ones, accumulate fewer competences and develop their abilities less, and reach — at the end — a lower qualification than their potential would allow. Interestingly enough, most countries with an emphasized vocationalism segregate student populations very early into strongly segmented educational tracks. In many of these countries, implicit vocational tracking already occurs in lower secondary education when students are sorted into tracks of education that later lead into the vocational route; implicit vocational tracking occurs long before the vocational programmes actually take off. In some countries — such as Germany — the educational opportunities for those entering the vocational track are also constrained because well connected pathways along the vocational route up to higher level tertiary education hardly exist. The early segregation of students into tracks that essentially lead to vocational training — with its diversion effects - is likely to be one of the core factors responsible for both, low proportions of tertiary graduates and high social inequality in the opportunities to reach tertiary degrees, as found in Germany and other countries running similar systems.

CONCLUSIONS

As the reflections in this chapter indicate the valuation of vocational tracking varies widely depending on the aspect considered and depending on its forms as well as on other conditions of the education and employment system in which vocational education and training is institutionalised. In the early work career, vocational qualifications facilitate a smooth integration of school leavers into the labour market. Positive effects appear stronger if vocational education and training is workplace related and occupation-specific. Education and training systems that teach specific skills with a strong work-based element can provide a preventive to youth unemployment by offsetting the negative effects of high employment protection. As the tendency to shift the risks of unemployment onto outsiders is especially marked in times of economic downturns or recession and "youth unemployment tends to be 'supercyclical' " (Ryan 2001:61), the benefits of well-designed vocational training systems that increase the competitive position of school leavers as compared to experienced workers are especially marked in times of high overall unemployment.

For the further career development, results are more mixed. However, vocational graduates do not appear to be *generally* less employable or less able to adapt to new requirements. At least up to their mid-careers, vocational graduates have similar or better employment prospects than graduates from general education at the same level. In terms of occupational status, class position or wage, returns for vocational graduates are favourable at higher qualification levels, but they seem less favourable at lower qualification levels with a poorer background of general competences.

Also, in view of *equality of educational opportunities* vocational tracks represent mixed blessings: the availability of vocational options may prevent early drop-outs of academically weaker students, but they also divert gifted children of lower class or educational backgrounds and limited resources from higher educational attainments. Especially early (implicit) vocational tracking enhances such diversion disparities and can lead students to invest in qualifications that in the long run provide poor or no returns.

All in all, vocational tracking has costs and benefits; the balance between the two appears most favourable when vocational tracking

occurs late in the educational career and is based on well developed general qualifications rather than when it occurs early and as a less demanding early alternative for students with difficulties in general education.

However, one crucial question has still not been adequately treated in most research: are poor returns bound to what is taught and learned in vocational as compared to general education and training or are they due to (negative) selections into vocational education and training of individuals with poorer work-relevant cognitive or non-cognitive abilities. Due to data limitations, hardly any research has so far been able to appropriately control for such selectivity (but see Dearden et al. 2002). Results without such controls must therefore be seen as merely indicating descriptive associations rather than the causal impact of different kinds of qualifications on observed outcomes. Yet, assuming that especially at lower levels vocational tracks compared to general/academic tracks are more likely to be chosen by students of weaker cognitive abilities, positive effects of vocational tracks should be underestimated rather than overestimated. Yet, without respective tests such assertions remain speculation.

Not the least for this reason assessments on the costs and benefits still remain quite vague. Also, while much research is meanwhile available on the school to work transition stage, the long-term consequences of different varieties of vocational tracking are largely unexplored. Thus, especially research on the long-term employability and other work career prospects is badly needed. In order to be conclusive, such research needs longitudinal observation with measures of individual abilities and competences from early childhood onwards. It thus puts high demands on research designs and investments in long-term data collection that are not easily fulfilled.

NOTES

1. See, e.g., the EU Commission's policy statements in http://ec.europa.eu/education/lifelong-learning-policy/doc60_en.htm
2. For an earlier discussion of strengths and weaknesses of different types of vocational education, see Blossfeld (1992).
3. In some cases so-called vocational tracks have only few vocational elements and the subjects taught are widely general, but on a lower level of cognitive demands (e.g. *istituti professionali* and *istituti tecnici* in Italy).

4. For the application of matching theory to labour market issues, see Jovanovic 1979, Kalleberg and Sørensen 1979, Logan 1996; the classic paper on matching — applied to marriage markets — is Gale and Shapley (1962).
5. With regard to firms, Dustmann and Schoenberg (2008) show that one important reason why firms engage in apprenticeship training is that they learn about the apprentices' qualities during training, which is highly valuable for firms in screening future workers, while firms who do not train are confronted with the "adverse selection" problem.
6. Unfortunately, in the EU labour force data for later years such a distinction is not made any more in a way that makes them comparable across countries. There are also many single country studies on the transition from school to work. Comparative conclusions from such studies, however, are often difficult to draw because the set-up of such studies often varies.
7. For details of the model and more results, see Gangl (2003a and b) on which the following figures 1–4 are based.
8. See e.g. Müller and Shavit (1998) and the country chapters in Shavit and Müller (1998), Shavit and Müller (2000), Ryan (2001, 2003), Müller and Gangl (2003), Scherer (2005), Ianelli and Raffe (2007), Wolbers (2008); for France in particular, see Mansuy and Marchand (2004) and the collection of articles in *Économie et Statistique* no. 378–379 (2004) and *Économie et Statistique*, 388–389 (2005); concerning the positive role of apprenticeship-based vocational education in France, see Bonnal *et al.* (2006) and Zdrojewski *et al.* (2008).
9. See Autor *et al.* 1998; Autor *et al.* 2003; Spitz 2004. Also globalization is advocated to lead to raising demands of high qualifications; but such effects are less clear and highly debated.
10. The study relates to work careers in the period of high unemployment in the 1980s and early 1990s and the quickly declining unemployment in the second half of the 1990s.
11. Also in Germany vocational education reduces the risks of unemployment and enhances reemployment chances if unemployed, and it also enhances upward career moves. No difference exists, however, between general and vocational education in preventing downward moves. In this case, the *level* of education is crucial. See Kurz *et al.* (2006).
12. But how can we understand that the strongly occupation specific training such as in Germany does not seem to have serious long-term drawbacks in terms of adaptability to changing requirements and long-term employability as is often asserted? Germany has, indeed, less mobility between occupations than other countries (e.g. Sweden, see Korpi and Mertens 2003); but it has more than is sometimes assumed. Ten years after the conclusion of vocational training only about 40% continue to work in their training occupation, more than half work in another occupation. And as Witte and Kalleberg (1995:312) infer, even apprenticeship training must confer valuable general and transferable skills because the earnings benefits of such training are not lost if a man changes his occupation.
13. See Dearden et al. (2002), McIntosh (2007), Jenkins *et al.* (2007) and other literature on the British case cited in these publications.
14. For a similar conclusion, see Ryan (2003).

15. For an overview of educational diversion policies in Sweden, see Murray (1988); for empirical studies of the diversion phenomenon in various countries, see Arum and Shavit (1995), Shavit and Müller (2000).
16. Jonsson and Erikson (2007) discuss the 1977 educational reform in Sweden in view of diversion. In this reform, traditional university education and the shorter post-secondary vocational tracks were organizationally integrated into the *Högskola*. Concomitantly, short-cycle, lower level tertiary education expanded considerably. Yet, Jonsson and Erikson (2007:135) do not find any "increase in origin-education association at the university level, giving no support to the pessimistic predictions that working-class students would be diverted from traditional university studies to the expanding shorter tertiary vocational tracks". However, as the authors observe, this outcome may be due to the fact that most of the vocational programmes already existed before the reform and that the organizational restructuring as such may not have produced additional diversion.
17. For a discussion of the loss aversion mechanism to explain inequalities in vocational education choices among children from different social background, see also Page (2003).
18. In recent years it has become highly relevant there, because ever larger cohort proportions reach this level and, as a consequence, higher education has become much more differentiated with an increasing variety of more or less academic or vocational options, and more or less costly and rewarding programmes. So, at that level the diversion mechanism is likely to become more important.
19. For a recent investigation confirming this conclusion, see Maaz *et al.* (2008) and literature discussed there.

REFERENCES

Arum, R. and Shavit, Y. (1995) "Secondary vocational education and the transition from school to work". *Sociology of Education*, 68: 187–204.

Autor D.H., Katz, L.F., and Krueger, A.B. (1998) "Computing inequality: Have computers changed the labor market?" *Quarterly Journal of Economics*, 113(4): 1169–1213.

Autor D.H., Levy, F. and Murnane, R.J. (2003) "The skill content of recent technological change: An empirical exploration". *Quarterly Journal of Economics*, 118 (4): 1279–1333.

Becker, R. and Hecken, A.E. (2008) "Warum werden Arbeiterkinder vom Studium an Universitäten abgelenkt? Eine empirische Überprüfung der ‚Ablenkungsthese' von Müller und Pollak, 2007 und ihrer Erweiterung durch Hillmert und Jacob, 2003". *Kölner Zeitschrift für Soziologie und Sozialpsychologie*, 60(1): 3–29.

Boudon, R. (1974) *Education, Opportunity, and Social Inequality: Changing Prospects in Western Society*. New York, Wiley.

Breen, R. (2005) "Explaining cross-national variation in youth unemployment: market and institutional factors". *European Sociological Review*, 21(2): 125–134.

Breen, R. and Goldthorpe, J.H. (1997) "Explaining educational differentials: Towards a formal rational action theory". *Rationality and Society*, 9: 275–305.

Blossfeld, H.-P. (1992) "Is the German dual system a model for a modern vocational training system? A cross-national comparison of how different systems of vocational training deal with the changing occupational structure". *International Journal of Comparative Sociology*, 23: 168–81.

Bonnal, L. Favard, P. and Mendès-Clément, S. (2005) "Peut-on encore occuper des emplois qualifiés après un CAP ou un BEP?" *Économie et Statistique*, 388–389: 85–105.

Brauns, Hildegard (1998) *Bildung in Frankreich. Eine Studie zum Wandel herkunfts- und geschlechtsspezifischen Bildungsverhaltens*. Opladen, Leske and Budrich.

Dearden, L., McIntosh, S., Myck, M. and Vignoles, A. (2002) "The returns to academic and vocational qualifications in Britain". *Bulletin of Economic Research,* 54 (3): 249–274.

Dustman, C. and Schoeneberg, U. (2008) "Why does the German apprenticeship system work?" In: Mayer K.U. and Solga, H. (eds), *Skill Formation. Inderdisciplinary and Cross-national Perspectives*. New York, Cambridge University Press: 85–109.

Erikson, R. and Jonsson, J.O. (1996). "Introduction. Explaining class inequality in education: The Swedish test case". In: Erikson, R. and Jonsson, J.O. (eds), *Can Education be Equalised?* Oxford, Westview Press: 1–64.

Gale D. and Shapely, L.S. (1962) "College admission and the stability of marriage". *American Mathematical Monthly*, 69: 9–14.

Gangl, M. (2003a) "The structure of labour market entry in Europe: a typological analysis". In: Müller, W. and Gangl, M. (eds), *Transitions from Education to Work in Europe. The Integration of Youth into EU Labour Markets*. Oxford, Oxford University Press: 107–128.

——— (2003b) "Returns to education in context: Individual education and transition outcomes in European labour markets". In: Müller, W. and M. Gangl (eds) *Transitions from Education to Work in Europe. The Integration of Youth into EU Labour Markets*. Oxford, Oxford University Press, 156–185.

Goux, D. and Maurin, E. (1994) "Education, experience et salaire: tendances récentes et évolution de long terme". *Economie et Prévision*, 116: 155–178.

Grunow, D. and Leth-Sørensen, S. (2006) "Mobility of men in the Danish labour market". In: Blossfeld, H.P., Mills, M. and F. Bernardi (ed.) *Globalization, uncertainty and men's careers. An International Comparison*. Cheltenham, UK, Edward Elgar: 174–200.

Hillmert, S. and Jacob, M. (2003) "Social inequality in higher education: Is vocational training a pathway leading to or away from university?" *European Sociological Review*, 19(3): 319–334.

Husén, T. (1948) *Begåvning och Miljö. Studier i bagåvningsutvecklingens och bagåvningsurvalets psykologisk-pedagogiska och sociala problem*. Stockholm, Gebers.

Iannelli, C. and Raffe, D. (2007) "Vocational Upper-Secondary Education and the Transition from School". *European Sociological Review* 23(1): 49–63

Jonsson, J.O. and Erikson, R. (2007) "Sweden: why educational expansion is not such a great strategy for equality — theory and evidence". In: Shavit, Y., Arum,

R. and Gamoran, A. (eds), *Stratification in Higher Education. A Comparative Study*. Stanford, Stanford University Press: 113–139.

Jenkins, A. Greenwood, C., and Anna Vignoles (2007) *The Returns to Qualifications in England: Upgrading the Evidence Base on Level 2 and Level 3 Vocational Qualifications*. MS., London, London School of Economics, Centre for the Economics of Education.

Jovanovic, B. (1979) "Job matching and the theory of turnover". *Journal of Political Economy*, 87(5): 972–990.

Kalleberg, A. L. and Sorensen, A.B. (1979) "The sociology of labour markets". *Annual Review of Sociology*, 5: 351–379.

Korpi, T., de Graaf, P., Hendrickx, J. and Layte, R. (2003) "Vocational training and career employment precariousness in Great Britain, The Netherlands and Sweden". *Acta Sociologica*, 46: 17–30.

Korpi, T and Mertens, A. (2003) "Training Systems and Labor Mobility: A Comparison between Germany and Sweden". *Scandinavian Journal of Economics*, 105(4): 597–617

Krueger, D. and Kumar, K.B. (2004) "Skill-specific rather than general education: A reason for US–Europe growth differences?" *Journal of Economic Growth*, 9 (2): 167–207.

Kurz, K., Hillmert, S. and Grunow, D. (2006) "Increasing instability in employment careers of West German men? A comparison of the birth cohorts 1940, 1955 and 1964". In Blossfeld, H.P., Mills, M. and Bernardi, F. (ed.) *Globalization, Uncertainty and Men's Careers. An International Comparison*. Cheltenham, UK, Edward Elgar: 75–113.

Lindbeck, A. and Snower, D. (1988) *The Insider–Outsider Theory of Employment and Unemployment*. Cambridge, MA: MIT Press.

Logan, J.A. (1996) "Opportunity and choice in socially structured labor markets". *American Journal of Sociology*, 102: 114–160.

Luijkx, R., Kalmijn, M., and R. J.A. Muffels (2006) "The impact of globalization on job and career mobility of Dutch men: life-history data from the mid-1950s to the year 2000". In Blossfeld, H.P., Mills, M. and Bernardi, F. (eds), *Globalization, uncertainty and men's careers. An International Comparison. Cheltenham, UK: Edward Elgar: 117–144.*

Maaz, K. (2006) Soziale Herkunft und Hochschulzugang. Effekte institutioneller Öffnung im Bildungssystem. Wiesbaden, VS-Verlag.

Maaz, K., Trautwein, U., Lüdtke, O. and Baumert, J. (2008). "Educational transitions and differential learning environments: how explicit between-school tracking contributes to social inequality in educational outcomes". *Child Development Perspectives*, 2(2): 87–84

Mansuy, M and Marchand, O. (2004) "De l'école à l'emploi : des parcours de plus en plus complexes. *Économie et Statistique*, 378–379: 3–13.

Maurice, M., Sellier, F. and Silvestre, J.-J. (1992) *Politique d'éducation et d'organisation industrielle en France et Allemagne. Essai d'analyse sociale*. Paris, P.U.F.

McIntosh, S. (2007) "A cost–benefit analysis of apprenticeships and other vocational qualifications". Department for Education and Skills Research Report 834.

Müller, W. and Gangl, M. (eds) (2003) *Transitions from Education to Work in Europe: The Integration of Youth into EU Labour Markets*. Oxford, Oxford University Press.

Müller, W. and Shavit, Y. (1998) "The institutional embeddedness of the stratification process: A comparative study of qualifications and occupations in thirteen countries". In Shavit, Y. and W. Müller (eds) *From School to Work*. Oxford, Oxford University Press: 1–48.

Mülller, W., Pollak, R., Reimer, D. and Schindler, S. (2009) "Hochschulbildung und soziale Ungleichheit". In: Becker, R. and Hadjar, A. (eds), *Lehrbuch der Bildungssoziologie*. Wiesbaden: 2009.

Murray, M. (1988) "Educational expansion, policies of diversion and equality: The case of Sweden, 1933–1985". *European Journal of Education*, 23(1/2): 141–149.

Page, L. (2003) "Explaining inequalities in vocational orientation choices among children from different social backgrounds". TEAM Working Paper; University of Paris I.

Ryan, P. (2001) "The school-to-work transition: a cross-national perspective". *Journal of Economic Literature*, 39: 34–92.

Ryan, P. (2003) "Evaluating vocationalism". *European Journal of Education*, 38 (2):147–162.

Scherer, S. (2005) "Patterns of labour market entry — Long wait or career instability? An empirical comparison of Italy, Great Britain and West Germany". *European Sociological Review*, 21: 427–40.

Shavit, Y. and Müller, W. (2000) "Vocational secondary education. Where diversion and where safety net?" *European Societies*, 2: 29–50.

——— (eds) (1998) *From School to Work. A Comparative Study of Educational Qualifications and Occupational Destinations*. Oxford, Clarendon Press.

Spitz, A. (2004) "Are skill requirements in the workplace raising? Stylized facts and evidence on skill-based technological change". Discussion Paper 04-23, Mannheim, Zentrum für Europäische Wirtschaftsforschung.

Witte, J.C. and A. Kalleberg (1995) "Matching training and jobs: The fit between vocational education and employment in the German labour market". *European Sociological Review*, 11 (3): 292–317.

Wolbers, M.H.J. (2007) "Patterns of labour market entry: A comparative perspective on school-to-work transitions in eleven European countries". *Acta Sociologica*, 50: 189–210.

——— (2008) "Increasing labour market instability among young people? Labour market entry and early career development among school-leavers in the Netherlnads since the mid-1980s". In: Blossfeld, H.-P., Buchholz, S., Bukodi E. and Kurz, K. (eds.), *Young Workers, Globalization and the Labour Market: Comparing Early Working Life in Eleven Countries. Cheltenham, Edward Elgar: 77–101*.

Zdrojewski S., Grelet Y. and Vallet, L.-A. (2008) "Increasing employment instability in France? Young people's labor market entry and early career since the 1990s". In Blossfeld H-P., Buchholz S., Bukodi E. and Kurz, K. (eds), *Young Workers, Globalization and the Labour Market: Comparing Early Working Life in Eleven Countries*. Cheltenham, Edward Elgar: 103–127.