Overqualification: reasons, measurement issues and typological affinity to unemployment

Felix Büchel

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Overqualification: reasons, measurement issues and typological affinity to unemployment

Felix Büchel

Abstract
This paper focuses primarily on two essential aspects of overqualification research: the reasons why people find themselves in underskilled jobs and the problems involved in establishing a valid means of identifying such a situation.

Starting with an extensive terminological discussion, the paper briefly introduces the various theories explaining the phenomenon of overqualification and discusses some influential factors that have rarely been examined in any work of literature, namely institutional and macroeconomic conditions and labour utility and productivity assessments on the supply and demand sides.

The next step is a systematic examination of the problems involved in identifying underskilled jobs. It begins with an explanation of the two main measurement strategies (the ‘objective’ and the ‘subjective’ approaches) and their diverse variants including unorthodox measurement processes. Thereafter, an extension of the subjective measurement strategy is introduced; in terms of validity, it is probably superior to the forms of categorisation that have been used hitherto.

The paper goes on to provide a comprehensive review of research literature, beginning with the origins of the debate in the educational expansion of the 1970s and 1980s. It retraces the academic discussion on the overqualification problem in the United States, then portrays the German situation as an example of the early development of overqualification research outside the United States. It goes on to introduce more recent work from the United States and Europe, including international comparative studies.

On the basis of longitudinal data from Germany, the theoretical analogy between unemployment and overqualification is empirically tested. The first part of this test focuses on four subjective indicators, which are tested for divergences between unemployed people, people in underskilled jobs and people whose jobs match their qualifications; the four indicators, which are already established in the field of static unemployment research, are problem-solving skills, morale, concerns about the future and participation in the political process. In the second part of the test, the set of instruments used in dynamic unemployment research is applied to analyse overqualification. The analysis is based on examples of movements from various types of employment status into underskilled work and from underskilled work into unemployment (downward career moves) as well as transitions from underskilled to adequately skilled jobs (upward career moves). Particular interest attaches to the question of the extent to which underskilled work and unemployment are alternative situations. Finally, the paper examines longer-term income effects of overqualification. Here, too, the main question is whether a period spent in an underskilled job creates income effects which – as should theoretically be the case – lie somewhere between the effects of a period spent in an adequately skilled job and those of a spell of unemployment.

The study ends with a catalogue of methodological conclusions, aimed at employment researchers, and substantive considerations, aimed at policymakers in the fields of education and employment.
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1. Introduction

It has gradually come to be recognised and is now an unchallenged truism that the human capital a society has accumulated in the form of education, and especially vocational education, is a crucial location factor in the context of global economic competition. If the matter is considered in this light, however, the entire human capital created through the education system is not what counts but only that which is ‘productively’ invested in the economy. Because of the mass unemployment that prevails in most European countries, substantial volumes of human capital are lying dormant. The result of this is economic underachievement by the Member States of the European Union. The ‘superfluous’ skills and qualifications, in other words those for which there is no demand in the labour market, are not just temporarily sidelined but are also rapidly devalued as a result of disuse and the consequent absence of training opportunities. This hysteresis phenomenon, in which the unbalanced labour market is both an effect of past unemployment and a cause of future unemployment, causes the problems to escalate with the passage of time.

The losses to national economies and the social problems that are generated by unemployment are clearly recognised, not only in employment research but by the general public too. One of the main aims of this study is to draw attention to the fact that the actual surplus of vocational skills and qualifications produced by the education system considerably exceeds the surplus indicated by unemployment statistics, even if analyses of hidden labour reserves are taken into account. Unused and therefore unproductive skills also come into the reckoning when individuals have jobs for which they are palpably overqualified. The analogy between such underskilled work, where the employee’s level of training exceeds the job requirements, and unemployment is unmistakable: the entire human capital of jobseekers lies idle, while only part of the human capital of overqualified employees lies idle. The latter phenomenon is also absolutely relevant to national economies; its significance can be measured if the number of overqualified employees is multiplied by the amount of skill wastage. The skill wastage may be empirically calculated, for example, as the difference between the remuneration of overqualified employees and the amount they would be earning if their job matched their skill and qualification level (see, for example, Duncan and Hoffmann, 1981; Daly et al. (forthcoming) and Büchel and Weißhuhn, 1997c and 1998). It is therefore no coincidence that the editors of the present report have combined the sections on unemployment and overqualification into a single section. A structural analogy between unemployed status and overqualification can also be derived from the terminological definition laid down by the OECD, which uses ‘unemployment and underemployment’ as a conceptual entity within its system. It divides the

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2 The author thanks Manfred Tessaring for most important observations and Johannes Giesecke for his valuable assistance in implementing an enhanced version of literature management software.

3 The overqualified percentage of the labour force varies widely, depending on the measurement process (on this central problem of overqualification research, see for example Smith (1986), Groot and Maassen van den Brink (forthcoming) and section 5 of the present study, which goes into some detail on the subject). The crucial point, however, is that this percentage is so high in all the Western industrialised countries that it cannot be ignored. For example, it exceeds the national unemployment rate in every country. Hartog (1997) and Borghans et al. (1998), as well as Groot and Maassen van den Brink (forthcoming) and Hartog (1999b) provide international comparisons of the frequency with which overqualification is observed.

4 Resolution I of the International Conference of Labour Statisticians (ICLS) on the ILO: see OECD, 1995a, pp. 44-45.
category ‘underemployment’, into two subcategories, namely ‘visible’ and ‘invisible’ underemployment. The first term relates to people who are employed but who have fewer working hours than they would wish (see for example Terry, 1981); the second term describes underskilled work (‘... refers to individuals who are working in jobs where their skills are not adequately utilised’).

At first sight, both of these subcategories appear almost too disparate to be two halves of the same whole. Visible underemployment is structurally closer to unemployed status, since the individual is working less than he or she would wish; in structural terms, it is akin to the German status of Kurzarbeit, applicable to employees on short time. On closer inspection, however, typological analogies are impossible to overlook. In neither of the situations can the full economic value of an individual’s vocational skill be realised; in the case of visible underemployment, this is because of an unwanted part-time working arrangement, which is ultimately due to restricted demand for the available skill profile; in the case of invisible underemployment, the reason is the low skill level required for the jobs that overqualified individuals take, presumably for want of something better.

The analogy between overqualification in general and unemployment lies in the fact that both are due to the aforementioned lack of demand for particular skills – with unemployment reflecting a total absence of demand and overqualification a shortfall in the volume of demand. The deficit in market demand for vocational skills and qualifications which is a consequence of chronic mass unemployment and which numerous studies have amply demonstrated is therefore systematically underestimated whenever overqualification is left out of the equation.

This typological analogy is presented in tabular form in some of the more recent publications of the U.S. Bureau of Labor Statistics. Hecker (1992, Table1, p.4), for example, presents annual figures under the following three headings: ‘All graduates in the labor force’, ‘Graduates in jobs that require a degree’, ‘Graduates in jobs that do not require a degree or who are unemployed’, the last column being divided into two subcolumns for graduates in non-graduate posts and unemployed graduates.

The structural analogy between unemployment and overqualification, however, has scarcely featured in employment research and its empirical surveying strategies. When researchers examine underskilled work and unemployment simultaneously or accord a similar level of priority to both, they are inclined to assume rather intuitively that both phenomena are serious problems for those who are affected by them and that their widespread occurrence on a macroeconomic scale may be regarded as a symptom of a profound disorder in the labour market. One exception is an earlier study of mine (Büchel (1998b), which undertakes the first systematic examination with the instruments of dynamic unemployment research based on career cycles, assessing for example the probability of access to, continuation in and withdrawal from employment as well as the long-term effects of a period of overqualification.

The question arises as to why the causal link between dormant vocational skills and lower living standards has been clearly recognised and adequately researched in connection with unemployment, whereas considerably less attention has been devoted to the problem of insufficient coordination between the educa-

5 It should be noted that the term ‘underemployment’ is sometimes used in a different sense. Ruiz-Quintanilla and Claes (1996), for example, include part-time work, temporary work and unemployment in this category, ignoring the fact that the first two forms, especially part-time work, are often undertaken on a voluntary basis; this broad definition, however, is contrary to the intention underlying the OECD terminology. Another entirely unorthodox version is proposed by Lichter (1988), who uses a category labelled ‘underemployment by low income’.

6 See for example Bielinski et al. (1994 and 1995) in relation to eastern Germany, which seems to illustrate this phenomenon particularly well, or Cedefop (Tessaring, 1998) in the European context.
tion system and the labour market, a problem that manifests itself in the form of overqualification.⁷

There are probably three main reasons. First of all, unemployment is a particularly flagrant waste of human capital, because the loss is absolute. Secondly, unemployment imposes a burden on national economies not only because the unemployed do not contribute to a country's productive output but also because part of the national product has to be diverted into a fund for the payment of unemployment benefits. And thirdly – an aspect that probably should not be underestimated – the precise volume of dormant human capital that results from unemployment has been statistically measured and recorded. Official statistics relating to overqualification, on the other hand, do not flag any problem, especially not in the highly aggregated form in which such statistics are characteristically produced and studied.⁸ Take the example of a man with a doctorate in philosophy who works as a taxi driver. He is not unemployed and therefore receives no state benefits – on the contrary, as far as the skill-related labour-market statistics are concerned, he even helps to furnish evidence that the economy employs philosophers and hence that there is a demand for philosophers. This signal is then transmitted to universities and their arts faculties and philosophy departments.

If dormant skills in the labour market are taken into consideration, it follows from the preceding observations that a new dividing line has to be drawn when we examine the labour market. The conventional boundary between jobseekers and employed persons must give way to a division between jobseekers plus people in underskilled jobs on the one hand and employed persons whose jobs match their skill and qualification levels on the other.⁹ It is evident that this type of approach must take account of the fact that a considerably higher volume of skill lies dormant when individuals are unemployed than when they are in overqualification, nor can it be denied that unemployment has a far greater impact on both the individual and society than the phenomenon of overqualification. Nevertheless, as far as the utility of acquired vocational knowledge and skill is concerned, there is still a typological analogy between unemployment and overqualification.

The present study pursues three principal objectives. Once the terminological concepts have been clarified, we shall present the first comprehensive investigation designed to establish which of the competing labour-market theories can help to explain the persistence of overqualification (section 3). A politically guided improvement of the interaction between the education system and the labour market, and hence an increase in the efficiency of the education system, cannot be achieved without knowledge of these causal

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⁷ The contrast here between the public interest and the present state of research is particularly striking (cf. Büchel, 1996b).

⁸ Although it is theoretically possible to differentiate, i.e. to break official data down into narrower categories, it is often impossible in practice, because such differentiation presupposes access to the original figures from which the statistics were compiled, and access to these figures is frequently restricted by the authorities. For an example of this type of approach in connection with the subject of the present study, see Plicht et al., 1994.

⁹ On this point, compare the generally analogous but considerably more radical and empirically almost unworkable approach presented by Müller and Beck (1993): ‘We are speaking [...] of underutilisation of the production factor labour when we refer to members of a country's active population who either do not have a job, even though they are prepared to work for the going rate of pay (unemployment type A) or do have a job but are not used efficiently in the production process (this is what we call hidden unemployment; unemployment type B)’ (pp.54-55, including text in parentheses). The employees whom Müller and Beck define as ‘not used efficiently’ come from a wide variety of categories, such as employees who are surplus to requirements but cannot be dismissed, employees whose job dissatisfaction is reflected in reduced productivity and ‘people who, in accordance with the accepted norms of administrative theory, remain in posts in which their services are effectively superfluous’ (!) (p.54). For a critique of the conventional dichotomous division of the active population into employed and unemployed persons in a broader context, see also Sulliven, 1981, pp.335ff.
Overqualification: reasons, measurement issues

The term 'overqualification' is generally used to describe a situation in which the knowledge and skills acquired through the education system are not exploited to the full. This definition is clearly very vague. For that reason, German researchers at any rate do not speak of overqualification unless the required skill level for the job is so far below the formal qualification of the employee that the work could obviously be performed by someone with a lower level of formal qualification.

This interpretation is not unconnected to the degree of formalisation of vocational training. The more institutionally standardised the qualification, the more plausible this approach appears. Applied to a rigidly segmented system such as the German one, which is divided into vocational training (non-academic) and higher vocational education (academic), this means that, on the one hand, people who have undergone vocational training — in the form of an apprenticeship, for instance — and are now in jobs for which no formal vocational qualification is required (e.g. a carpenter who works as a car-park attendant) and, on the other hand, graduates in jobs which could be done by people without higher educational qualifications (e.g. an engineering graduate working as a technician or even as a fast-food chef) are considered to be in overqualification.

As the definition shows, the important factor is the vertical dimension of occupational flexibility, not the horizontal dimension.\(^{11}\) Although the latter also results in the disuse of knowledge and skills acquired during the training process (if a qualified nurse, for example, works as a medical technician), the

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10. Despite a comprehensive body of relevant American literature, this type of in-depth analysis has yet to be performed in the United States. As Hecker says, 'Currently, we do not know how many college graduates take noncollege-level jobs because of labor market supply-and-demand conditions, how many do so because their individual educational backgrounds limit their options, and how many do so through deliberate choice.' (Hecker, 1995b, p.41).

11. On this distinction, see also Plicht et al., 1994, p.178).
type of ‘skill spillage’ that occurs when the training curriculum is out of alignment with the job description is considered to be inherently unavoidable when jobs are allocated to jobseekers.

It may be assumed that this form of horizontal mismatch will become increasingly commonplace as the industrial division of labour grows in complexity. Accordingly, a high incidence of horizontal mismatches in a national economy can scarcely be cited as evidence of an inefficient education system. In Germany, for example, a very high percentage of the active population state that they are not working in the occupation for which they were trained. Not least among the reasons for this is the fact that the dual system of alternating practical and theoretical training is based on a highly refined catalogue of occupational disciplines; an employee can therefore claim not to be doing the job for which he was trained even though the content of his actual job is very similar to the one in which he is qualified. Such ‘skill spills’, i.e. elements in the training curriculum that are not needed at work, also tend to affect every person who starts a new job.

So the decisive question is whether an employee’s post could also have been filled by someone with a lower level of formal qualification, which would mean that the employee’s vocational training represents a wasted personal investment, at least in part. In the case of the qualified nurse who was mentioned above, however, this situation is unlikely to obtain, since it may be assumed that she would not have obtained her post as a medical technician if she had not been trained to an equivalent standard in an associated discipline; her fellow technicians may therefore be expected to possess a similar level of qualification.

In the literature from the English-speaking world in which the terminology of employment research is coined, the terms ‘overeducation’ and, to a lesser extent, ‘overqualification’ have won acceptance as labels for the phenomenon described in this study. It should be noted, however, that in the initial phase of this discussion (see point 5.2.1 below) and even thereafter, in a few cases (see for example Dooley (1986) or Lambropoulos and Psacharopoulos (1992), who implicitly said the same thing, albeit in another context and without using the term ‘overeducation’) these concepts were used not only to refer to an individual in an underskilled job but also to refer in macroeconomic terms to a surfeit, or alleged surfeit, of paper qualifications in the labour market, which manifests itself, for instance, in diminishing returns from higher qualifications (cf. Rumberger, 1981c, p.294). However, other terms in frequent use, namely ‘skill underutilization’ (see for example Kalleberg and Sørensen, 1973, p.217, as well as Staines and Quinn, 1979, p. 8) and ‘surplus schooling’ (see for example B.Tsang et al., 1991), relate explicitly to the individual. The term ‘mismatch’ occurs occasionally; from each of the contexts in which it is used, it is clear that the mismatch is between the formal qualification level and the skill level of the job (see for example Clogg and Sullivan, 1983, p.121); now and then the term ‘occupational mismatch’ is also encountered (Clogg, 1979, and Sullivan, 1978). This concept, however, seems to pose semantic problems, because in the strictly literal sense it includes overskilled jobs,12 which are irrelevant in the context of our study and which, in a different framework, would have to be regarded as overqualification.13

Other designations have not stood the test of time, such as ‘overtraining’ (Kalleberg and Sørensen, 1973) or the term ‘nominal overeducation’, which Halaby used (1984, p.48) and ascribed to Clogg and Shockey (1984), although

12 Such a situation would arise, for example, if the holder of a master craftsman’s certificate were the only non-graduate member of the management team of a sizeable construction company.

13 The difference between the theoretical approaches to the phenomena of underskilled and overskilled work is reflected, for example, in the fact that the proponents of the theory of career mobility (Sicherman and Galor, 1990) explicitly state that they can only explain the persistence of overqualification, not the occurrence of underqualified activity (cf. Sicherman, 1991, pp.109-110).
this reference could not be traced. The same fate awaited the terms *Grauzonentätigkeit* ('grey-area activity'), which Schlegelmilch used in 1982, and ‘inappropriateness of skills’ (Tessaring, 1998). Nor could Mincer win acceptance for his proposed alternatives to ‘over-education’. He criticised the tendency to confuse ‘education’ with ‘schooling’, which was only part of an individual’s education, and suggested the terms ‘overschooling’ and ‘mismatching’ (Mincer, 1984, p.208).

Finally, there is surely a touch of irony in the fact that the expression ‘invisible underemployment’ which was quoted from the OECD terminology in the introduction to this study is conspicuous by its virtual absence from the body of literature on the subject of overqualification – *nomen est omen*!

3. Theoretical reflections on the causes of overqualification

3.1 Overqualification from the neoclassical perspective

From a neoclassical point of view, the phenomenon of overqualification, like that of unemployment, is a ‘non-event’. Where overqualification occurs, the neoclassical view is that it can only be the symptom of a temporary imbalance. This opinion is expressed by the authors of earlier conventional macro-economic studies on overqualification (see for example Freeman, 1976b).

In the longer-term adjustment process, for which, these authors believed, political support would be needed, the stiffer competition for adequately skilled jobs would lead to pay reductions at the top end of the labour market. This in turn would induce companies to adapt their production structures, the general effect of which would be an increase in demand for higher qualifications. On the supply side – always assuming perfect information – the diminishing return on higher levels of skill and qualifications would make advanced training a less attractive proposition. The demand-side adjustment would thus be reinforced by a reduction in the supply of skilled labour.

As always happens in neoclassical models, a stable balance would be restored; any remaining imbalances between the supply of skilled labour and the demand for skilled labour, which would manifest themselves in unemployment and underskilled work, would then be no more than frictional loss.

Criticism of this view begins at the same points as the familiar criticism that has been levelled at the neoclassical understanding of unemployment. Market operators seem even less likely to conform to neoclassical theory in their responses to overqualification than they do in responding to unemployment. The information gaps are even wider, which means that longer reaction times may be expected on both sides of the market. Trusting solely in the healing powers of market forces to overcome overqualification ‘in the long term’ therefore seems just as inadvisable as it is in the case of unemployment; Keynes’ criticism of the neoclassical insistence on patience is very apt here too. As he said, ‘In the long run we are all dead’.

3.2 Decision-making in the event of an individual mismatch between a person’s skill profile and the job description

In the general empirical literature on the subject of overqualification, the labour-market theories referred to in point 3.3.1 below are generally cited as possible ways of explaining the phenomenon. These various approaches are then evaluated in the light of research findings to establish their empirical legitimacy. The observable degree of concurrence among all the relevant empirical studies is remarkably high.

None of the studies presented in section 4 focuses on the precept that the interests of both employers and employees must always be reconciled in any job-matching process, a precept which is very important if we are to grasp the overall picture (Franz, 1991, chapter 6). Most of the attempts to explain the persistence of overqualification that are enumerated in point 3.3.1 below are only able to explain the calculation underlying the decision taken by one side; apart from the theory of career
mobility – and even in that theory the interests of the employers’ side are only implicitly assumed – there is not a single theory that can explain why the same decision is taken simultaneously by different players.

Equally scant attention is devoted in the body of empirical literature to investigation of the decision-making options of both sides in the labour market. In fact, the nature of the decision-making problem differs quite markedly between the supply and the demand side.

**The employee’s decision**

For the employees’ side, the implicit alternative to underskilled work is normally unemployment or withdrawal into the hidden reserve (for empirical evidence see Schlegelmilch, 1982 and 1983b). According to this premise, the main difference between overqualified employees and the unemployed is the former’s unconditional desire for a job, what Schlegelmilch refers to as an ‘I’d have done almost anything’ attitude (Schlegelmilch, 1982, p.414).

It must clearly be assumed – implicitly, once again – that a person’s acceptance of an underskilled job will have been preceded by a fruitless search for more suitable employment. This perspective, however, systematically obscures two other possible scenarios. Firstly, a spontaneous switch from another form of economic inactivity (that of the non-jobseeker) to overqualification is conceivable if an acceptable underskilled job offer were to materialise – an unexpected opportunity, obviously – and if that job seemed likely to benefit the individual more than continued inactivity.

It is also conceivable that underskilled work could be a genuine alternative to adequately skilled employment. This implies a ‘voluntary’ choice of lower job status. Teichler (1994, p.30), in a résumé of the findings of a study by Teichler et al. (1992), surprisingly reports that the majority of the academic respondents who were in underskilled posts had voluntarily chosen that employment status; Hecker (1995b, p.41) also discusses the same option in the U.S. context, though without empirically testing a hypothesis.

Such a decision could be taken, for example, if advantageous non-monetary working conditions, such as a lighter workload, a shorter journey from home to work, a job with high regional status, shorter working hours (if preferred), etc., outweighed the monetary disadvantages of an underskilled job in relation to adequately skilled employment and if income maximisation were not the basis of the jobseeker’s decision (see point 3.4.3 below, where this factor is addressed in greater detail). Moreover, it might also happen, albeit more rarely, that a higher net income can be earned – at least in the short term – from overqualification than could be obtained from a well-matched job (cf. Lucas, 1977).

Although all the indicators suggest that this favourable pay differential will not be sustainable in the long run (see for example Büchel, 1994b), if the jobseeker does not possess this information or only wants to do the job for a limited time, it is entirely logical for him or her to accept an underskilled job as an alternative to more appropriate employment. There is empirical evidence of both the aforementioned types of decision in the present report.

**The employer’s decision**

The motives behind the employer’s decision almost never feature as a subject of empirical literature either. Nevertheless, this decision is quite different to that of the employee. The main alternative in empirical terms to appointing an overqualified candidate is most probably the selection of an applicant whose skills and qualifications are commensurate with the job description. This, however, presupposes the absence of restrictions on the supply side.

It is entirely conceivable, for example, that the local labour market might be unable to deliver a ‘suitable’ person for a particular job, i.e. one whose skills and qualifications match the job profile, perhaps because of the specific nature of the job in question. At the same time, the job might not be important enough to warrant the additional cost of casting the recruitment net beyond the local area. In this situation it would be futile to investigate the employer’s motives for choosing an overqualified applicant.
This turns the spotlight onto another option that is open to employers: if there is not even an overqualified candidate for a post, or if overqualification is automatically regarded as a reason for rejection of an application, the employer may simply decide not to fill the post at all.14

When the empirical effectiveness of the competing attempts to explain the persistence of overqualification is assessed, due consideration must be given to the difference between the parameters governing the employer’s and the employee’s decisions. This means that, even if an explanatory method (based on one party’s decision) proves to be especially effective, it is still only a partial analysis, and the persistence of the phenomenon will not be fully explained unless plausible explanations are found for the behaviour of the other party.

3.3 Explanatory methods based on partial analysis

3.3.1 Established methods

The explanatory methods we call ‘established’ here are those that have featured in empirical studies in the field of overqualification research. This, however, does not automatically imply anything about the popularity of a given method or its empirical substantiation.

The human capital theory

The human capital of employees comprises not only the certified knowledge they have acquired at schools or technical colleges but also contains other components, which are created as the employees gather work experience or which reflect their length of service with a company, for example. If these diverse components are interchangeable, it is conceivable that various people whose components are mixed in different proportions might possess an equal stock of human capital. In such a case, measuring the extent of a mismatch on the sole basis of formal qualifications would not furnish proof of inefficient skill deployment in the labour market.

This more methodological aspect of overqualification, however, only comes into play if a DOT/GED approach is adopted to measure the degree of overqualification; such an approach is not based on employees’ subjective self-reported estimates but on a standard set of measures of required schooling for various occupational categories (see subsection 4.1 below). Accordingly, the human capital approach (Becker, 1964) is never used to explain the persistence of overqualification, except by Sichermann (1991), who makes a study of this aspect of the overqualification problem (p.114). Since the human capital theory may be deduced from neoclassical premises (see subsection 3.1 above), Rumberger’s comment, ‘overeducation does not really exist in this conception’ (Rumberger, 1981b, p.24) applies to the theory of human capital too.

Nevertheless, the great versatility of the human-capital theory surfaces once again in partial analyses in the field of overqualification research when, for example, it is demonstrated in western Germany that, in the course of a career in which a person’s jobs generally match his or her qualifications, transitional periods spent in overqualification result in less erosion of human capital – and hence of subsequent earning power – than equivalent periods of unemployment (see subsection 6.6 below).

The assignment theory

The assignment theory, which was established by Tinbergen (1956), following preparatory work by Roy (1951), and was further developed by Sattinger (1975), Rosen (1978), Hartog (1980, 1981a and 1981b) and Mac-
Donald (1982) proceeds from the assumption that people with different skill levels are assigned to jobs with different requirement levels. Given the complexity of this allocation process, mistakes are inevitable. In other words, the phenomenon of underskilled (and overskilled) employment is inherent in an intricately structured market economy. The income effect of such mismatches is examined in assignment literature, which is able to demonstrate that the income differential arising from the discrepancy between individuals’ formal qualifications and their job descriptions is exclusively incurred by neither the employer, as the job-competition model might lead us to expect, or by the employee, as the human-capital theory would suggest, but is actually divided between both parties (Hartog, 1986). Hartog shows this explicitly for a case of directly measured overqualification (Hartog, 1985a). The ratio in which this income effect is split between the two parties can also be established for Germany and other countries. When the income losses incurred by each party from a mismatch are reduced, this eases the pressure on either side to avoid overqualification and makes the phenomenon all the more persistent.

Filtering, signalling and screening approaches

Filtering, signalling and screening approaches all proceed in similar ways from the assumption that human capital created in formal education does not directly determine employees’ pay levels. The exact future productivity of job applicants is not recognisable to a prospective employer, who faces the problem of ‘hiring as investment under uncertainty’ (Spence, 1973, p.356). The quality of the applicants’ training certificates serves as a manifest indicator of the latent variable ‘future productivity’.

This resolves the crucial problem of uncertainty or imperfect information, since candidates with a higher or more relevant educational qualification are expected to be more productive than others. The certificate only acts as a signal, a screening mechanism and a filter in the recruitment situation. Once the new recruit has started work, he or she can be extensively tested, as can the efficiency of the basis on which the recruitment decision was made, in other words the approaches we are discussing here; the effect of the certificate diminishes rapidly: ‘To the extent that the employer does filter and does so accurately, the value of the college filter is reduced’ (Arrow, 1973, p.215). Even if some certificates and/or their holders prove unproductive when put to the test, this will scarcely change employers’ decision-making criteria, since employees with higher educational qualifications are more productive on average than their less-educated colleagues: what counts is the level of expectation. So it is not the actual human capital that yields an investment dividend but the certificate. To put it another way, the certificate, being a manifest quantity, is a tangible indicator of the holder’s human capital, which, being a latent quantity, is not directly measurable – at least not in the recruitment situation; presumably these two quantities are not perfectly equal. On the basis of these premises too, the return on individual certificates may be expected to fall when the market experiences a glut of labour; nevertheless, the fact that a certificate attesting to a higher level of education is not only directly rewarded but also indirectly, because it serves as a key to skilled employment, tends to increase demand for higher qualifications within the education system, irrespective of market demand for labour.

This growing demand is further stimulated by factors extraneous to the labour market, namely the non-monetary returns to higher education, such as the accretion of social status and prestige; here too, the educational certificate serves as a signalling device. If the demand for labour with the skills and

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15 See Rumberger, 1987 (United States), Daly et al., forthcoming (United States and Germany), Alba-Ramírez, 1993 (Spain) and Kiker et al., 1997 (Portugal).


17 On this aspect of formal qualifications, see Smith, 1986, p.98.
Overqualification: reasons, measurement issues

qualifications in question cannot keep pace with this expansion, the result – once all the matched posts have been filled – will be a rise in the unemployment rate for people with higher qualifications and/or an increase in overqualification.\(^{18}\)

The distinctive feature of the aforementioned approaches is that they are almost impossible to test empirically within a microeconomic framework. Although nearly all the relevant empirical studies on the subject of overqualification resort to these approaches when they advance their explanatory hypotheses, they offer no explicit test. They circumvent the measurement problem by relying on the fact that the empirical legitimacy of these approaches is generally held to be irrefutable.

This probably applies even more to European countries with sophisticated systems of vocational education than, for example, to the United States. In Germany, for instance, virtually every job offer – at least above a modest skill level – stipulates that applicants should possess a specific formal qualification. The function of the required certificate as a signal and a screening device is not altered by the fact that, in recent times, especially at the highly skilled end of the jobs market, mere evidence of vocational training is no longer enough to secure a job. Additional tests, such as those conducted in the assessment centres of large companies, seem to be a response to the appreciable weakening of the signal emitted by university degrees, for example. The implication – which may not be entirely unfounded – is that we are seeing a decline in universities' ability to measure their students' skills and to translate the results of their measurements into a valid form of certification when students complete their degree courses. The signal function of a certificate, however, is unquestionably preserved by virtue of the fact that, while it may not be a sufficient qualification in itself, in the vast majority of cases it is probably at least a *sine qua non* for the jobs for which certificate holders apply.\(^{19}\)

**Job-competition model**

The job-competition theory is based on the premise that an individual's place in the job queue is largely determined by the nature of the underlying variable 'education'. A higher level of education – whether or not the job actually requires it – implies lower training costs for employers. It will likewise take less time and effort to familiarise individuals with a job for which they are overqualified than for one that matches their formal qualifications.

Still greater importance attaches to the training costs involved in upgrading employees' skills and qualifications. The preference is to invest in employees who, on account of their educational background, are likely to be the cheapest to train. Accordingly, it is the overqualified candidates who raise the highest expectations in terms of returns on further educational investments and who therefore stand the greatest chance of being sent on training courses; these corporate expectations and the strategy of externalising training costs to which they relate (in the case of overqualified employees, the education system has already footed a good part of the bill) put overqualified people in pole position in the labour queue, ahead of those whose qualifications match the job description; in short, overqualified people have a head start in the recruitment stakes (Thurow, 1975, pp.75ff., pp.86 *et seq.* and pp. 91 ff.).

This model is therefore able to explain an employer's motivation for preferring overqualified candidates and, by the same token, the persistence of overqualification.

An important point is that the candidates' formal qualifications only determine their position in the job queue. They do not, however, affect the income they can expect to earn; that is determined by the job description

\(^{18}\) For detailed treatment of this phenomenon, see Rumberger, 1981b, pp. 25ff., as well as Tsang and Levin, 1985, p.95.

\(^{19}\) See also Rippe, 1984, pp.76 ff., on this point and, for a more general analysis, Weißhuhn, 1978.
alone. So all that Thurow’s job-competition model directly explains is the motivation of employers to put cost and productivity considerations first and opt for the candidate with the best formal qualifications.

This does not directly explain the incentive for the candidate to accept an underskilled job, because he or she cannot expect an education premium. Indirectly, though, the desire to acquire the highest possible level of educational certificate in order to secure the best possible position in the job queue helps to perpetuate overqualification from the supply side. If overqualification is always an option, this strategy seems rational, irrespective of the structure of demand for labour. The demand for education in this case is not based on absolute expectations but is governed by the desire to secure the best possible relative position in the labour market, even at the risk of subsequent devaluation of qualifications.

The upshot of this is that people with higher qualifications are squeezing the less qualified out of the jobs they have traditionally occupied. This applies at least to jobs with more than minimal skill requirements (cf. van Ours and Ridder, 1995). In this respect, the job-competition model is therefore compatible with the approaches described on the preceding pages.

Rumberger writes, ‘[…] the model does offer an intuitively appealing interpretation of the phenomenon of overeducation’ (Rumberger, 1981b, p.29); this may be the reason why this is the most frequently cited approach in the empirical literature on overqualification.

There is, however, one serious problem in relation to empirical testing, although it has surprisingly gone unmentioned in the literature that has been produced to date. This concerns the question of the type of training in which overqualified employees are expected to enjoy comparative advantages over their colleagues with well-matched jobs and less schooling. Is it initial training, when they are new to their jobs, in other words the training of recruits for their posts? Or do these advantages relate to future training courses to upgrade their skills and qualifications, particularly in connection with career development within the company? Thurow is not at all specific on this point.

The classic test of the job-competition model in relation to overqualification involves a comparison between the training activities undertaken by employees in underskilled jobs and those undertaken by employees in appropriate jobs (see for example Groot, 1993a and Hersch, 1995). If the validity of the initial premise is to be proved, it must be demonstrable that overqualified employees undergo less training than those whose jobs match their qualification levels, since people with better formal qualifications need shorter familiarisation periods and less training. In order to substantiate the second premise, however, we should need to arrive at the opposite result, since the greater learning capacity of the more highly educated employees will reduce training costs and therefore increase the return on investments in further training; at constant required skill levels, employees in underskilled jobs are therefore more likely to be sent for training than their less-educated colleagues whose jobs and qualifications are well matched.

There are several reasons why the second interpretation appears more credible. In very undemanding jobs, which would be underskilled for any employee, familiarisation normally takes the form of learning by doing. At least in European surveys, however, most of the training reported by overqualified respondents is formal in nature. If this line of argument is pursued, the training activities reported in surveys must relate primarily to further training designed to upgrade skills and qualifications. Such an interpretation also draws an analogy with the theory of ca-

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20 The same applies to non-monetary returns (see von Henninges, 1996, p.81).
21 For a more detailed treatment of this point, see Rumberger, 1981b, pp.27 ff., as well as Tsang and Levin, 1985, p.95).
22 For a more extensive discussion of this aspect, including employers’ productivity considerations, see point 2.3.4 above.
reer mobility (see below). This not only concerns the employer’s motivation but also that of the employee: the prospect of being at the front of the queue for further training and thus of achieving at least limited promotion is likely to increase a jobseeker’s willingness to accept overqualification.

**The job-matching theory**

The theory of job-matching, which was developed in the 1970s, may be loosely divided into two types of model. In the first category, jobs are understood as ‘pure search goods’. Information about an alternative job, in which an employee’s qualifications and the job description are likely to be more closely matched, is obtainable at all times. If such an alternative is available elsewhere, the employee will switch companies (Burdett, 1978; Jovanovic, 1979a; Mortensen, 1988). In the second category of model, jobs are interpreted as ‘experience goods’: ‘That is, the only way to determine the quality of a particular match is to form the match and “experience it”’ (Jovanovic, 1979b, p.973, quoting from Nelson, 1970; for studies on this type of model, see Johnson, 1978; Jovanovic, 1979b; Topel and Ward, 1992).

Length of service with one company is traditionally regarded as a suitable indicator of the quality of a match: ‘Job tenure is my (match) quality indicator under the assumption that “good matches endure”’ (Bowlus, 1995, p.336; for analogous rationalisation, see for example Schasse, 1991, and Topel and Ward, 1992). The assumption is that a mismatch will be identified relatively quickly by one of the parties, and the employment contract will be terminated. A good match, on the other hand, benefits both sides, and the contract will therefore last longer.

In the context of the present study, it seems logical to measure the quality of the match directly by reference to the correlation between qualifications and job descriptions. Employment in a job that is commensurate with one’s level of training is obviously more likely to prove a good match than overqualification. Accordingly, the ‘experience-goods’ variant of the job-matching theory is able to explain the persistence of overqualification on the basis that, on the one hand, employees need a certain amount of time in the initial phase of their careers to find a ‘good’ match. Employers, on the other hand, do not respond quickly enough — if at all — to mismatches, sometimes because of a risk-avoidance strategy based on the precept that ‘a bird in the hand is worth two in the bush’, and therefore miss the opportunity to test whether the employee’s skills are better matched to the requirements of a different job and hence the chance of improving their company’s overall efficiency.

In the empirical studies on overqualification, the job-matching theory is only used on the odd occasion as a means of explaining the phenomenon. Sicherman (1991) uses it implicitly in testing his career mobility model: ‘Overeducation might be an indication for a bad match in the sense that the worker’s education might qualify him for a better-paying job. In such a case, it is likely that eventually the worker will change his job, that is, his occupation, firm, or both’ (p.105). Sicherman tests it explicitly when he compares the job tenure of employees whose job descriptions are commensurate with their qualifications and those who are overqualified for their jobs. His finding that mismatched employees have shorter job tenures (p.106) is hardly surprising. To the extent, however, that a short stay with a company is a traditional indicator of a mismatch, as was mentioned above, this test is tautological in a sense; the best it can do is to verify the validity of the mismatch indicator selected by the job-matching theorists, namely job tenure.

Alba-Ramírez (1993) chooses a more effective test. He not only uses the duration of jobs, which can be observed longitudinally, but also has recourse to the employee’s earlier career history. He examines the connection between the average duration of all previous jobs and the current job match. The analysis is extended to include two further partial indicators: whether the employee has ever changed firms and whether the employee has more than five years of seniority in his or her current job. On this basis, Alba-Ramírez likewise finds empirical evidence to validate the theory.
There are, however, two weak spots in this train of thought. The first is that Alba-Ramírez is only able to use prior work experience, a ‘potential’ measure; this is likely to cause serious reliability problems, especially in the case of older working women. The second is that he includes in the calculation the employee’s seniority in his or her present job, which is a piece of right-censored data at the time of observation. Where employees have only had their present jobs for a short time, moreover, it will not yet be possible to establish a valid correlation between job duration and match quality.23

In the present study, we intend to test the empirical evidence for the ‘experience-goods’ version of the job-matching approach even more explicitly.

The expectation raised by the theory is clearly that the match between the demands of the job and the worker’s skills and qualifications will be all the more perfect the older and more experienced an employee is (Franz, 1991, p.203).

Although the argument that ‘older and more experienced’ employees stand a better chance of being in a well-matched job by virtue of the progressive improvement in their ability to assess their own career prospects is certainly plausible, it does raise the question of the validity of the personal attributes cited by Franz. Merely growing older is obviously not enough in itself. The second attribute, increasing experience, certainly seems to be more serviceable. If experience is not intended to be synonymous with age, it is plainly not experience of life but occupational experience that is meant here. The theory does not suggest that occupational experience, which in this context means the knowledge accumulated by the employee about his or her productive capacity and the uses to which it can be put in the labour market, is likely to increase through continuous employment in one and the same job but only through a process of trial and error in various jobs with several different employers.

For this reason, it seems advisable to regard the frequency of job moves as a direct measure of occupational experience in empirical tests.24 This would be used to check whether an increase in the number of career moves actually reduces the probability of a subsequent mismatch between formal qualification and job requirements. A specific test (Büchel, 1998b, p.139) demonstrates that – contrary to theoretical expectations – overqualified employees have a record of considerably greater career mobility than those in jobs that match their level of training. This finding does more to prove the plausibility of the segmentation approach (see below), which predicts weak company attachment among employees in undemanding jobs.

Career mobility theory

The theory of career mobility, developed by Sicherman and Galor (1990) on the basis of Rosen’s groundwork (1972), postulates that the return on investments in higher levels of education not only manifests itself in higher starting pay but also in better prospects of promotion within a company or of an upward move to another company. In other words, it focuses on income development over a period of time and may be regarded as a refinement of the human-capital theory. If tests control for required skill levels, promotion prospects will increase with rising education levels.

One proposition (‘Corollary 2’) is as follows: ‘Individuals may choose an entry level in which the direct returns to schooling are lower than those in other feasible entry levels if the effect of schooling on the probability of pro-

23 Alba-Ramírez, like Sicherman (1991), establishes a strong positive correlation between job tenure and match quality (pp.272-273).

24 Even within the work of individual authors, this configuration is presented in different ways and hence inconsistently. Hersch (1991), for example, rightly speaks of employees who ‘move into better matching jobs’ (p.144), which they clearly cannot do unless they make a change (such as obtaining promotion within a company or moving to another company), whereas Hersch (1995) refers generally to ‘previous work experience’ (p.620), which is measured in total years of employment.
motion is higher in this entry level’ (Sicherman and Galor, 1990, p.177).

Sicherman (1991) operationalises this sort of promotion as both a ‘move to higher-level occupation’ and the attainment of a ‘higher wage level’ (p.109). A motive for accepting an underskilled job can be deduced from the above hypothesis: ‘[...] it will be rational for some individuals to spend a portion of their working careers in occupations that require a lower level of schooling than they have acquired. This observation can serve as a partial explanation for the phenomenon of ‘overeducation’ (Sicherman and Galor, 1990, pp.177-178; cf. Sicherman, 1987). The higher the probability of promotion, however, the greater is the possibility that the employee will quit if promotion is not approved; this is the other proposition (‘Corollary 1’) of the career mobility theory (see Sicherman and Galor, 1990, p.176).

The appeal of the career mobility theory does not derive solely from its high degree of plausibility but also from the fact that – unusually – it can explain both parties’ motivation for accepting an individual job/education mismatch by means of the same approach.

Employees forego part of what they could be earning now in exchange for a favoured position in the promotion queue, thereby investing in increased future earning power. If, after some time in the job, they feel that their employer has reneged on the deal, their only option is to move to another company.

For employers this arrangement is enticing in the sense that it gives them an opportunity to ‘test’ new recruits, whose high level of qualification predestines them for managerial functions, at a reduced rate of pay over a certain period of time. There is something of an analogy between this and the training process under the German Duales System of alternating classroom and workplace training, in which the company with which a trainee has been working decides at the end of the training course whether to offer the trainee an employment contract, in other words to ‘promote’ him or her to the status of a skilled worker. A comparable configuration is becoming increasingly commonplace in the academic world, whereby individuals are not appointed to traditional academic posts until they have completed a traineeship in the institution in question.25 The ‘course fee’ that the trainee is implicitly expected to pay for his or her on-the-job training thus assumes the nature of an investment.

In a subsequent study, Sicherman (1991) went back to the test of the theory developed in Sicherman and Galor (1990) and tailored it explicitly to the phenomenon of overqualification. He found clear evidence, which is hardly surprising, of the validity of the career mobility theory he helped to construct. Employees in underskilled jobs, he established, are younger than those in well-matched jobs, have a higher rate of internal promotion and switch companies more often.

Alba-Ramírez (1993) arrives at similar results. The problem with the approach adopted in both studies, however, is that, in comparing employees in underskilled and well-matched jobs, they operate with a constant level of formal qualification but different levels of skill requirement. If the structures they identify correlate highly with job levels, the findings will inevitably be misinterpreted, because a causal link will be imputed between the various identified effects and the job/education mismatch, although it is possible that the differences between the two groups are entirely due to the fact that the members of one group have more demanding jobs than those of the other group.

In a test the author conducted on this theory (Büchel, 1998b, pp.140 ff.), allowance was made for this possibility by ensuring that, once the conventional qualification-based test had been completed, the effect of overqualification was only investigated for certain jobs which were as homogeneous as possible in terms of required skill levels. The test shows first of all that there is no significant differ-

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25 ‘Evidently, in many companies, an employee’s precise job is not determined until he or she has successfully completed the traineeship programme’ (iwd, 1994b, p.5).
ence between the promotion prospects of overqualified employees and those of adequately educated employees. Secondly, on the basis of the same investigative strategy, the test actually did indicate a negative correlation between the internal promotion of an overqualified employee and the probability of that employee leaving the company, just as the theory predicts, but it also demonstrated the same phenomenon for adequately educated employees. These findings clearly do not deliver a resounding endorsement of the career mobility theory.

In a more extensive test by Büchel and Mertens (2000, and forthcoming), the Sicherman (1991) findings are replicated with German data (full-time male employees in western Germany) – with the required skill level again being held constant. This test actually demonstrates a higher probability of promotion into an occupational group with a greater mass of human capital for overqualified employees than for those with adequate education. This also applies if we pursue the approach adopted by Robst (1995a), who analyses changes in occupational status rather than transfers from one occupational group to another. It has been demonstrated, however, that these findings largely derive from blurred distinctions between categories of occupational status. If changes in income are examined instead, and if the test controls for the base effect (income in the base year), it emerges that overqualified employees experience less wage growth than their adequately educated colleagues. This finding is consistent with that of the sociological studies which have established a link between better job/education matches and brighter career prospects (see for example Sørensen, 1977, and Spilerman and Lunde, 1991, p.716). This is another finding which undermines the attempt made in Sicherman (1991) to apply the theory of career mobility to the phenomenon of overqualification.

The theory of differential overqualification

A remarkable theoretical approach to the explanation of a greater risk of mismatch between formal qualification and job requirements for married women in restricted markets was developed by Frank (1978b; see also Frank, 1978a). He criticised the fact that the difference in the incidence of mismatches between male and female employees had always been ascribed to the personal characteristics of men and women (see for example Gwartney, 1970, Cohen, 1971, and Fuchs, 1971) and that the residual variance had been rather feebly explained away as ‘discrimination’ (see for example Oaxaca, 1973).

A theory of differential overqualification may be outlined as follows. The starting point is an income-maximising jobseeker. The expected rate of pay is governed by the skill level of the job alone, like the expectations in the job-competition model and the production theory (Frank, 1978b, p.362).

If ‘qualification’ is defined very broadly, jobseekers are, to a certain extent, overqualified for every job for which they are eligible to apply, since they will always possess certain knowledge that is never used in the performance of their duties. This overqualification gives rise to a wage deduction from the ‘optimum’ (purely education-dependent) income which would be obtained if a perfect match were to be made (p.362). The economically rational strategy for a single individual is therefore simple: the individual identifies that vacancy in the market system for which he or she is least overqualified. The sampling distribution of the degree of qualification depends on the total number of vacancies in all markets combined; this follows from the fact that the mobility of an individual within his or her own region is not restricted. The expected degree of overqualification (and hence loss of pay) for the single searcher approaches zero as the total number of vacancies in all markets approaches infinity.

In the case of married couples, the search problem is considerably more complex. Assuming an inclination towards paid employ-

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26 On the concept of local labour markets, see for example Topel, 1986.

27 Frank chooses not to include transaction costs in the calculation underlying a migration decision.
ment on the part of both spouses, their aim would be to maximise the joint income. Because of the formal basis of the spouses’ respective rates of pay, it is not possible simply to find the lowest possible degree of combined overqualification; consideration must also be given to the spouses’ education levels, which may differ (pp.363-364). The optimisation process is further complicated by the assumed condition that both spouses will have to find work in the same local job market. Four general properties of the expectations with regard to a married couple are identified (pp.364-365):

i) The expected amount of the added overqualification degrees of a searching couple will exceed the expected degree of overqualification for a single searcher.

ii) The expected degree of overqualification of a husband will be lower than that of his wife, if his qualification is higher than her’s (and vice versa).

iii) The expected degrees of overqualification for both partners will approach zero as the total number of vacancies in the market system approaches infinity.

iv) The expected degrees of overqualification for couples are not, as in the single-worker case, independent of the distribution of vacancies across local labour markets. The expected degrees of overqualification increase as vacancies are more evenly distributed across local labour markets – always assuming that migration is a possibility for the couple.

In this dilemma, the sheer complexity of which will overwhelm any couples trying to maximise their household income, Frank (1978b) says that the husband takes the initiative and acts in accordance with a ‘male chauvinist family location decision rule’ (p.364). He begins by seeking the best possible job for himself once he has performed the simple task of identifying the vacancy for which he is least overqualified (see above); in so doing, he also determines the local labour market in which both spouses will work. Once this decision has been taken, the wife conducts her own individual search to find the best possible job for herself within that market.

Assuming that the couple are entirely free to migrate, the crucial point is that the husband is clearly able to conduct his search across the whole range of local markets, in other words to apply for any suitable job vacancy in any market. The wife’s subsequent search, however, is restricted to the local job market selected by the man. Since the number of job vacancies in the local market is smaller – very much smaller – than in the global market, the wife may logically be expected to find a poorer match. This disadvantage will surely be all the greater if the husband finds his optimum job in a small local market.

The disadvantaged position of married women may be reflected in either of two ways. If the woman is unable to take up a more attractive job offer at another location because her husband has already found his optimum job locally and is not prepared to move, she is a ‘tied stayer’ (Mincer, 1978). If, on the other hand, the man has decided to accept a lucrative job offer far away from the couple’s present home, his wife is compelled to move with him, irrespective of the quality of her current job or her employment prospects at the new place of residence; she is a ‘tied mover’. So whereas marriage tends to enhance a man’s status in the labour market, the opposite may be expected to apply to women.

A high degree of empirical plausibility makes this another persuasive theoretical approach. It does not even rely on the assumption that the man will adopt an irrational ‘macho’ stance to establish the family location against the interests of his partner. Since, in terms of the whole population, the average level of formal qualification for husbands is always observably higher than that of wives, and since married women work fewer hours on average than married men, the use of the ‘male chauvinist family location decision rule’ should generally be rational too, given the aim of

28 For a summary of the various reasons for this, see Cornwell and Rupert, 1997.
maximising the total household income – especially as it seems impossible to fully reconcile both sides' interests, not only because of the mathematical complexity of the decision-making operation but also because of crucial information gaps.

When Frank tested the theory (Frank, 1978b), the test was not explicitly tailored to overqualification but took the form of an income analysis. Studies have traditionally focused on the 'tied stayer' variant, presumably because of data limitations.

An income-based analysis, however, raises significant methodological problems. If an unequivocal causal link is to be established between the phenomenon of differential overqualification and income differentials, it will be necessary to control for those income-level variations between larger and smaller local labour markets (the usual distinction is between municipal and regional markets) which are not productivity-dependent. Such variations include, for example, local weighting allowances designed to compensate for higher housing costs. In addition, there would be a need to control for differences between municipal and regional occupational structures, for instance by including several hundred occupational dummies in the income estimates. None of the studies that have appeared to date have come up with a satisfactory solution to this problem.

A less complex approach can be adopted if the examination of relative incomes (which are only used, after all, as indicators of the job/education mismatch that this theory studies) is replaced by direct examination of the mismatch, which might be done by measuring the degree of under- or overqualification. The only example of this line of enquiry is found in McGoldrick and Robst (1996), who concluded that there was no empirical evidence to support the theory of differential overqualification, since the dummy variables they incorporated to denote different sizes of region did not have a significant effect in the model used to establish whether the probability of a married women being overqualified for her job was greater in smaller than in larger markets (p.282).

This test was reproduced in Büchel, 1998b, p.143 ff. The author's study was also the first to include tied movers in such a test. It also took heed of the criticism made by McGoldrick and Robst (1996) that the number of job vacancies was an inadequate indicator of the shortage of jobs since it did not take account of the number of people seeking those jobs; a more suitable measure of the 'tightness' of the labour market, they said, would be the regional unemployment rate. At the same time, for the sake of greater validity, this test included not only married couples but cohabiting couples too; married people not living together, on the other hand, were treated as single.

Like its predecessors, this study had to adopt an implicitly assumed correlative trend between the number of job vacancies, the total number of jobs and the population of the place of residence when it tested the theory, although it also controlled for the regional unemployment rate (see above). The problem of equating the place of residence with the job location can, however, be overcome by at least a proxy construction which controls for the distance from home to work.

The study demonstrated that married women in rural areas actually do register a significantly above-average overqualification rate if – and only if – an estimated distance from home to work is taken into consideration. This high-risk group can therefore avoid the overqualification syndrome if they commute into larger urban areas. However, where married women living in sparsely populated areas are unable or unwilling to commute, the probability that they will not find a well-

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29 For similar approaches, see Topel, 1986, and Ofek and Merrill, 1997.

30 Teichler (1994), who focuses on Germany, identifies academics who have 'voluntarily' chosen underemployment in preference to a more appropriate post because they wanted to be close to their partner (p.30).

31 See also Büchel, 1999d, and Büchel (forthcoming).
matched job in the vicinity of their home is atypically high. This finding accords with the expectations of the theory.

The job-search theory

The basic assumption of the job-search theory (Stigler, 1961)\(^{32}\) is that jobseekers adopt a search strategy which will maximise their potential lifetime earnings. In the basic model of the theory, which has subsequently been extended in many different ways, it is assumed that, from a density function of wage offers, postulated as a known quantity, the jobseeker chooses the number of offers that will optimise the job search process. Once this chosen number of job offers has been reached, the jobseeker will select the highest wage on offer. The longer the jobseeker waits, the greater his or her chance of receiving an even higher wage offer. However, the longer the duration of the job search, which equates to a period of unemployment, the higher the cost to the jobseeker, not only in terms of higher direct expenditure arising from job applications but also in terms of opportunity costs, in other words the income the jobseeker has foregone in order to wait for a better offer, minus any unemployment benefit he or she might have received in the interim period. There is also a danger that acquired skills will become increasingly obsolete during that period.

As the job search goes on, the jobseeker’s target wage may be expected to decrease, since the time limit on a person’s working life will compel the jobseeker to operated within a restricted time frame. The longer the search for work lasts, the less will remain of the jobseeker’s working life. After the wage level, this is the second decisive parameter governing the maximisation of lifetime earnings. The job search is maximised if the marginal cost of seeking a job is matched by the marginal increase in future earnings.

The expected decrease in the target wage as the off-the-job search continues may mean that the job-search theory can help to explain why people accept underskilled jobs, because a lower wage is likely to equate with a lower required skill level, for which the jobseeker will often be overqualified. The findings contained in Büchel (1992), for example, show that a high percentage of skilled workers in West Germany can only escape from a lengthy spell of unemployment by accepting jobs in which their specialised skills are not required.

It may therefore come as a surprise to discover that, in the existing body of literature on overqualification, the job-search theory is hardly ever cited as a means of explaining the phenomenon. One implicit exception is Patrinos (1995), who explains the acceptance of overqualification as a response to abnormally heavy pressure to find work but generally focuses on the economic resources at the disposal of jobseekers.

With regard to the serviceability of the job-search theory in the context of overqualification, however, it should be noted that the theory can only explain the temporary, short-term occurrence of overqualification, since it explicitly relates to off-the-job searches only. The theory is therefore unable to explain why overqualified people, having taken undemanding jobs, are then unsuccessful in their on-the-job search for a better job, which in this context would mean a job that is commensurate with their qualifications (on this expectation, see Rosenfeld, 1992). Hence, since the theory can only explain mismatches caused by frictional loss, it is not capable of explaining the persistence of a high percentage of overqualified employees in the labour force.

3.3.2 Unorthodox approaches

Rumberger (1981, pp.29ff.) speaks of two unorthodox approaches to the explanation of persistent overqualification. One of these is the segmentation approach, and the other is a ‘radical’ approach; in American terminology in this field, ‘radical’ stands for ‘Marxist’.

Segmentation approach

The segmentation approach rejects the homogeneous neoclassical model of the labour mar-

\(^{32}\) For a review of the most important refinements of this theory, see Lippman and McCall, 1976 a, b.
ket as unrealistic and postulates the existence of labour-market segments in which widely disparate working conditions obtain. The assignment of labour to these market segments is decided by employers on the basis of a ‘discriminatory’ weighting of individual screening indicators, such as formal qualification; it is asserted that opportunities to move from one segment to another are extremely limited.

In the original model presented by Doeringer and Piore (1971), the basic assumption was that the U.S. labour market is essentially a dual market. The primary market is chiefly reserved for the traditional core workforces, and jobs in that market are characterised by high wages, employment stability and good career prospects. In a secondary or peripheral labour market with unskilled, poorly remunerated and insecure jobs, employers recruit their fringe workforces in times of prosperity; when cyclical downturns come along these fringe workers can be fairly easily offloaded with minimal transaction costs, because they are loosely attached to the company, which has accordingly invested little in the development of their human capital33.

This simple methodological concept has proved to be highly resilient. Individual refinements, such as attempts to take account of regional characteristics, have seldom gained general currency. In the West German labour market, for example, Lutz and Sengenberger (1974) claimed to have identified a separate segment of the ‘specialised labour market’ which was characterised by insecure conditions of employment for skilled workers with good formal qualifications. This regional distinction was intended to take account of the fact that the Federal Republic of Germany, unlike the United States, had an established system of alternating on-the-job and theoretical training.

This distinction, however, is open to criticism on the grounds that every job requires a certain degree of skill, however minimal. Why successful completion of an apprenticeship, of all things, should be used as the decisive skill-categorisation criterion largely defies logic. The skill level required for a job is traditionally operationalised on the basis of the wage paid for that job, a variable that is hardly likely to be governed by ‘natural’ thresholds such as the difference between the wage of an unskilled or semi-skilled worker and that of a skilled worker. The infinite array of criteria that could be selected to distinguish between segments of the labour market and the resulting diversity of typological segmentation, which could hardly stand up to a validity test, have already come in for criticism from several sources, and rightly so (cf. Blien, 1986, p.147).

The segmentation approach does help to explain the persistence of overqualification in conjunction with the screening approach and the job-competition model. If all suitable jobs in the primary segment of the labour market are initially occupied, jobseekers who are less well equipped to withstand the screening devices (applicants with lower pass grades where formal qualification is the screening device, for example) have to settle for jobs in the peripheral segment. Since the boundary between the segments tends to be impervious, the result is a state-dependence effect, whereby the fact that a person works in the peripheral segment becomes a further negative screening device (see also Rumberger, 1981b, p.32).

Neubäumer, 1993 (see also Neubäumer, 1997, and forthcoming), adds a noteworthy dimension to conventional consideration of market segmentation in the present context by postulating the segmentation not only of the labour market but also the market in course places within the system of vocational training. In those occupations and industries where training and working conditions are poor (e.g. for hairdressers), training is provided in excess of requirements – not only because the cost-benefit ratio of training is especially favourable to employers in these areas of activity but also – and this is the nub of Neubäumer’s argument – as a means of coping with the loss of the best trainees, who move upmarket when they have served their apprenticeship. Because even the training

33 For an overview, see Cain, 1976.
market is segmented, the less gifted applicants for training places, even though they are aware of the aforementioned situation, are compelled to accept training places in the peripheral segment of the training market. In so doing, they are also running the risk, once they have completed their course, of neither finding an appropriate job in the occupation for which they have trained nor of moving into a better segment of the market (assuming they are prepared to switch to another occupation). In such circumstances, their only alternative is often to settle for a relatively menial job.

Because its underlying hypothesis possesses a certain plausibility, the popularity of the segmentation approach remains undiminished. In very specific areas of the labour market, it is certainly possible to observe structures that are consistent with the propositions of the segmentation approach (see for example Büchel, 1994a). Economics-based analyses of overqualification, however, rarely have recourse to the segmentation approach. One reason may be that the approach cannot be built on theoretically self-contained foundations. The propositions of the segmentation approach can be easily constructed in a partially analytical manner on the basis of hypotheses deriving from various microeconomic theories, such as the screening approach or the job-competition model\textsuperscript{34} – but this also means that supposedly 'segmented' structures in the labour market can be explained in economic terms without recourse to the segmentation approach.

*The Marxist dialectical approach*

From a Marxist perspective, the incidence of overqualification on a large scale serves the interests of capital. The phenomenon therefore performs a similar structural function to mass unemployment, in that overqualified employees are regarded as a reserve army whose members could easily be reactivated (i.e. drafted into more demanding jobs) if the need arose. As this reserve of skills grows in size, the labour force comes under increasing pressure to 'toe the line', while wages are subject to downward pressure (for more precise details, see Rumberger, 1981b, pp.32 ff.; for a brief outline, see Levin, 1995, pp. 14-15). The systematic overproduction of qualifications in the education system (which can be manipulated by the capitalists in a capitalist state monopoly) therefore serves the purpose of systematically weakening the working class in the never-ending class conflict (cf. Bowles and Gintis, 1976, quoted in Rumberger, 1981b, p.35).

This view, however, is invalidated by the fact that the systematic expansion of education provision and the associated desire for an end to elitist educational privilege for the upper classes were being consistently advocated in the sixties by supporters of the far Left too.

Even as recently as the mid-eighties, voices in West Germany were calling for the problem of the overqualification of highly qualified labour and the question of the whereabouts and professional situation of university and college graduates to be ‘addressed in terms of class theory’ (Krais, 1983, p.36). Although there are unmistakable signs in some European countries that employers may indeed be deriving certain benefits from the current mass unemployment, such as the resultant erosion of trade-union power, this alone is scarcely able to explain satisfactorily why the phenomena of unemployment and overqualification are so persistent. A disinclination on the part of employers to take effective action to eliminate such inefficient deployment of human capital, even if such an assessment could be substantiated, would be easily explicable within the framework of an empirical analytical theory, because it is no more than economically rational behaviour. A connection between overqualification and class conflict seems to be even more spurious.

The Marxist dialectic approach to economics has, of course, lost much of its appeal over the last few years. The sole purpose of describing it here is to ensure that all the relevant theories are chronicled in this literature survey for the sake of completeness.

\textsuperscript{34} See for example Hartog, 1985a, p.281.
3.4 Extraneous conditions

3.4.1 Institutional regulation

The methods based on partial analysis which are used to explain the persistence of overqualification and which were outlined in point 3.3.1 above are abstracted from the conditions imposed by the institutional framework. In addition to the indirect effect of these conditions, it is likely that their practical application will have a direct impact too. In the countries of Europe with their highly developed welfare systems and their traditionally high degree of corporatism, such conditions will probably have a far greater effect than, for example, in the United States, where most of the aforementioned approaches were developed. Remarkably, scarcely any of the relevant empirical works examine this aspect of overqualification.\(^{35}\)

One important factor in people’s willingness to accept overqualification is likely to be the differential between the rate of unemployment benefit or, alternatively, social security and the rate of pay for underskilled (normally simple) work. This brings two regulatory arrangements into play – minimum wages secured by the trade unions and the rate of unemployment benefit and social security payments set by the government. In recent times, as the ‘jobs miracle’ has unfolded in the United States, more and more voices in a number of European countries have been criticizing the excessively narrow gap between the minimum wage and welfare benefits. As the gap narrows, the volume of overqualification may be expected to fall, because – in the eyes of many jobseekers – the reward for economic activity is not the pay itself but only the amount by which the wage exceeds the rate of welfare benefit. It does not ‘pay’, in other words, to take a cheap job.

The employment authorities are trying to counteract these calculations by enforcing the statutory criteria by which a reasonable job offer is defined. As these criteria become increasingly rigid, sometimes even compelling an unemployed individual to chose between underskilled work and loss of benefits, we may expect the percentage of overqualified employees to rise.

In Germany, for instance, these criteria have recently been considerably tightened in response to the sustained rise in unemployment. Staff directive 30/90 of the Federal Employment Services (Bundesanstalt für Arbeit), dated 19 March 1990, rescinded one of the provisions of staff directive 100/82 of 13 April 1982, which laid down that placement in employment at a lower skill level should only be effected if, despite adequate and appropriate efforts to fill the post in question over a period normally lasting three weeks, no jobseeker with the required lower skill level could be recruited.

On 1 April 1997, the new section 103b of the Promotion of Employment Act (Arbeitsförderungsgesetz) entered into force, drastically curtailing once more the right of unemployed people to reject job offers. In the first three months of unemployment, offers of jobs paying up to 20% less than the jobseeker’s previous employment are classed as reasonable offers, and in the following three months this figure rises to 30%; from the start of the seventh month, a job offer is considered reasonable if the net wage (minus necessary employment-related expenditure) is at least equal to the rate of unemployment benefit (paragraph 3); in the case of full-time work, commuting times of up to three hours per day are considered reasonable (paragraph 4), as are temporary separation of spouses and ‘Occupations […] for which the employee is or is not trained or which he or she has or has not previously pursued’ (paragraph 5 (my italics); see Federal Law Gazette (Bundesgesetzblatt) 1997/I, No 20 of 27 March 1997, p.700). Although these rules seem highly restrictive at first sight, the German welfare system is still relatively generous by international standards; in the United States, for example, entitlement to unemployment benefit is subject to the strict proviso that any available job offer – normally at the minimum wage – must be accepted.

\(^{35}\)Tsang and Levin (1985, p.101) and Rumberger (1981b, pp.124-125) are exceptions, although their propositions are couched in very general terms.
It is evident that curtailing the right to reject job offers will not of itself influence the percentage of jobs that are occupied by overqualified people. The impact of such a measure will very much depend on the way in which jobcentres apply the relevant legislation. In Germany, for example, there are some grounds for assuming that, even before the latest amendment of the Employment of Promotion Act, the criteria for the definition of reasonable work, which were already rigorously formulated, were not applied very consistently.

Some evidence for this allegation may be derived from the fact that labour offices rarely order the suspension of benefits for rejection of a job offer under section 119(1)(2) to (1)(4) of the Promotion of Employment Act (see for example the official bulletin (ANBA) of the Federal Employment Services, issue No 7/1997, Übersichten II, 7/8, pp.1042-3). This finding may indicate that very few offers of underskilled work have been rejected in practice, which would point to the efficiency of the strict criteria for the definition of reasonable job offers. But if this is the case, at a time when it is difficult to place jobseekers, the rising level of unemployment should be accompanied by a parallel rise in the percentage of jobs occupied by overqualified employees; this, however, is not borne out by the available empirical data (see Büchel and Weißhuhn, 1997a and 1998).

The formulation of statutory provisions governing protection against dismissal may be cited as another institutionally imposed condition that influences the volume of overqualification. In this domain too, there are great differences between many European countries and the United States, for example. It is conceivable, for instance, that an overqualified employee whose company wishes to offload him for productivity reasons has no prospect of finding a job commensurate with his level of training and that he therefore invokes his right to protection against dismissal. In the United States, he could expect dismissal and a place in the dole queue, but in countries with sophisticated systems of statutory protection against dismissal, such systems tend to increase the overqualified percentage of the active labour force.

Another institutional condition which probably has a considerable impact on the percentage of jobs occupied by overqualified employees is the funding structure of the various component parts of the education system. Higher education in Germany, for example, is largely state-funded, which is not the case in other countries. The external effects of this funding structure grossly distort the situation in the education market and are liable to produce a steady flow of overqualified graduates. While the acquisition of educational qualifications at prices ‘below the market rate’ amounts to rational behaviour in the eyes of the individual, since, given the current imbalance between supply and demand, highly qualified jobseekers are still in pole position in the labour market, in terms of the national economy it generates an excess demand for education.

Besides the conditions enumerated above, there are a host of other governmental or semigovernmental regulatory mechanisms which can directly affect the qualification structure of the labour force and hence, ceteris paribus, the percentage of overqualified employees. These mechanisms include the setting of quality standards in the education system, the formulation of rules governing scholarships and student grants and so forth.37 A detailed discussion of every conceivable contributing factor would be an unnecessary digression in the present context; the sole purpose of this part of the study has been to draw attention to the potential impact of the basic conditions in which the employment structure operates.

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36 See section 1, and more especially section 2(3) of the administrative order issued by the Federal Employment Services (Bundesanstalt für Arbeit) in Nuremberg on 16 March 1982 concerning assessment of the reasonableness of a job offer (Zumutbarkeits-Anordnung – documented in the special issue of ANBA, dated 15 April 1982). The author wishes to thank Mr Reichel of the Federal Employment Services for putting together the relevant documentation.

3.4.2 The production structure and conditions in the labour market

The changes that the production structure undergoes in the course of time – as a result of technological progress, for example – can have a direct effect on the overqualified percentage of the labour force. For example, the incidence of underskilled jobs may be expected to rise if qualifications which were once in demand in the labour market (and were therefore produced by the education system) have been devalued over a period of time as the conditions of production have changed. A classic example of this would be the training of blacksmiths. In addition, job descriptions and skill profiles for particular occupations may change so dramatically with the passage of time that even those employees whose qualifications originally matched their job requirements will eventually come to realise that they are no longer qualified to do their job by present-day standards. Such a development is observable in journalism, for example. While it is conceivable that further training could update employees’ skill and qualification levels, horizontal effects, which are not the subject of the present study, are likely to prove more significant than vertical effects. Irrespective of their empirical significance, however, such structural effects are possible and should therefore be investigated as a means of explaining the occurrence of overqualification.

The findings contained in Büchel (1998b, Table 5.16, p.216), however, show that this is not the most common route to overqualification. These findings, which were controlled for a number of variables – several socioeconomic characteristics of the employee sample and general economic conditions – reveal that overqualification is immediately preceded by unemployment, by full-time training and by voluntary economic inactivity far more frequently than by adequately skilled employment.38

38The most common access route is from unemployment, followed by full-time training, with voluntary inactivity in third place.

Besides the aforementioned structural changes that take place over a lengthy period, more rapid changes in conditions within the labour market might also conceivably influence the overall balance between the skill profiles of jobs and those of their incumbents. It may be expected, for example, that contractions and expansions of the labour market which result from cyclical or seasonal fluctuations will directly affect the probability of individuals being compelled to accept overqualification, not least on the basis of the hypothesis that overqualification is a direct alternative to unemployment in many cases. Büchel and Weißhuhn (1998) cite actual evidence of dependence – and inverse dependence – of the aggregate growth of unemployment on the level of overqualification.

3.4.3 Employees’ utility preferences

The theoretical approaches discussed in point 3.3.1 above all assume behaviour patterns based on income maximisation. If this assumption is set aside and utility maximisation takes the place of income maximisation, new factors come to light – factors which are relevant in the context of overqualification.

In the typical dichotomy between unemployment and overqualification, leisure time39 plays a key role as a preference in a conventional assessment of the utility of a job offer. A change in the importance attached to leisure time, for example as part of a general shift in social values or as a regionally (as opposed to nationally, for example) conditioned reassessment of leisure time in Europe will therefore directly affect the percentage of jobs occupied by overqualified employees. The linkage is likely to be even less elastic with unemployment as the alternative than with the conventional alternative of a form of economic inactivity other than unemployment, since the ‘distorting’ base effect of unemployment benefit has to be taken into account.

39It may seem euphemistic to refer to a period of unemployment as ‘leisure time’ but is nevertheless based on specialised usage.
As for the alternative status of employment commensurate with qualification level, which has been largely neglected in the discussion of the phenomenon of overqualification (see subsection 3.2 above), the connections between utility preferences and the decision to be taken are presumably even more intricate. Individuals who are not out to maximise their income have to assess a complex set of job characteristics. When people take more demanding jobs, they can expect heavier workloads, longer journeys to and from work, greater pressure to work overtime, less scope for negotiating reduced working hours and more besides. The ‘purpose’ of a job is also a factor. The need for a sense of purpose is surely universal, but it may take different forms from one social milieu to another. Schlegelmilch (1987), who reports findings from an analysis of job content among university graduates who have opted for an alternative lifestyle, records the following comments from a graduate working as a masseuse in a sauna: ‘When I think of all that intellectual work, all that studying … it makes me sick. You sit there at your desk, and maybe you write the odd article, and somebody says it’s quite good; that happens maybe once or twice in a year.’ (Schlegelmilch, 1987, pp.179-180). In an earlier work, Schlegelmilch also lists a number of irrational grounds (from an income-maximising point of view) for preferring underequipped to adequately skilled employment, irrespective of the demand situation in the market for adequately skilled jobs. These grounds include problems with a professional role, such as that of a teacher, anticipated problems with superiors (encountered in people of an anti-authoritarian disposition), the disillusionment of individuals with what they could achieve in their occupation in the prevailing conditions and so forth (Schlegelmilch, 1982, pp.418-419).

Individuals who rate the utility of non-monetary job characteristics higher than that of income are more likely to accept overqualification. A change in people’s priorities as part of a general shift in social values also has a direct effect on the percentage of the total labour force in underequipped jobs.

Many of the empirical findings in Büchel (1998b) show that people who subscribe to the statement ‘A successful career is not so important to me’ are more likely to be overqualified for their present jobs. This correlation is particularly high in the case of West German women in the middle tier of the qualification hierarchy, i.e. holders of vocational diplomas (Büchel and Weißhuhn, 1997a, Table 4-WA, pp.68-69); as was mentioned above, however, this pattern was also demonstrated by Schlegelmilch’s studies of disaffected graduates.

### 3.4.4 Employers’ productivity considerations

The most common decision facing employers in the context of overqualification (see subsection 3.2 above) is whether to select an overqualified job applicant in preference to one whose formal qualifications are commensurate with the job requirements. Their decisions will be governed by productivity-based considerations. This aspect has already been taken into account in the discussion of certain approaches in point 3.3.1 above; the intention in the following paragraphs is to subject it to more thorough scrutiny.

While the production theory-related effects of overqualification in the literature of the English-speaking world have already been fairly widely discussed, scarcely any findings on this subject are available for the European continent (the few exceptions are referred to below).

Wolfgang Franz, writes, ‘If a job has a fixed rate of pay [...]’, the company’s aim will be to identify the most productive applicant for that job’, adding in a footnote, ‘This is not necessarily the candidate with the highest (formal) qualification. Companies are rightly hesitant to engage “overqualified” candidates, for example because any dissatisfaction on the part of such an employee may have an adverse effect on his or her productivity [...] and because the probability that he or she will not stay long with the company is liable to be high’ (Franz, 1991, pp. 211-212). The very wording of these assertions sounds a distinct note of caution, which lends Franz’s statement the character of a supposition rather than a validated scientific finding. This means that it cannot be cited as evidence of such behaviour.

The main dimensions of productivity losses that result from overqualification respectively overeducation are given in the relevant literature in the English language as a lesser degree of job satisfaction (Khan and Morrow, 1991, Johnson and Roy, 1995, and de Witte and Steijn, 1998), poorer health (Amick and Lavis, 1998, pp.26 ff.), a higher incidence of shirking and absenteeism, narcotics (alcohol) consumption at work and ‘sabotage’ (for a general discussion of this point, see Tsang and Levin, 1985; also Haugrund, 1990, p.233). Other factors with relevance to business management are an assumed propensity among overqualified employees to change firms more frequently, which would result in a loss of human capital developed specifically for the needs of the company as well as creating direct transaction costs and restricting participation in further training, thereby impeding the development of know-how within the company (Beneito et al., forthcoming).

If employers are aware of these risks to productivity that are inherent in overqualification, that knowledge may influence the wage rates they set. Unlike the United States, however, many European countries have special legislation granting an extensive right of protection against dismissal. If shirking by an individual worker is only discovered – assuming that it is discovered – after the end of the initial probationary period, those employers who have overqualified staff on their pay-roll can only cover themselves financially by converting part of the basic wage into a productivity bonus – not just for the individual in question but by way of a 'collective insurance premium'.

Such a strategy, however, depends not only on possession of all the relevant information but also on the absence of trade-union ‘obstruction’ of the wage-fixing process. Both of these aspects create an incentive for the employer to deal with the equation of gross pay and productivity on a one-to-one basis, i.e. in relation to an individual employee.

An examination of these quite considerable productivity risks to an employer who recruits overqualified personnel (which are confirmed in most of the literature from English-speaking countries) raises the question whether employers have any interest at all in employing people in jobs for which they are overqualified. Haugrund (1990) sees one such incentive (in the technical sector) in the expectation of above-average performance from these employees, along with their ‘natural’ function as a 'centre of competence' within their respective teams (p.233).

The key to this question, however, is the fact that an employer’s basis of assessment can be influenced by extraneous factors. A change in the information base, for example, may be such a factor. It is already patently difficult for employers to measure their employees’ productivity at the best of times (see Bodenhöfer, 1984, pp.13ff., and Rippe, 1984, pp.76ff.). The productivity effects of overqualification, such as an increased incidence of shirking, must be even harder to measure. It is conceivable that administrative and technical progress might serve to enhance the supervisory mechanisms available to employers (cf. Tsang and Levin, 1985). Where overqualification is assumed to be having adverse effects on productivity which cannot be nullified by pay cuts, the consequence should be a reduction in the volume of overqualification.

The general difficulties involved in obtaining information (with which Rippe, 1994, deals in detail) might also induce employ-
ers, however, to base their decisions on subjective experience gathered over a lengthy period. If the information situation is extremely bad, they have to rely on 'prejudices'. It is conceivable that, with a general change in social values (in society’s evaluation of the productive utility of job-sharing or part-time work, for example), the assessment basis on which employers take their decisions will alter.

Such a change may even be caused by a major shift in the market situation: ‘The higher the percentage of new recruits who are university graduates, the more widely an increasing percentage of graduates in middle management will be accepted as the norm’ (Teichler, quoted in Der Spiegel, 1985, p.47).

In the context of the sea change that the labour market is clearly undergoing, this acceptance of higher education as the norm is likely to take root not only among job applicants but also in the minds of employers. A similar effect has been observed in the inverse relationship between the strength of the stigma attached to unemployment and the length of the dole queue (cf. Omori, 1997). This type of shift in values could therefore result in a sharp rise in overqualification in the future.

The opposite effect could be achieved by the exertion of direct political influence on the production system. Tsang and Levin (1985, p.101) listed some of the levers that could be used for this purpose, such as tax breaks to encourage the employment of appropriately qualified staff, but these levers seem almost unworkable. Indeed, Rumberger (1981b, pp.124-125) had already delivered a pessimistic verdict on the power of governments to reduce the degree of overqualification in the private sector.

Be that as it may, government measures certainly can be an efficient means of reducing the level of overqualification in the labour market as a whole in the sense that the state, as a major employer, is able to define its own staff-selection criteria. The findings set out in Büchel and Weißhuhn, 1997a and 1998, show that the state actually does this very successfully; the percentage of overqualified staff in the civil service is minimal, at least in western Germany. The only snag is that this strategy goes beyond the scope of the present part of our study, since the public sector is not subject to direct productivity criteria.

In the European context, apart from the classic income analyses performed by Duncan and Hoffmann (1981), productivity effects have only ever been analysed for Germany. Haugrund (1990) devoted a monograph to the subject. Despite its ambitious and highly detailed examination method, scarcely any general extrapolations can be made from the findings of the monograph, because it takes the form of a company study and focuses on a few technical trades. The author has also conducted three studies (Büchel, 1999b, which goes into greater detail, 1999c and 1999a). It emerges from these that productivity analyses only serve a useful purpose if the job-requisite level is kept constant. That is the only configuration which equates to the choice facing personnel managers who have to fill a vacant post.

The studies conducted in western Germany show that in unskilled jobs (in which the overwhelming majority of overqualified employees work) overqualified workers tend to keep better health, to change firms less frequently and to engage in more further-training activities than their less educated colleagues in similar jobs; there are no significant differences between the two groups in terms of the productivity indicators absenteeism and job satisfaction.

The adverse effect of overqualification on job satisfaction has been diminished over the years.

For a similar hypothesis relating to the academic world, see Büchel, 1996a.

This result is consistent with Thurow’s job-competition theory, which predicts that people with more education will be at the front of the labour queue. On the other hand, it contradicts the traditional expectation that overqualified personnel will feel frustrated and therefore prove less productive than their adequately educated colleagues.

If overqualified workers are less productive than their adequately qualified counterparts, as is generally reported in the relevant literature, it is solely because these findings are obtained with enquiry methods in which the formal level of qualification is held constant rather than the skill level required for the job. It is obvious that such a strategy can bear little fruit, for it is hardly surprising that a taxi driver with a law degree is less productive than a law graduate working as a solicitor. The only relevant question in this context is whether the taxi driver with the legal qualification is less productive than his fellow cabbies whose only formal vocational qualification is their taxi driver’s licence.

In general terms, the findings of the author’s aforementioned studies can serve to break down prejudices about the productivity of overqualified employees and go at least some way to explaining the persistence of overqualification in the labour market by demonstrating that it makes economic sense for employers to hire overqualified staff, because they can be expected to be more productive in a given job than other, less qualified candidates.

4. Strategies for measuring the educational adequacy of a job

4.1 Existing measurement strategies

On the problems involved in measuring overqualification, the OECD notes in its Employment Outlook that ‘invisible underemployment [the term used by the OECD to denote overqualification] refers to individuals who are working in jobs where their skills are not adequately utilised, and by its very nature is difficult to measure. For this reason, it is not discussed.’ (OECD, 1995a, p.45, author’s italics). What the OECD is expressing here is that there is no consensus among employment researchers on a measurement strategy, which is why no internationally standardised tables of comparative national statistics can be compiled for overqualification as they are for other phenomena, such as unemployment. The following paragraphs provide information about the various measurement issues. The box presents a typology of different measurement approaches.

4.1.1 The ‘objective’ approach

In the early days of empirical analysis of overqualification in the United States, the so-called ‘objective’ DOT/GED approach was regarded as the standard process for measuring the discrepancy between an employee’s level of educational attainment and the actual education level required for his or her job. The measurement process is considered to be ‘objective’, in so far as it does not rely on the employee’s own subjective assessment of the required education level. The basic principle of the measurement strategy is that it measures the required education level for a job by reference to its occupational category; all important microeconomic details of this occupation are recorded. Each occupation listed in the Dictionary of Occupational Titles (DOT; see Fine, 1968) is allocated a level of ‘general educational development’ (GED) from a scale of GED values.46 In the second stage of the process, this educational development level is translated into an equivalent number of years of schooling (see Eckhaus, 1964).

45 This means that Rumberger’s postulate in an earlier OECD publication that the model he was developing was an internationally comparable measure of overqualification (Rumberger, 1994, p.281) must have fallen on deaf ears – at least in the short term.

46 Attempts were made to introduce an alternative scale (‘specific vocational preparation’ – SVP), but it failed to establish a foothold in the field of overeducation research (cf. Fine, 1968, Scoville, 1966, and, for an explicit appraisal, Kalleberg and Sørensen, 1973, p.221).
Once the formal qualification level in the form of the highest reported educational certificate has also been converted into an equivalent in years of schooling (unless, as usually happens in the United States, the information has already been collected in the form of a number of completed years of schooling), the number of surplus or deficit years of education can easily be established by subtracting one amount from the other; thus, overeducation (in years) equals years of schooling completed minus GED levels (in years) (see for example Rumberger, 1981b, p.58).

The measurement scale for the variables that are calculated in this way is recognisably based on the requirements of the human-capital approach. Accordingly, income effects of surplus and deficit components of human capital can be analysed in the framework of the traditional evaluation procedures, and the returns to these components can be compared with the returns to the ‘required’ components of human capital (see for Duncan and Hoffmann, 1981; Kiker et al., 1997, and Daly et al. (forthcoming)).

Teresa Sullivan (1978), Clogg (1979), Clogg and Sullivan (1983) and Clogg and Shockey (1984) increased the reliability of this measurement by excluding from the definition of overqualified workers all persons with a surplus of zero years of schooling; in their place they proposed the insertion of a ‘safety margin’ comprising a standard deviation in excess of the mean duration of education used for a particular occupation (‘analog for deficit years’); this approach was subsequently adopted by other researchers (see for example Verdugo and Turner Verdugo, 1989, and Groot, 1993a). At this point, one should add the methodological remark that Hartog (1997, p. 2) and Hartog and Jonker (1998, p. 102) classify this type of measurement as an own, third category apart of the so-called objective and subjective approach (see section 4.1.2 below). The present author, however, follows the argumentation of Groot (1996) who takes it as a variant of the DOT/GED approach.

An enquiry strategy derived from the DOT/GED approach can be found in Plicht et al., 1994, who analysed the structure of over-qualification among academics in the western part of Germany on the basis of the national microcensus. Since a standardised GED scale is not available for Germany, the authors themselves had assessed each individual job type to establish whether it was adequately skilled for an incumbent with academic training. This strategy, however, produces an unavoidable ‘grey area’ (Hecker, 1992, p.4) of occupations to which it is impossible to assign an unequivocal education level. Plicht, Schober and Schreyer call this the ‘mixed category’ of occupations.

A variant combining the approaches described in the last two paragraphs is described in Groot (1996). Although the occupations of the employees he studies are listed in the British Household Panel Survey (BHPS), on the basis of which he conducts his examination, no GED rating is available for the various occupations, just as in the case of the German microcensus. Groot compensates by calculating the mean number of years’ schooling of the employees in each occupational category; those whose schooling exceeds the average for their group by more than a standard deviation are classed as overqualified.

The validity of the DOT/GED methodology has been criticised on several occasions, and with good reason. The first problem lies in the wide diversity of skill levels required for different jobs within a single occupational category, which the GED system does not take into account: ‘[...] estimates of the mean years of required schooling in an occupation are constructed by aggregating jobs, thereby ignoring variation in the mean years of required schooling across jobs within an occupation’ (Halaby, 1994, p.48).

Moreover, the use of a one-digit code to evaluate the level of education required for a job clearly cannot reflect the complexity of training requirement profiles: ‘The GED scores are simply not detailed enough to produce sensitive measures and have validity problems of their own’ (Clogg and Shockey, 1984, p.254). Besides, the conversion of GED into required years of schooling is not standardised. Rumberger (1987) rightly expresses the following criticism: ‘Another problem with the DOT
## Box: Typology of overqualification measurement approaches

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<tr>
<th>Short description of approach</th>
<th>Developers of approach and early studies</th>
<th>Advantages of approach</th>
<th>Disadvantages of approach</th>
<th>Selected follow-up empirical studies based on approach</th>
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<tr>
<td><strong>Ia: ‘Objective’ approach</strong></td>
<td>(Preliminary work: Eckaus 1964, Fine 1968) Scoville (1966), Berg (1970), Kalleberg and Sørensen (1973)</td>
<td>No negative influences in the measurement process which are caused by subjective assessments of job-holders.</td>
<td>Heterogeneity of jobs within an occupation is neglected. New occupations, such as e.g. in the IT industry, cannot be considered (until a new DOT is realised). Change in job requirements is neglected (until a new GED scale is realised). Defining required skill levels (construction of GED scale) is methodologically problematic. Making the GED scale compatible to the scale of acquired schooling is methodologically problematic. Usually high numbers of missing values in occupational information (caused by coding problems).</td>
<td>Hartog (1980), Burris (1983(c)), Rumberger (1987), Patrinos (1997), Batenburg and de Witte (1998)</td>
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For each occupation listed in the *Dictionary of occupational titles* (DOT), information about the level of educational requirements is available in an ordered scale (*General educational development*, (GED)).

The GED scale has to be made compatible to the scale on which individuals report their acquired schooling (e.g. transformation into requested years of schooling).

The information about the requested schooling to perform a specific occupation (SR) is compared with the acquired schooling (SA) of job-holders.

Overqualification of an individual is stated, if SA > SR.
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<th>Short description of approach</th>
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<th>Selected follow-up empirical studies based on approach</th>
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**Box: continued**

Variant of ‘objective’ approach: ‘realised match approach’

Within each occupation (disaggregated as low as possible, usually on a 3-digit-level), the mean, median, or mode (M) and the standard deviation (SD) of acquired schooling of job-holders is calculated.

Information about M and SD of a specific occupation is compared with the acquired schooling (SA) of job-holders.

Overqualification of an individual is stated, if SA > (M + SD).
### Short description of approach

#### IIa: ‘Subjective’ approach

Each worker is asked about the educational requirements of his specific job (e.g., ‘What kind of education is usually required to perform (get) a job like yours?’) (required education, (RE)).

The scale of the RE variable has to be made compatible with the scale of the respondents information of acquired schooling (ideally already by the designers of the questionnaire, e.g., by asking for years of schooling required).

Overqualification of an individual is stated, if SA > RE.

### Developers of approach and early studies

Quinn and Mandilovitch (1975), Quinn and Staines (1979(a), (b)), Duncan and Hoffmann (1978, 1981)

### Advantages of approach

- Severe disadvantages of ‘objective’ approach become obsolete.
- Individuals know the specific requirements of their specific job best (specifically: better than labour market experts generating the GED scale).

### Disadvantages of approach

Subjective influence in measurement approach: e.g., risk of getting answers influenced by a cognitive dissonance behaviour; answers may be biased towards pompousness or exaggerated modesty.

### Selected follow-up empirical studies based on approach

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<td>Ilb: Variant of ‘subjective’ approach: three variables approach</td>
<td>Büchel and Weißhuhn (1997(a)).</td>
<td>Tests showed a much higher validity when categorising overqualification, compared to the standard subjective two-variable approach.</td>
<td>Approach produces a so-called ‘mixed’ or ‘grey’ area of work with doubtful plausibility of combination of required schooling, acquired schooling and occupational status. In general, individuals working in such a situation have to be excluded from overqualification analyses. This leads to information loss in general and reduced number of cases in special. Number of missing values in the produced overqualification variable is slightly higher than in the standard subjective two-variable approach, because three source variables are involved.</td>
<td>Most of overqualification studies authored or coauthored by Büchel.</td>
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<td>Measuring overqualification in a first step as described in Ila.</td>
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<td>Using a 3 third variable (occupational status) for validation.</td>
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<td>Validation check is done using a standardised categorisation system. This produces the output categories ‘clearly plausible combination of the three variables’, ‘clearly implausible combination’ (in German GSOEP: about 1% of cases), and ‘doubtful plausibility of combination’ (in German GSOEP: about 5% of cases).</td>
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<td>Overqualification of an individual in the case of SA &gt; RE is stated only, if the validity check leads to a clearly plausible result (otherwise: generating a missing value).</td>
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is that categories of training requirements must be translated into equivalent years of schooling. Although such translations have been done in the past, there is no consensus on the appropriate conversion’ (p.30). Of the many different measurement methods, each of which has a perceptible direct influence on the empirical results, three are presented by Rumberger (1980, p.105), Kalleberg and Sørensen (1973, p.221) and Burris (1983c, p.457) respectively. Furthermore, the DOT/GED system takes no account of the situation within a particular occupational category: ‘The DOT measure of required schooling can classify someone as overeducated when the person has a very good job within an occupation’ (McGoldrick and Robst, 1996, p.281).

The final criticism is that the GED system, which dates from the sixties, does not respond to changes in the requirements for specific occupations, such as those resulting from technological progress (cf. Clogg et al., 1986, p.382; for a complete summary of the validity and reliability problems of the DOT/GED approach, see Rumberger, 1981b, pp.59 et seq.).

Given the objections enumerated above, some of which have serious implications, it is not surprising that this approach is hardly ever adopted any more in new studies on overqualification, which are largely based on the so-called ‘subjective’ strategy described in the next point.

### 4.1.2 The ‘subjective’ approach

The reservations about the DOT/GED approach which were expressed in the previous point relate to both of the steps that need to be taken to establish the education requirement for the practice of a particular occupation, i.e. the assignment of GED scores to the occupations in the DOT list and the calculation of the GED equivalent in years of schooling. This criticism is not levelled, however, at the idea of equating the required number of years’ schooling with the actual duration of an employee’s schooling. It follows from this that any improvement, especially if it relates to the reliability of the mismatch indicator, should focus exclusively on the process of determining the education level required for the job.

One effective way of tackling the problem is to ask employees themselves for a subjective assessment of the qualification level required for their respective jobs. Respondents may be asked to choose from a scale of requirement categories or to assess the qualification level in terms of a number of years of training. The questions are sometimes varied. Respondents may be asked for the qualification that is normally required for the work they perform (this is the case in the German Socio-Economic Panel (GSOEP) study and in other surveys such as the employment survey conducted by the Federal Institute for Vocational Training (BIBB) and the Institute for Employment Research (IAB) in 1991-92). Another common question asks for the qualification required to obtain the relevant job; this is the approach adopted in the Panel Study of Income Dynamics (PSID), although McGoldrick and Robst (1996, p.281) rate the PSID question inferior to that of the GSOEP. The nature of the question does not alter the process of equating the required qualification with the employee’s actual qualification level in order to obtain the mismatch indicator.

The first such survey of job-requirement levels was conducted in the PSID of 1976, and others took place in 1978 and 1985. The same approach was adopted by the GSOEP.

Although there are no reports in the relevant literature of reliability problems stemming from incomprehension (cf. Hersch, 1991, p.141), the subjective nature of the question undoubtedly poses its own reliability problem.
It is conceivable, for instance, that reported requirement levels will tend to relate to conditions of recruitment at a particular time rather than present job descriptions; moreover, it is not impossible that cognitive dissonance might cause overqualified employees to imagine a higher requirement level than that which actually obtains (Hartog and Oosterbeek, 1988, p.186-187; on this aspect of data collection, see also Kalleberg and Sørensen, 1973, p.236).

Nevertheless, it may be expected that differences in required skill levels for people with equivalent qualifications will be sufficiently identifiable: ‘Although this measure may contain much noise, due to differences in standards the individuals employ, it will certainly bring out differences among equally educated individuals in the demands that their jobs put on them (Hartog, 1985a, p.282; for a similar line of argument, see Witte and Kalleberg, 1995, p.301). For all its recognised flaws, the subjective approach is generally held to be more effective than the DOT/GED system: ‘This [i.e. the subjective approach] has the advantage of obtaining information from the source closest to the actual job situation, taking account of all specific circumstances’ (Hartog and Oosterbeek, 1988, p.186). A general reliability check on this strategy, involving a comparison of employees’ and employers’ responses, for example, has yet to be developed.

4.1.3 Unorthodox measurement strategies

Studies devoted to the examination of mismatches between job and qualification are characterised by an almost unbounded diversity of measurement strategies. The purpose of the following paragraphs is to show just how diverse these strategies can be by means of some examples from German literature.

Apart from the studies by Rippe (1988), Schwarze (1993), Plicht et al. (1994), Brinkmann and Wiedemann (1995) and the author, German employment research gives the impression of having been insensitive until quite recently to the methodological debate outlined above, which was conducted with great gusto in the pages of the U.S. journals. The diversity of methods not only raises questions about the reliability and validity of the measurement strategies but also complicates the quest for comparability of empirical data.

One classic measurement strategy in the field of German qualification research seeks to identify the extent to which knowledge and skills acquired in vocational training are usable in an individual’s current job; similar approaches are also to be found in earlier literature from the English-speaking world (e.g. Staines and Quinn, 1979, p.9). The problem with this strategy is that there are basically no jobs in which employees can draw upon all the knowledge and skills they had to assimilate in the course of their vocational training (cf. Suda, 1979, p.153). The assessment of the degree of applicability is likely to be very highly subjective. A validity test by Halaby (1994) on this type of measure produced disappointing results; Rippe (1988, pp.179-180) could only pour scorn on this measurement strategy.

Kaiser et al. (1980) used a system of seven job indicators designed to assess the job/qualification match – indicators such as the degree of variety in the job, cooperation with superiors, etc. The validity problems of this approach seem obvious (p.102).

Krämer (1982) establishes the degree of job/qualification match for executives of small companies by comparing their formal qualifications with a job grading that he assigns on the basis of their decision-making powers. On the basis of Krämer’s findings, it is doubtful whether his measurement strategy can be considered a success. For example, he reports that ‘It can actually be seen from the tables that all university graduates [in executive posts] are overqualified for the work assigned to them’ (!) (p.105).

Another approach tries to find a means of identifying overqualification on the sole basis of occupational status and formal qualification (see for example Henninges, 1991; Minks, 1992; Tessaring, 1994a; iwd, 1994a; Minks, 1996, and Velling and Pfeiffer, 1997). This strategy is clearly too basic to obtain valid results. The range of job requirements within various status groups is too wide to allow unequivocal categorisation. This is illustrated, for example, by the question whether or not a desk-officer post in an administrative body should be categorised as appropriate employment for a graduate of a higher technical college.

As an alternative to occupational status, use is also made of the employee's position within a company, a category that is available from surveys such as the German microcensus (see for example Tessaring, 1994a, and Velling and Pfeiffer, 1997). A combination of the two status categories is used by Handl (1996), who uses information on both occupational status and company position to establish the level of an individual's employment. This, however, is unlikely to solve the aforementioned validity problems.

Earlier works sometimes had recourse to the employee's pay level as a suitable criterion of adequate employment (see for example Tessaring, 1984). The findings produced by Rumberger (1980), however, testify to the problems arising from income analyses in connection with the acquisition of data on overqualification: during the period covered by his study, the income position of college graduates in relation to high-school graduates had not deteriorated, but the relative adequacy of their education had. Schlegelmilch (1982) applied a more refined strategy, combining reported data on occupational status and income level, on the basis of which she classified as underskilled any job done by a graduate for which no university degree was required and for which the incumbent received less than the minimum rate of pay for graduates in the German public service, i.e. point IIa on the statutory salary scale for federal employees (see p.407, footnote 31).

An original approach is used by Szydlik, at least in his studies in German (Szydlik, 1996a, 1996b and 1997a). He extends the subjective approach by combining the obtained variables relating to the job/qualifications match with the question whether the employees work in the occupation for which they have been trained. The question is what additional information this disaggregation yields. In a vertical sense (and this refers not only to the basic principle underlying the strategy for measuring overeducation but also to the line of argument used by Szydlik in the interpretation of his findings), the information that a person is not working in the occupation for which he or she has been trained cannot be regarded per se as proof of a mismatch; in some cases, job descriptions in different occupations are far too similar to permit such an assertion (cf. section 2 of the present study).

A highly unconventional categorisation of mismatches can be found in Wonneberger (1994, pp.144-145), where a mismatch is deemed to exist if a person is trained for an occupation (for which an academic degree is not required) in which career prospects are poor.

The diversity of measurement strategies illustrated in the foregoing paragraphs underlines the soundness of Rumberger's postulation of the need for standardised measurement of overqualification (Rumberger, 1994, p.281). Teichler (1994, p.28) reports that various studies have put the percentage of graduates in overqualification at levels ranging from 40% to under 5%, depending on the criteria applied. Elsewhere, Teichler (1998, p.98) tells of an approach that involved assigning the 'overqualified' label to all university graduates who admitted to knowing non-graduates with similar professional duties to their own (!). In such a case, the size of each respondent's circle of acquaintances would

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49 See for example Minks and Filaretow (1993, p.43), Gleiser (1996) and even Plicht et al. (1994); on the discussion of this question, see also Velling and Pfeiffer (1997, p.14, footnote 17); on the differentiation between graduates of technical colleges and universities, see Gleiser (1996, pp.36-37).
have a direct bearing on the findings of the study. It is patently obvious that such measurement strategies can yield little useful information.

4.2 An innovative approach

As a refinement of the familiar measurement strategies presented in subsection 4.1 above, the empirical part of this study (section 6) will introduce a new process for identifying overqualification. It is based on the conventional subjective approach. The innovative element is the inclusion of a third indicator to validate the overqualification variables which were initially obtained from the information on employees’ formal qualifications and job-requirement levels. It has to be said that the disadvantages of this strategy are a slightly higher rate of missing values and a category entitled ‘implausible combination of the three basic variables’. In addition, there is also an optional ‘mixed’ category to cover cases in which the information conveyed by the three basic variables does not permit a clear distinction to be drawn between a job/training mismatch and a case of overqualification. The crucial advantage of this triple-variable strategy is that it draws a far sharper line between adequate work and overqualification than the conventional double-variable approach (for details see point 6.1.2 below).

5. Overqualification: a literature survey

The educational policymakers’ fear of producing surplus qualifications for which there is no demand in the marketplace is presumably as old as institutionalised education itself.

Tessaring (1980, pp.374-375) corroborates this, quoting from almost 300 years of German educational history. For example, in 1890 Bismarck pronounced these words of warning: ‘One of the principal ills of our higher school system lies in the surfeit of academic schools and in the artful seduction to attend the same which our establishments practise, so that we breed learned young men far beyond our needs and beyond any possibility of their procuring suitable positions. Our higher schools are attended by too many young persons who are destined neither by talent nor by parental provenance for a learned profession [...]. The consequence is the excessive study of all academic disciplines and the education of a proletariat of scholars constituting a danger to the state.’ [author’s italics].

Similar quotations from other countries have also been recorded. The debate on the career prospects of qualified individuals leaving the education system was given a new lease of life in the sixties and seventies, when a rapid expansion of higher education took place almost simultaneously in the United States and some European countries, driven by demographic developments and political decisions. Education and employment researchers in the United States were the first to undertake systematic study of the consequences of a glut of higher qualifications and thereby set their seal on the scientific examination of the phenomenon of overeducation.

5.1 Origins of the discussion

5.1.1 The U.S. discussion from the sixties to the eighties

Treatment of the overqualification problem by American employment researchers may be considered to have begun with Berg’s monograph of 1970. Under the catchy title The Great Training Robbery, Berg tried to demonstrate that the labour market was no longer able to absorb the output of university and college graduates comfortably following the sharp rise in their numbers in the wake of the baby boom and changes in educational preferences. The repercussions would be keenly felt in the form of unemployment and overqualification, accompanied by falling returns to education. As the Bureau of Labor Statistics later established, the number of university and college graduates in under-skilled jobs multiplied from about a million to 3.6 million in the short period from 1969 to 1980 (Hecker, 1992, p.5).

See also his subsequent works on this subject, such as Berg (1989).
Methodological innovation made a very early appearance in the study by Kalleberg and Sørensen (1973), which presented a simple measurement strategy for the collection of empirical data on overqualification. This approach was based on the DOT/GED system (for details see subsection 4.1 above) and followed on from the work of Eckaus (1964) and Scoville (1966), who took the measurements provided by the authorities for assessing the required skill level for jobs in the various occupational categories and adapted them for use by employment researchers. These multivariate data analyses did not yet control, however, for significant factors such as age.

In 1975, following thematically related preliminary studies (Freeman, 1971, and Freeman and Breneman, 1974) one of the two main protagonists in the U.S. overeducation debate, Richard Freeman, entered the scene. His question Overinvestment in college training? (Freeman, 1975b) is intended to be rhetorical. Freeman was firmly convinced that the college system in the United States had been producing a large surplus of qualifications since the sixties, which was not entirely due to the demographic effect of the baby boom. He tried to underpin this assertion in subsequent works, including a monograph devoted to the issue (Freeman, 1976b) and a contribution to the Review of Economics and Statistics (Freeman, 1977); this period also saw the appearance of his special studies devoted to specific occupational groups (Freeman, 1975a, 1975c and 1976a).

The ‘discovery’ of the growing imbalance between the supply of and the demand for higher qualifications in the U.S. labour market had already been made at that point (see for example Carnegie Commission on Higher Education, 1973), but it had not yet been sufficiently ‘marketed’. The pithy titles of his studies on the subject of overqualification, suggesting that the hypothesis underlying his research is an incontrovertible truth, and his sometimes drastic speculations on the consequences of the growing qualification surplus (e.g. ‘destabilizing political consequences’ – Freeman, 1976b, p.189) achieved their aim and made Freeman the most-quoted author in American literature on the subject of overqualification, even though numerous papers in a similar vein appeared at that time (see for example Jenkins, 1974; Rawlins and Ulman, 1974; Dore, 1976; Jaffe and Froomkin, 1978; Brinkmann, 1978; Suda, 1979; Denison, 1979, and a later work relating to Canada, namely Dooley, 1986).

Freeman’s presentation, which is quite one-sided at times, could not fail to provoke criticism (see for example Smith and Welch, 1978). Several replies were published in issue No1 of the Journal of Human Resources for 1980. Witmer (1980) and Schwartz and Thornton (1980) criticised Freeman’s methodological approach.

Russell Rumberger, who was to emerge as the second main protagonist in this discussion alongside Freeman, did not find any empirical evidence to suggest that the relative position of university and college graduates in the labour market was deteriorating, but did identify a rise in overeducation (Rumberger, 1980). Freeman, however, was unmoved by this welter of criticism, describing the claims of Schwartz and Thornton, for example, as ‘pure nonsense’ (Freeman, 1980, p.141). In a concluding review of the debate in the Journal of Human Resources, however, Kaufman (1984) advances arguments in support of Schwartz and Thornton. After the publication of another two shorter papers (Freeman, 1981a and b), Richard Freeman withdrew from this field of research.

Staines and Quinn (1979) adopted an innovative approach, analysing individual data on job characteristics in a partial time series. Survey data for the years 1969, 1973 and 1977 are examined. One category in the collected data is the respondents’ subjective assessment of their job/education match (p.9). Staines and Quinn also arrive at the conclusion that the overall degree of mismatch has tended to increase.

In subsequent studies, Rumberger (1981a, 1981c and 1984) concentrated on presenting

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51 For a review of the monograph, see Levin, 1977.
evidence in support of his thesis that the development of the job structure in the United States is marked by a slower rise in skill requirements than would be necessary to ensure that enough appropriately skilled jobs were available for the masses of new university and college graduates entering the labour market. He even asks the question whether technical progress, contrary to common belief (see for example Cappelli, 1993, who examines the production system), actually leads to a reduction in the skill level required for the average job (Rumberger, 1981a, p.588; see also Rumberger, 1981b, p.67).

Rumberger’s studies are innovative in relation to Freeman’s in that Rumberger shifts the concept of overeducation from the macroeconomic level to that of the individual; all of his measurements are based on the DOT-GED approach.52 His monograph on overeducation in the U.S. labour market (Rumberger, 1981b) – the most important on the subject of overqualification along with Freeman’s The Overeducated American and perhaps also T.A. Sullivan’s Marginal Workers, Marginal Jobs (Sullivan, 1978) – goes far beyond any previous literature in its comprehensive and thematically broad portrayal of the researched aspects of overeducation.

Another major innovation in the study of overeducation is to be found in Duncan and Hoffmann, 1981 (see also the Duncan and Hoffmann study of 1978, which was the fore-runner of this work). These two authors examined at an individual level the financial returns to necessary, surplus and deficit components of education, thereby establishing a direct link to the human-capital approach. In place of the DOT/GED system, they used subjective data obtained directly from employees about the skill level required for their respective jobs; this information had originally been collected from the 1976 survey batch of the Panel Study of Income Dynamics (PSID). A similar approach underlies studies by Rumberger (1987) and Shockey (1989).

New dimensions were added by Burris (1983a), whose study was the first to explore the sociological and political aspects of overqualification. Until then, studies had only analysed individual sociological or political aspects, such as the effects of overqualification on health (see for example Kasl, 1974; House, 1974; Coburn, 1975, and Caplan et al., 1980).

The studies by Jaffe and Froomkin (1978), Clogg (1979), Clogg and Sullivan (1983), Clogg and Shockey (1984 and 1985), Clogg et al. (1986) and Lichter (1988) – although Lichter’s definition of overqualification poses some problems – proved that the rise in overeducation in the United States was caused to a great extent by changes in the demographic structure of the potential labour force.53 The study by Burris (1983b) can be considered as part of this cluster, too.

The 1985 study by Tsang and Levin seeks to present the first integral economic theory to explain the persistence of overqualification; the study focuses primarily on productivity issues (for a critical appraisal, see deGrip, 1989; for a reply to this criticism, see Tsang and Levin, 1989.

By 1986, the postulate that overeducation was gradually developing into a critical problem within the U.S. labour market had come to be regarded as an established fact, but it was subjected to critical examination for the first time by Smith (1986); however, this methodologically based study, which was sharply critical of the measurement strategies used in support of the said postulate, had a limited impact.

5.1.2 The early discussion outside the United States: the case of Germany

Outside the United States too, the sometimes dramatic expansion of educational provision was the subject of controversy in various countries (for a general review, see Teichler, 1996,

52 For a detailed description of the DOT/GED system, see point 4.1.1 above.

53 Dooley (1986), however, arrives at the opposite conclusion for Canada.
It must be said, however, that the academic quality of the debates lagged far behind those in which the U.S. researchers were engaged, at least until the late seventies. The case of Germany may be cited as an example.

The study Akademisches Proletariat? (Schlaffke, 1972) caused quite a stir among German educational researchers. The study (in fact, the term 'essay' is more apt) strikes a perceptibly and no doubt deliberately polemical tone. The line of argument is inherently negative and fuels conservative prejudices; moreover, the author generally fails to provide his readers with sources in which they might find empirical figures to substantiate his hypotheses. The following quote exemplifies this approach: 'How can a political scientist whose special papers at university were in the theory of the class struggle and strategies for overthrowing the system possibly explain the workings of our economic system to his pupils in a modern-studies class?' (p.47). If strict academic standards of empiricism and analysis are applied, this key contribution to the early German literature on overqualification is clearly not in any respect in the same league as its American contemporaries.

The only field of research which seemed to interest German empiricists was that of educational forecasting. As in the early discussion in the United States, it was not a matter of studying aggregated individual discrepancies between job requirements and formal qualifications but rather of alleged or expected imbalances between the aggregate supply of labour with particular qualifications and the aggregate demand for such labour. Besides the interest in quantitative forecasting, the main methodological bone of contention was whether the demand-centred manpower requirement approach or the supply-centred social demand approach should be adopted (for a detailed review of the host of conflicting predictions, see Tessaring, 1980, pp. 376). The huge discrepancies between the findings of such studies, however, presumably sowed more confusion than reassurance in the minds of educational planners (cf. Schlaffke, 1972, pp.10 et seq.).

Not until the end of the seventies did empirical research in Germany diversify into several different subject areas. Tessaring (1978) tried to trace the careers of graduates but had to rely on highly aggregated statistical material (see also Tessaring, 1981 and 1984, for similar approaches). A breakthrough was undoubtedly made in the empirical study of graduate employment when the micro-economic Infratest surveys were conducted in the autumn of 1978 and the spring of 1979 (see Stooss, 1979). Similarly designed analyses by the Institute for Employment Research (IAB) around that time laid the foundations for a new research tradition (see for example Kaiser et al., 1980).

The competition that emerged in the late seventies and early eighties between micro-economic empirical research, which strove to establish certain methodological standards, and the 'essayist' approach to the overqualification problem is exemplified by the papers published in an anthology of contributions to the Conference on University Expansion and the Labour Market – Problems and Research Perspectives (Tagung «Hochschulexpansion und Arbeitsmarkt – Problemstellungen und Forschungsperspektiven»), held in Berlin in November 1981. While some sound empirical papers were presented (Tessaring, 1983, and Schlegelmilch, 1983a, for example) there was certainly no shortage of representatives of the 'old school'. Busch and Hommerich (1983), for instance, saw the cause of the escalating employment problem in changing 'power constellations' (p.71), while Krais (1983) proposed that the issue of graduate employment and career prospects be examined ‘in the light of class theory’ (p.36), and Nuthmann (1983) expressed the following view on the graduate overqualification: ‘Some of these activities, work forms and lifestyles may be directly connected with labour-market problems of the people concerned. In other cases, they are probably a reaction to growing economism and industrialisation, bureaucratisation and the increase in the statutory regulation and control of all aspects of life’ (p.11). In the years that followed, however, such approaches were almost entirely supplanted by empirical analytical research (see point 5.2.2 below).
It only remains to describe how the German Federal Government assessed the threat of an increase in sub-standard forms of employment for graduates as a result of the reform and expansion of higher education. The Federal Ministry of Education and Science seemed to be rather wary of vastly overoptimistic predictions of labour demand. The purpose of a course of study, namely to qualify the student for professional activity of a suitable standard, certainly remained intact ('Aim of the course of study: The purpose of instruction and study shall be to prepare the student for a field of professional activity [... so] that he or she is capable of performing academic [...] work' – section 7 of the Higher Education Framework Act (Hochschulrahmen gesetz), quoted in Neusel, 1983, p.236).

Expectations regarding the ability of the labour market to play its part in the achievement of this aim, however, were muted. As part of the process of developing ‘points of reference’ for the Permanent Commission on Higher Education Reform, the Federal Ministry of Education and Science called on employers to ‘create jobs [for graduates] below the top level’, and expressed confidence that even ‘underskilled’ occupations could ‘be a means of job satisfaction’ (quoted in Neusel, 1983, p.240).

5.2 Present state of research

5.2.1 Recent studies relating to the United States and Canada

Recent studies from the United States on the subject of overeducation/overqualification have been characterised by the fact that, unlike the studies referred to in subsection 5.1 above, they rarely focus on the consequences of a glut of university and college graduates in the labour market. By the end of the eighties, the concept of ‘overeducation’ – relating to individuals – had become established as a separate category in the field of employment research, and subsequent studies became more widely diversified.

For the first time, the implications of overqualification for business management came under scrutiny. The question was whether overqualified employees were less productive in the same level of job than their adequately educated colleagues (Tsang, 1987, and Tsang et al., 1991). The relevant studies was based on in-house data of the U.S. Bell Companies. More recent studies examine the correlation between overqualification and health (Amick and Lavis, 1998) and between overqualification and job satisfaction (Hersch, 1991, Johnson and Johnson, 1992, 1996 and 1997, and Johnson and Roy, 1994 and 1995).

Sicherman (1991) studied overqualification in the framework of the career mobility theory (Sicherman and Galor, 1990). He used the phenomenon of overqualification as a practical example of the empirical relevance of the theory he had helped to develop. He dismissed the possibility that other theories could do much, if anything at all, to explain the phenomenon. An extensive review (and endorsement) of the career-mobility approach is contained in Hersch (1995).

The observation that the imbalance in the labour market for graduates which had begun to appear in the sixties had continued throughout the eighties (and that no improvement was in sight – cf. Shelley, 1992 and 1994) was the subject of another series of ‘conventional’ articles (Hecker, 1992, Tyler et al., 1995a, b and c) who criticised Hecker, and the latter’s reply to this criticism (Hecker, 1995a); see also Amirault, 1992, Cappelli, 1993, Hecker, 1995b, and Zemsky, 1998.
An article by Halaby (1994) levelled methodological criticism at the DOT/GED approach and at questions on the occupational utility of knowledge acquired through formal education, to which the article ascribes little validity.

The study by Bishop (1995) gives a short introduction to the topic of overeducation and the respective state of research in form of a contribution to an encyclopedia of economics of education. In the same volume, the article by Levin (1995) presents a broader overlook to the environmental setting, in which this special field of research is done.

The connection between the quality of a university or college education and the probability of overqualification is examined by Robst (1995b). As expected, Robst establishes a negative correlation between the quality of the university or college a person attends and the probability of subsequent overqualification.

Lastly, an original study is presented by McGoldrick and Robst (1996), who test the theory of ‘differential overqualification’ developed by Frank (1978b); the originality of their approach lies in the fact that, instead of basing their test on income factors (see for example Ofek and Merrill, 1997), they use an employee-centred measure of overqualification. They reject the hypothesis that married women run a higher risk of overqualification in smaller local labour markets.

Madamba and De Jong (1997) reopen the discussion on the influence of demographic changes on the degree of overqualification. They find that, in the United States, male immigrants from India, China and Korea are more frequently overqualified, those from Vietnam are more rarely unemployed, while immigrants from the Philippines and Japan do not differ significantly in this respect from the longer-established Anglo-Saxon population. Zhou (1993), on the other hand, reported higher mismatch rates for Japanese (and Cuban) workers. To what extent the qualifications of those immigrants who were educated in their native countries can be made comparable is an exceedingly moot question, given the extreme variations in the quality of the school systems in their countries of origin and is a fundamental problem in studies designed to examine overqualification among immigrants.

On the basis of Canadian data, Vahey (forthcoming) certainly confirms in principle, at least as far as men are concerned, the findings of Duncan and Hoffmann (1981) and their epigones, according to which positive and negative returns to human capital may be expected for surplus and deficit years of schooling respectively; he demonstrates, however, that the returns vary in accordance with the skill level required for each job. For women, on the other hand, he finds insignificant effects at all job levels.

5.2.2 Recent studies relating to the countries of the European Union

The main distinct traditions of research into overqualification outside the United States exist in the Netherlands and Germany. In the United Kingdom the subject was not ‘discovered’ until the mid-nineties, although the subsequent volume of research on overqualification in the UK has been considerable. There are only isolated analyses for other countries.

The Netherlands

There are several analyses of job/qualification matches in the Netherlands. If we focus exclusively on the studies devoted to overqualification, it emerges that Dutch employment researchers, compared with their colleagues in other EU countries, have been the most prolific contributors on this subject in English, at least in the widely accessible English-language publications.

The first studies were undertaken by Hartog (1985a and 1986). His approach is very similar to that of Duncan and Hoffmann (1981), although he does not cite the latter work. Like Duncan and Hoffmann, he rejects unilateral determination of pay rates for the Dutch context too, either by the supply side through formal qualification (the human-capital theory) or by the demand side through job
requirements (the job-competition model). In the good old Tinbergenian tradition, he provides evidence of the explanatory capacity of the assignment theory. Extending this approach, Hartog and Oosterbeek (1988) identify a gradual rise in overqualification in the Netherlands over a period of time. Groot (1993a) refines the approach presented in Duncan and Hoffmann (1981), devoting special attention to the link between training activities and mismatches. Overqualification, Groot says, not only has an adverse effect on total income from employment but also has the same sort of impact on returns to in-service training.

In more recent papers on the subject, Hartog (1997 and 1999b) passes critical judgement on the body of research into overqualification. As far as future research perspectives are concerned, the author puts the case for longitudinal analyses, more theoretical input, more ambitious evaluation procedures and – in the old-established tradition of Dutch research in this field, which bears the unmistakable imprint of Tinbergen – for analytical approaches in which supply and demand effects are considered in combination. In the study by Hartog and Jonker (1998), the authors have access to the Brabant-survey which includes IQ measures. Having the opportunity to control for individual ability opens the door to new aspects. The authors, however, find that the impact of this variable on the risk to work overeducated is relatively low. In other studies (Hartog, 1999c, d and a), Hartog once again warns against investing overqualification with unduly pejorative connotations, referring to the positive, albeit limited, returns to surplus years of education which were previously identified by Duncan and Hoffmann (1981).

Borghans and Smits (1997) show that an increasing percentage of overqualified labour can also impair the earning potential of adequately educated workers. DeWitte and Steijn (1998) examine the effects of increasing automation on the incidence of overqualification. They discover a direct link as well as frustration effects in overqualified employees. Batenburg and Witte (1998) identify a rise in the mismatch rate within the Dutch labour market over the period from 1977 to 1995. Groot and Maassen van den Brink (1999) demonstrate the sensitivity of the measurement strategies used to identify jobs which are incommensurate with their incumbents’ qualifications. Groot and Maassen van den Brink (forthcoming) present a survey of empirical findings from various countries. Among other things, this survey reveals a positive correlation between growth rates and overqualification rates. Van Eijs and Heijke (forthcoming) demonstrate that the current allocation of qualifications to job requirements is inefficient; this finding contrasts with Hartog’s latest estimates. The study by Borghans and de Grip (1999) examines determinants of overqualification, categorising them by whether or not they are compatible with the allocation theory. A clear result, however, does not emerge. Van der Velden and van Smoorenburg (1999) compare results gained from the so-called objective and subjective measurement approach. Their major finding is that overqualification measured with an objective approach is clearly overestimated. On the other hand, they do not find hints for an underestimation of overqualification when applying the subjective approach.

Two Dutch authors are about to present a new anthology on overqualification (Borghans and de Grip, forthcoming(b)). In their editorial article (forthcoming(a)), Borghans and de Grip discuss the current issues in this field. The paper by Muysken and terWeel (forthcoming) seeks to integrate human-capital theory, job-search theory, the job-competition model and screening into a discrete theoretical approach. Borghans et al. (forthcoming) examine the connection between aggregated and individual overqualification on the one hand and low pay on the other and conclude that the impact of overqualification is greater than that of low pay. Finally, the study by Gautier (forthcoming) examines cyclical effects on the level of demand for various qualifications. One of his findings is that, during recessions, employees in unskilled jobs are paid off without regard to their qualification levels.

Besides the aforementioned works, there are several relevant essays in Dutch, such as Hartog, 1985b, Oosterbeek, 1986, Groot, 1993b, Groot and Maassen van den Brink,
1996, Oosterbeek and Webbink, 1996, and Groeneveld, 1997, which testify, as in the case of Germany, to a wealth of research on the subject of overqualification that the international scientific community is unable to appreciate. The author's lack of knowledge of the Dutch language prohibits an evaluation of the content of these papers at the present juncture.

**Germany**

The only comprehensive monograph on overqualification in Germany is a study by the present author (Büchel, 1998b). One of the main innovative methodological elements of this study is that it is the first to adapt the existing instruments of dynamic unemployment research systematically for use in the analysis of overqualification. In this way, on the basis of panel data, it is possible to analyse the probability of individuals being recruited and of their staying with or leaving their firm, to determine longer-term income effects and more besides. Important preliminary work, especially with regard to the categorisation of overqualification, was performed in the studies by Büchel and Weißhuhn (1997a and 1998). Schlegelmilch (1987) presented a monograph analysing data on overqualified graduates; another monograph, in the form of a company study, on the effects of overqualification among technicians and engineers (Haugrund, 1990) was designed more as a business-management resource.

Two individual papers dealing with the subject under examination were produced by Szydlik (1996a and 1997a). To generate the mismatch variables, Szydlik includes a question about the occupation for which the employee has trained (for a critique of this approach, see section 2 above) but does not use occupational status to validate the mismatch (Szydlik, 1996b, p.300, footnote 10) as Büchel and Weißhuhn do (see also subsection 6.1 below). This produces distinctly higher percentages of overqualification than would result from an operationalisation based on the Büchel/Weißhuhn approach. Velling and Pfeiffer (1997) also examine overqualification (as part of a wider-ranging study) for all qualification levels, though for western Germany only. Despite the use of a different database and a sharply divergent means of assessing the degree of job/qualification match, the study arrives at very similar findings to those of Büchel and Weißhuhn (1997a and 1998).

Lastly, Zwick (2000 and forthcoming) adopts an ambitious theoretical approach to examine the links between overqualification, wage levels and attitudes to education.

In continuation of the research tradition outlined in point 5.1.2 above, the main focus of German overqualification research has remained on university graduates, right down to the present day.

Straddling the border between ‘old’ and ‘new’ research is the work of Rippe (1988), who was the first researcher in Germany to conduct a broad investigation of the methodological side of job-match assessment and thus to reflect at least some signs of affinity with the body of U.S. research on that subject; until that point, Germans had been virtually oblivious to the discussion of these issues in the United States. Proceeding from the DOT/GED approach and the criticism levelled at it and at its application to the microcensus by IAB researchers, Rippe identified ‘a lack of validated methods for assessing job matches by comparing existing and required qualifications’.

Plicht et al. (1994) presented the first broad-based study of the suitability of jobs held by university graduates in Germany. Their approach may not correspond exactly to the DOT/GED strategy, but it is related to the latter in so far as it does not have recourse to subjective assessment of job-requirement levels by the respondents themselves. Although it is designed as a cohort study without longitudinal examination of individuals, the authoresses postulate that the high percentage of young graduates in jobs for which they are overqualified is primarily due to the fact that overqualification is a natural phenomenon at this stage in a graduate’s career. This interpretation was put into perspective in Büchel (1996a): although the risk of involuntary overqualification is higher at the start of a career than after a period of occupational experience, it has been proved that structural and cohort effects have played a dominant role.
Overqualification: reasons, measurement issues

during the nineties. In other words, the percentage of graduates who tend to run a higher risk of overqualification on account of their membership of particular status groups (e.g. women and graduates of technical colleges) is rising steadily, and membership of these groups is largely unalterable in the course of a career.

The situation of academically trained career starters is examined by Büchel and Matiaske (1996) on the basis of longitudinal data from the German Socio-Economic Panel (GSOEP). It emerges from this study that a high risk of overqualification at the start of a career attaches to certain ‘soft’ academic disciplines which are mainly chosen by female students. An interaction analysis shows that the gender effect is governed by the student’s choice of subject.

Most of the other literature relating to the more recent discussion of the phenomenon of graduate overqualification in Germany may be divided into two categories: the first comprises highly specific surveys of graduates, differentiated by subject specialisation (most of these have been conducted by the University and College Information System (HIS) in Hanover) or even by specific departments of individual universities (this type of survey is conducted by ‘interested parties’, i.e. students in one of the departments in question, often as one of their degree papers); the other category comprises papers presented at conferences on the subject of graduate career prospects and subsequently published in the report of proceedings.

The HIS studies are reports on graduates in specific federal states or subjects, based on the system’s own surveys (see for example Minks, 1992 and 1996; Minks and Filaretow, 1993; Lewin et al., 1994a and b). One of the central problems with these studies, however, lies in the database, which only covers the first years of a graduate’s career.

This problem, of course, also arises for university- and subject-related studies of graduate employment. The utility of this type of study is undisputed, because it can give prospective students important information about future career prospects. Nevertheless, the scientific quality of the studies is generally below average, since they are compiled as a rule by people with no research background.\(^{54}\)

The important thing about the latest developments in this field is that the discussion about the future of graduate employment in Germany now focuses on overqualification and unemployment as closely related phenomena (see for example Schreyer, 1999, and Wissenschaftsrat, 1999). This represents a major step away from the narrow perspectives which had long prevailed, in which unemployment was only seen as an employment risk.

Studies on the overqualification of people with vocational diplomas are considerably less common than studies on graduate job matches. The most plausible explanation of this phenomenon may be that higher education is expanding more rapidly than vocational education. Accordingly, graduates may be regarded as more likely victims of labour-market imbalances.

Hofbauer and Nagel (1987) conducted a wide-ranging study of the risk facing skilled workers of occupational demotion to semi-skilled or unskilled status, examining the specific level of risk in various different trades, for example. The study by Neubäumer (1993), to which reference has already been made in section 3 above, is based on an unconventional approach. The authoress proceeds on the assumption that segmentation applies not only to the labour market but also to the market for training places in the dual system of classroom and on-the-job training. The study demonstrates that in those occupations where working conditions are poor, training is provided in excess of requirements as a means of coping with the loss of the better trainees, who move upmarket when they have served their apprenticeship. Those who complete their training in occupations with poor working conditions but do not find a job, either in the occupation for which they have trained or in

\(^{54}\) For a collection of graduate studies from various European countries, see Teichler (1988).
a market segment with better career prospects (assuming they are prepared to switch to another occupation) are generally compelled to settle for overqualification. Neubäumer’s findings show that this phenomenon is undoubtedly empirically significant in Germany (see also Neubäumer (1997) and Neubäumer (forthcoming)).

A study by the present author (Büchel, 1994b) examines overqualification at the start of non-graduates’ careers. What seemed astonishing at first sight was the higher incomes earned by the overqualified workers. This finding, which was also obtained by Hofbauer and Nagel (1987, pp.54-55), shows that monetary considerations are an important factor in the acceptance of an underskilled job, at least in this phase of a person’s career (for a similar finding, see Neubäumer, 1993). Pay differentials to compensate for monotonous work and other disagreeable working conditions, such as the presence of noxious substances, could also play a part (cf. Lucas, 1997, p.557). This factor may be particularly significant in the case of trained craftsmen who subsequently take up semi-skilled jobs in manufacturing industry or do piecework. Even after a short time, however, those who started out with a good fit would be better placed, because their income would have risen more sharply. A similar approach is found in partial analyses such as Büchel and Weißhuhn (1995), Weißhuhn and Büchel (1998), or Büchel and Pannenberg (1997).

Pfeiffer and Blechinger (1995) and Blechinger and Pfeiffer (1999) examine the realisable value of vocational training in the labour market and observe diminishing returns in the course of people's careers.

The only general study relating to Germany that is exclusively devoted to the fit between vocational training and jobs was conducted, ironically enough, by two researchers from the United States (Witte and Kalleberg, 1995). The way in which they assess job/training matches, however, is somewhat questionable, for they assert (p.311) that only about 50% of men and 60% of women who have successfully completed their vocational training are in jobs that match their training [1].

An innovative study was compiled by von Henninges (1996), who investigated the persistent contention that technical progress, the globalisation of labour markets and other factors would lead to the gradual disappearance of unskilled jobs. In so doing, he addressed the methodological problem whereby, because of the restricted availability of data, most studies do not focus on the requirement levels for specific jobs but on the formal qualifications of the people in those jobs. As a result of the expansion of educational provision, there are indeed fewer and fewer workers with no formal qualifications; however, the fact that unskilled work is being performed by semi-skilled or skilled workers means that the rate at which unskilled jobs are being shed is being systematically overstated (p.78).55

Lastly, the topic of overeducation was chosen as an example how to work efficiently with robust stochastic earnings frontiers (Jensen, 1999). This paper, however, has a stronger econometric focus than a substantial one.

Only a short time after the dissolution of the German Democratic Republic, special studies on eastern Germany began to appear. Von Henninges (1991) shows that, contrary to the ideological claims made by the regime, overqualification had already assumed epidemic proportions during the Communist era (see also Schwarze, 1993, Büchel, 1995, and Brinkmann and Wiedemann, 1995, p.330). Schwarze (1993) presents a comparison of the situation in eastern Germany before and after the demise of the East German state (1989 and 1991) and identifies income effects of overqualification.

The labour-market monitor for the new federal states proved to be an effective source of data for the investigation of overqualification. In thematically wide-ranging IAB studies on the development of the employment situation in eastern Germany, the phenomenon of

55At this point, however, it should be mentioned that, irrespective of data restrictions, macroeconomic surveys of the jobs that people do are far more difficult to conduct from a methodological point of view than surveys of employees' qualifications or occupational categories.
overqualification is given special treatment (Bielenski et al., 1994 and 1995, and Brinkmann and Wiedemann, 1995 and 1997). The very structure of the 1995 study by Brinkmann and Wiedemann (p.323) testifies to the high priority that is attached to the phenomenon of overqualification in the empirical research of the IAB, at least in relation to eastern Germany, where the percentages of overqualified employees are very high; this emerges especially clearly from the special study on this subject by Brinkmann and Wiedemann (1997).

These, then, are the studies that focus specifically on eastern Germany.

The extent to which foreigners in Germany are affected by overqualification is investigated in a study by Szydlik (1996a). However, the fact that the source data (from the GSOEP) only yield rudimentary information on foreigners’ qualification levels (at least for those who were educated in their native country) must pose problems when it comes to assessing whether their jobs are commensurate with their training. Szydlik observes, for example, that more than half of the Turks working in Germany are overqualified for their jobs. If we bear in mind, however, that even today Turkey requires only five years’ compulsory schooling of its young citizens and that there is effectively no institutional system of vocational training in the country, the validity of this finding appears dubious. Heinelt and Lohmann (1992) also elicit high overqualification rates for ethnic Germans who have moved to the Federal Republic from Eastern Europe; here too, there are problems with the validity of the measurement strategy.

The job/training fit for working women is examined in detail in one of the studies by Büchel and Weißhuhn (1997c). Extending the basic approach adopted in Büchel and Weißhuhn (1997a and 1998), the authors attach special importance to an examination of the socioeconomic background of the women who are affected by overqualification. This relates not only to the women’s family circumstances (e.g. the number of children in the household and the arrangements made for their care) but also to their partner’s employment status, his income situation, etc. The study establishes a strong link between the financial circumstances of the household and the need to accept underskilled work, although marked differences were observed between women with different qualification levels. The household structure and the number of children seem to be less significant factors, with the qualification that women who are lone parents exhibit a far higher risk of having to accept a second-best solution in the labour market.

Other countries of the European Union

In the United Kingdom, Sloane et al. (forthcoming – see also Sloane et al., 1996) were the first to devote a study to the subject of overqualification. Their work is based on the research approach adopted by Duncan and Hoffmann (1981) and delivers similarly structured findings.

The Dutch researcher Groot (1996) found that few British employees were overqualified for their jobs. His assessment of the job/education match, however, was based on what appears to be a somewhat arbitrary modification of the DOT system. An extension of this approach, based on the same assessment strategy, is found in Groot and Maassen van den Brink (1995).

Battu et al. (1998a and b) test the theory of differential overqualification (Frank, 1978b) and arrive at a negative result. In a longitudinal study, Battu et al. (1999) show that overqualification has adverse effects on job satisfaction and income. They produce the noteworthy finding that social background does not affect the probability of a mismatch.

56 There are, however, other studies on the empirical situation in eastern Germany, such as those by Büchel and Weißhuhn (1997a, 1997c and 1998) and by Szydlik (1997a, b and c). One remarkable point is the finding presented by Szydlik alone that underemployment is less widespread in eastern than in western Germany (see Szydlik, 1997b, Table 1, p.43, or the redundant findings in Szydlik, 1997c, Table 2, p.13).

Alpin et al. (1998) examine over- and under-qualification in a wide-ranging study. Their ambitious quest to establish whether the overqualification of individuals is only a temporary phenomenon meets with little success, however, because they only have access to right-censored data on job duration. This question cannot be answered on the basis of such data. Finally, Battu and Sloane (forthcoming) find that displacement effects caused by overqualification do occur in the upper echelons of the labour market, but that unskilled workers in the United Kingdom are not being ousted to any great extent by overqualified recruits.

One of the more unusual longitudinal studies in the domain of overqualification research was presented by Dolton and Vignoles (1997). They observe that most employees who start their career in a job for which they are overqualified do not manage to make the transition to appropriate employment in the first six years. Dolton and Vignoles (forthcoming) arrive at similar findings to Sloane et al. (1996 and forthcoming) with regard to the returns to surplus years of schooling.

Alongside these microeconomic studies on overqualification there are also conventional studies which examine the aggregate effect produced by the expansion of the education system, such as the study by Mason (1996).

For France there are studies by Forgeot and Gautié (1997a and b), in which the percentages of over- and underqualified employees in the younger age brackets are assessed by qualification level and job duration for the years 1986 and 1995, as well as a study by Vincens (1995), which treats the problem of overqualification in a rather general fashion (pp. 149-150).

With regard to Spain, there are relevant studies by Alba-Ramírez (1993) and Beneito et al. (forthcoming). Alba-Ramírez finds evidence for the job-matching and career mobility theories. Beneito et al. examine the question whether surplus years of schooling should be regarded as complementary components of human capital or substitutes; their test shows that the latter is the more accurate assessment.

The Portuguese situation has been the subject of studies by Kiker et al. (1997) and by Mendes de Oliveira et al. (forthcoming). Kiker et al. adopt a similar approach to Duncan and Hoffmann (1981) and find that it confirms the allocation theory. Mendes de Oliveira et al. refine the same Duncan and Hoffmann approach and demonstrate that the returns to surplus and deficit years of schooling are heavily dependent on job duration.

In Greece, studies on overqualification have been produced by Patrinos (1995 and 1997). He arrives at similar overqualification rates for Greek graduates to those recorded in western Germany, for example. As might be expected, Patrinos finds evidence of wide divergences between academic disciplines. One especially noteworthy finding is that overqualification is disproportionately high among graduates from humbler backgrounds.58 Other studies are based on the idea of overeducation as an imbalance between the supply of higher qualifications and the demand for them, an idea that was widespread in the early days of the discussion (see subsection 5.1 above); these include works by Tsoucalas (1981), Psacharopoulos (1988), Glytsos (1990) and Lambropoulos and Psacharopoulos (1992).

For Austria there is a study on access to blue-collar occupations for apprentices when they complete their training (Öfner, 1994). Öfner finds that, two years after obtaining their certificate of apprenticeship, about one-third of the former apprentices who have jobs are overqualified.

This review of nationally focused literature on the subject of overqualification shows that this major problem has yet to arouse the interest of employment researchers in many countries of the European Union. We can but speculate on the reasons for this. The restricted availability of key data may be a sig-

58 This finding is consistent with that of the author (Büchel, 1997), who identifies a positive correlation between income prospects and the education level of the parental household, thereby challenging the oft-expressed view that a university degree is a social leveller.
significant factor, for a mismatch variable cannot be generated without an adequate range of relevant reliable data. Efforts must be made to ensure that data-gathering institutions show greater willingness than in the past to elicit the information that researchers need, such as the skill level required for individual jobs. This problem has already been recognised (ILO, 1998, p.90); a fair degree of patience is likely to be needed, however, before this aim is achieved.

5.2.3 International comparative studies

There are studies in which findings from various countries are put together and some in which the researchers’ own empirical comparisons are drawn.

Examples of the first group are the publications by Suda (1979),59 Teichler (1988), Hofmann (1995) and more specifically those of Hartog (1997), Büchel and Weißhuhn (1997c), Borghans and de Grip (1999), Tessaring (1998), Büchel (1998b), and Groot and Maassen van den Brink (forthcoming). These studies provide quite general information on various research findings in an international context.

Studies in which direct international comparisons are drawn in the domain of overqualification have so far been limited to comparisons between the country in which the researchers are interested and the United States, which serves as the reference country. Almost all such studies compare Germany with the United States.

Büchtemann et al. (1993) presented a comparative study on career starts in Germany and the United States. Their study analyses data from the PSID and GSOEP. Matches and mismatches are only one aspect of this wider-ranging study. The study by Daly et al. (1997, revised in Daly et al. (forthcoming)) uses the same databases to examine the income effects of deficit and surplus components of human capital along with the returns to qualifications which are actually needed for a person’s job. In so doing, it follows the approach established by Duncan and Hoffmann (1981). The authors are interested in ascertaining whether structural changes in the U.S. labour market have a greater impact on results than structural differences between the countries under examination. Astonishingly close analogies emerge in the findings for Germany and the United States; the key finding of the study is that similarities between the nations are more pronounced than the similarities between the U.S. findings for different points in the time series.

Büchel and Witte (1997) analyse the effects of overqualification in the initial phase of employees’ careers. They use the longitudinal structure of the ‘High-School & Beyond’ data sets and the GSOEP. Here too, the two countries under scrutiny are remarkably similar in structural terms. The studies by Szydlik (1997b and c and, to a certain extent, a), are also based on information from the PSID and GSOEP. While the aforementioned studies arrive at similar overqualification rates in the United States, the identified percentages of underqualified workers are strikingly lower than those calculated by Daly et al. (1997, Table 1, p.27).

Szydlik (1998) examines the overqualification of immigrants in Germany and the United States. But this once again begs the question how, given the extremely wide divergence between national training systems in terms of quality, anyone can hope to achieve comparability between the formal vocational qualifications that immigrants have obtained in their own countries. Witte (1999) examines the development of overqualification among young people in Germany and the United States; unlike Büchel and Witte (1997), this study bases its analysis of the U.S. situation on PSID data. The study by Büchel and Weißhuhn (1997b) provides a summary in German of the main elements contained in the previous studies by Daly et al. (1997) and Büchel and Witte (1997).

Cohn and Ng (1999) as well as the more fully elaborated version of this study by Cohn et al.
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al. (1999) examine overqualification in a comparison between the United States and Hong Kong. What seems at first sight to be a rather exotic research project actually produces remarkable results. In fact, the standard pattern that is familiar to us from Western research literature also applies to Hong Kong: as a rule, overqualification is more frequently observed than underqualification, older employees are more often underqualified for their jobs, while younger employees are more likely to be overqualified, and the Duncan and Hoffmann findings on the returns to surplus and deficit years of schooling, which were first published in 1981 and have since been confirmed in numerous studies, are likewise found to hold true for Hong Kong.

The presentation of this literature survey has also shown up major research gaps. An important research perspective for the future relates to the need to achieve mutually compatible national data sets on mismatches and to analyse them on the basis of a standardised examination model. Only in this way can institutional and regional effects be satisfactorily isolated; a comparison between individual studies for various countries cannot achieve this because of the widely divergent measurement methods.

6. Overqualification and unemployment: The case of Germany

The purpose of this empirical section is to present some examples, with the aid of a few indicators, of links that exist between overqualified and unemployed status.

In subsection 1.2 above, a methodological affinity was highlighted between overqualified and unemployed status within the labour market. The essence of this affinity is that people in both situations are unable to capitalise fully on their certified vocational qualifications in the labour market. The ‘skill spill’ in the case of overqualified workers amounts to \( x \% \), where \( x \) is only indirectly determinable – by means of an income analysis, for example – but is substantially higher than zero. In the case of jobseekers, the spillage factor is 100%. If we assume, for the sake of simplicity, that the skill spill in the case of an adequately employed person is 0%, the ‘middle’ ground of overqualification which lies between adequate employment and unemployment must be observable within those social categories that unemployment literature identifies as clearly disadvantaged.

6.1 Research approach

6.1.1 Database

The measurement strategy introduced in the following paragraphs is based on data from the German Socio-Economic Panel (GSOEP) administered by the German Institute for Economic Research (Deutsches Institut für Wirtschaftsforschung – DIW) in Berlin. This set of data, collected from representative samples of the population resident in the Federal Republic of Germany, contains a wealth of longitudinal information on households and individuals. The initial sample in 1984 comprised almost 6000 households. The head of each household was given a questionnaire covering the whole household. All members of the household aged 16 or over (more than 12000 individuals) were also given a separate personal questionnaire seeking factual information and opinions on many aspects of their lives, especially education and employment.

The households and individuals in this sample are surveyed at yearly intervals. The database is constantly being widened as household members leave to start new households, as new members move into panel households and as younger members of the household reach the survey year in which their 17th birthday falls.60

Information on the education and training of foreigners

The vast majority of the foreign nationals who are GSOEP respondents are first-generation foreigners, in other words the ‘guest workers’

60 For more extensive information, see Projektgruppe Panel, 1995.
who were encouraged to come and work in Germany. In the present context, these people form a special group in the sense that they underwent schooling and vocational training in their native countries. There is only rudimentary information available on their educational and training qualifications. This information is not comparable with the very precise details elicited by the questions that are addressed to German respondents about their education level. Moreover, the education systems of the various countries of origin are so highly disparate that identical response patterns can rarely be taken to mean equivalent levels of qualification.

The conclusion we must therefore draw from this situation is that it is impossible to measure the degree of mismatch for foreign workers if they have been trained in their native countries. The aforementioned heterogeneity of training courses in their countries of origin is not the only reason; another factor is that the GSOEP question equates the various levels of job requirement with German educational certificates. No very convincing attempts have yet been made to solve this compatibility and validity problem adequately (Szydlik 1996a); Szydlik’s exorbitant assessment that around 60% of all ‘qualified’ foreigners are overqualified will certainly raise eyebrows at the very least (Szydlik, 1996a, p.667; see also Szydlik, 1997a, p.17).

In the light of these considerations, the categorisation of job/education matches in the following paragraphs will only apply to those foreigners who have undergone at least their vocational training in Germany. The problems outlined above with regard to information on immigrants’ education levels also apply to other databases, but overqualification researchers have yet to respond to them with the necessary sensitivity (see the criticism in point 5.2.1 above of the methodology applied to immigrant studies).

General case selection

All members of the sample who were in the labour force at the time of observation are categorised. People in full-time employment, regular part-time employment, minimal employment, and involuntary unemployment (including the hidden labour reserve) are examined, except in cases where the employees are still in full-time education, since there will be no ‘definitive’ information on vocational qualification in such cases. For the same reason, internees, voluntary workers and people in similar occupational situations are excluded from the analysis, as are those of retirement age (65 and over). Since people who have no vocational qualifications at all cannot by definition be overqualified, they too are excluded from the categorisation (cf. Witte and Kalleberg, 1995, p. 308, for an analogous approach). With respect to the latter selection, an exception is made for the step of analysis resulting in Table 1.

The considerations described above form the basis of the condition that only people who have received vocational training and/or higher education in Germany are taken into account. Migrants who moved between East Germany and the Federal Republic are also excluded from the analysis. Because of the categorisation rules governing the assessment of overqualification (see point 6.1.2 below), it is also necessary to exclude those few people for whom no information on vocational qualification, job-requirement level or occupational status is available.

6.1.2 Categorisation of overqualification

Because of the superiority of the subjective approach to the ‘objective’ DOT/GED system, as discussed in point 4.1.2 above, the strategy presented below for the measurement of overqualification is based on the former. The

61 Szydlik writes, ‘Admittedly, knowledge and skills acquired abroad cannot be unequivocally evaluated’ (p.664); however, the continuation of his study, which compares the job/training matches of Germans and foreigners, is evidence of such an evaluation being undertaken in spite of this acknowledged obstacle; indeed, the evaluation is at the very heart of this particular study.

62 For the rationale behind this exclusion, see Büchel, 1998b.
strategy takes account of the objections that have been raised about the subjectivity of the collected information on job-requirement levels by validating reported information on occupational status.

This generation of the mismatch variables from three, rather than the usual two, initial indicators is what gives this categorisation system its innovative quality. It does, admittedly, create two additional categories: implausible combinations (of job-requirement level, formal qualification and occupational status) as well as a ‘grey area’ (Hecker) or ‘mixed category’ (Plicht et al., 1994), in which the three indicators referred to above cannot clearly signal a match or mismatch, even though there is nothing recognisably inconsistent in the data reported by the respondent.63

One problem with the measurement strategy is therefore that the scope of this new mixed category scarcely lends itself to evaluation in the framework of overqualification research. This disadvantage is more than offset, however, by a sharper distinction between adequate employment and overqualification.64

The GSOEP does not ask directly whether a respondent’s job is commensurate with his or her training but merely asks about the requirements of the person’s job. The question ‘What type of training is normally required for the job you do?’ is accompanied by the following graded response categories: ‘No special training required’, ‘Only a short induction on the job’, ‘A lengthy period of coaching at my place of work’, ‘Attendance at special theoretical or practical courses’, ‘A certificate of vocational training’ and ‘A university or college degree’. It is permissible to choose more than one response. Pre-tests, however, have shown that multiple responses, which are in any case quite rare, almost invariably involve a combination of ‘A certificate of vocational training’ and ‘A lengthy period of coaching at my place of work’ or else the requirement category ‘Attendance at special theoretical or practical courses’ in conjunction with any of the other options. This means that we can record the most demanding reported requirement without sacrificing any very significant information.65

By means of a comparison with the acquired formal vocational-training qualification,66 the degree of congruence between job and education can be directly determined; the disparity between the employee’s formal qualification and the job requirements – at least for people with the same category of formal qualification – can then be graded, i.e. assigned to one of a number of bands in a ‘skill spill’ scale. Since the pre-tests that were conducted as part of the data-verification process high-

63 To define the mixed category, we must first conduct pre-tests (which are not documented here), using group-specific occupational and income information.

64 A further residual category, created by the presence of a missing value in one of the three indicators required to generate the mismatch variables, is no different in methodological terms to an equivalent category based on a conventional two-variable approach but is made somewhat larger by the addition of the third variable. The information on occupational status is not regarded as sensitive data and is seldom posted as a missing value in the GSOEP.

65 In conjunction with the income distribution for each category and the structure of the job classifications in each category (on the basis of the three-digit ISCO codes), summaries were produced in advance for each of the requirement levels. These pre-tests revealed, for example, that the occupational and income structure for the two requirement levels ‘A certificate of vocational training’ and ‘Attendance at special theoretical or practical training courses are similar, in the same way as the structures for ‘No special training required’ and ‘Only a short induction on the job’ resemble each other. For that reason, each of these response pairs is bracketed together.

66 Following similarly structured pre-tests, the levels of formal qualification are aggregated. The certificate of vocational training, which is the general category for those workers whose qualifications are non-academic, covers those who are qualified master craftsmen, as is common practice; graduates of universities and colleges of higher technical education (Fachhochschulen) are also bracketed together in the customary manner, which reflects the fact that no distinction is made between these two levels of qualification on the job-requirement side.
lighted individual borderline cases straddling two categories as well as a number of inconsistencies, other particularly detailed information on the respondents’ occupational status from the GSOEP survey is included in order to determine the mismatch variables.

The following categories are thus created: ‘(definitely) overqualified’, ‘degree of mismatch not clearly determinable’ (a mixed category which is wisely excluded as a rule from evaluations of job content), ‘(definite) congruence between job and education’, ‘implausible combination of the three generating variables’ and ‘at least one missing value among the three generating variables’ (an indeterminable degree of mismatch is also classed as a missing value).67

The use of separate classification models for western and eastern Germany takes account of the different educational certificates in the former East and West Germany.68 The classification model for western Germany with the combinations of job requirement, formal qualification and occupational status is documented in Table 0 of the annex; for the classification models for eastern Germany, see Büchel, 1998b, Tables 4.2 and 4.3, pp.189 ff.

Identifying underqualification

Occasionally, when analysing the job/qualification fit, besides examining the category of adequate employment and that of overqualification, researchers also study a second misfit category, namely that of underqualification (see for example Daly et al. (forthcoming)). Such a situation occurs when a respondent does a job for which he or she does not possess adequate formal qualifications. This mismatch phenomenon occurs in a few exceptional ‘rags-to-riches’ careers, such as that of a dishwasher who works his way up to become a millionaire, but it has to be discussed on the basis of completely different premises to those that underlie the discussion of overqualification (cf. Alpin et al., 1998, pp.19-20). The theory of career mobility, for example, can explain overqualification but not overemployment; Sicherman (1991, p.109) explicitly addresses this point.69 If researchers wish to examine mismatches in general, they must accordingly analyse and discuss the categories ‘overqualification’ and ‘underqualification’ in strict segregation. If, on the other hand, the emphasis is on the phenomenon of overqualification, as it is here, underqualification and adequate qualification can be lumped together fairly easily (for a similar approach, see for example Groot, 1993a, p.302, and Groot, 1996). In the following paragraphs, therefore, underqualified workers are assigned to the ‘adequate employment’ category; their common quality that interests us in the present context is the fact that they are identified as not being overqualified.

The degree of overqualification

The aforementioned grading scale for data (recoded into categories) on formal vocational qualification and job requirement can also be used to interpret and grade the newly created information on the discrepancy between these job and training levels. However, when the categorisation is subjected to further differentiation in this way, since the original variables were already highly aggregated, the resultant lack of sharp divisions between the categories demands a certain amount of caution from anyone who develops such a classification model or who subsequently interprets the findings it produces.

67 For a treatment of the relatively small percentages that fall into this category and into those of ‘implausible combinations’ and ‘missing values’, see Büchel and Weißhuhn, 1997a, Tables A2-W/O-84, -91 and –93, as well as Büchel and Weißhuhn, 1998, Table A2-W/O-95.

68 For the rationale behind this division, see Büchel, 1998b.

69 Moreover, in European countries such as Germany, where certified vocational qualifications are major determinants of career prospects – in contrast to the United States, for example – underqualification is of minimal empirical significance. The 7% or so of German employees (1984 figure) whose educational certificates would not normally qualify them to pursue their current occupation have an average shortfall of only 0.7 years of schooling; the average qualification surplus for overqualified workers in 1984, on the other hand, exceeded two years (see Daly et al., 1997, Table 1, p.27).
While the division into appropriate employment and overqualification on the basis of the described categorisation system has certainly passed the validity test (cf. point 6.1.2 above), this cannot be said unreservedly of the degree of overqualification. Although there is no doubting the validity of the graded structure, the volume of the various skill spills cannot be determined with sufficient accuracy. For that reason the graded structure has only been used to obtain information on the volume of skill spillage in particular descriptive evaluations where incidence figures have been high (see for example Büchel, 1998b, Tables 5.1 to 5.3, pp.192 ff.).

For more ambitious research designs, such as the one illustrated in the present section, it therefore seems advisable to accept some loss of information for the sake of a more valid categorisation system; this, indeed, is done in most empirical studies on overqualification. Thus, if the sample is classified into valid categories, the result will be a dummy variable – overqualified: yes/no – for all workers with a formal vocational qualification or a university degree acquired in Germany.

Validity checking

The overqualification variable obtained on the basis of the categorisation principle described in the preceding paragraphs must be externally and internally validated before being used empirically.

The external validation is based on the comparability of the volume of underqualification revealed by one’s own findings with the figures produced by other studies with different underlying research strategies.

The most comprehensive empirical study of the incidence of overqualification in Germany which is not based on the categorisation strategy described above is that of Plicht et al. (1994), although it only examines university graduates. The study involves a mixed category, which results in wide margins of error; within this framework it identifies graduate overqualification ranging from 8% to 17% (western Germany, 1991). The author of the present study, eliminating the mixed category, arrived at a value of about 14% (see Büchel, 1998b, Table 5.2, p.193), which is of the same order as Plicht, Schober and Schreyer, even though they not only use a different database but also pursue an entirely different approach, based on occupational categories.

In studies on overqualification among university graduates, which is the main focus of attention in the German discussion, percentages of under 10% to 15% (Tessaring, 1994a, p.49, Buttler and Tessaring, 1993, p.470, and Szydlik, 1996b, p.304) are identified, although no details are given on any part of the operations used to arrive at these percentages. The figure of 25% advanced by the Donors’ Association for the Promotion of Science and the Humanities in Germany (Stifterverband für die Deutsche Wissenschaft, 1993, p.4) is surely overestimated and must be seen in the light of the general pessimistic tone of that publication. So if we exclude this last outlier, the external validation seems to have been generally successful.

For the purpose of internal validation, the validity of the construct used to distinguish between the characteristics of jobs done by appropriately qualified workers and those whose incumbents are overqualified is tested. If the categories really are sharply defined, considerable differences should emerge in terms of quality.

Irrespective of its theoretical derivation, the expectation that overqualified workers would be considerably worse off than adequately employed workers with similar formal qualifications is observably fulfilled in a highly refined examination of some 50 items in virtually all dimensions (Table 1 in the annex). The pattern of these findings leaves no room for doubt about the validity of the categorisation model.

6.1.3 The evaluation process

The empirical evaluations are based on the German Socio-Economic Panel (GSOEP – see point 6.1.1 above). West and East Germany are examined separately. The cross-section evaluations are based on the year 1995, while the longitudinal analyses use the period from
1984 to 1995. Specific details of the analytical methodology are contained in the various paragraphs on the interpretation of findings. The findings that are presented are largely derived from the multivariate analyses. For further descriptive information on the various stages in the evaluation process, the reader is referred to Büchel, 1998b. Overqualification is identified on the basis of the strategy described here in subsection 6.1.2.

Subsection 6.2 examines four subjective indicators that produce inferior values for jobless people compared with employees in the field of unemployment research, refining this strategy by applying a division into three categories — ‘unemployment/hidden reserves’,70 ‘overqualification’ and ‘adequate employment’. Subsections 6.3 and 6.4 go on to analyse transition patterns into and out of overqualification. Finally, section 6.5 examines the dynamics of income loss resulting from overqualification; the second part of this evaluation focuses on a comparison between losses resulting from periods of unemployment and periods of overqualification.

6.2 Subjective indicators: differences between adequate employment, overqualification and unemployment

6.2.1 Problem-solving capacity

In order to measure possible deprivation in people’s everyday lives, the questionnaire asks respondents to what extent they agree with a number of statements, one of which is ‘Things have become so complicated that I can barely cope’. Although this question has a recognisable dynamic component, which relates to external (social) development, the response can also apply to transitions from a socially secure status, such as training or adequate employment, to overqualification or unemployment and therefore seems to be a very suitable means of shedding light on the issue under examination here. The responses ‘fully agree’ and ‘tend to agree’ with the aforementioned statement are interpreted as indicative of limited problem-solving capacity. A probit model is used to identify the determinants of this limited capacity, special attention being focused on the three relevant categories of employment status.71

The findings set out in Table 2 of the annex show that the overqualified respondents’ assessment of their own problem-solving capacity, controlled for important socioeconomic variables, including the level of formal education, actually places their expected ‘middle’ position far closer to that of jobseekers than to adequately employed workers. Although their problem-solving capacity is higher, on average, than that of jobseekers, the difference is not significant. By contrast, there are significant differentials between matched and mismatched employees. This finding is observable for both West and East Germany.

6.2.2 Morale

A person’s awareness of a shortage or absence of demand in the labour market for his or her acquired vocational skills and qualifications will probably have an adverse effect on that person’s morale, since the vast majority of people, or at least of those who wish to be economically active, place employment high on their list of priorities. For the purposes of the study, the sample is divided into those whose morale is high and others. In accordance with a strategy commonly used by the GSOEP to evaluate morale, based on an empirical distribution of responses on an eleven-point scale (0-10), people who rate themselves at points 8, 9 and 10 on the scale are defined as having high morale.72

70 Hidden reserves of labour are those non-working members of the active population people who are not registered as unemployed but who report immediate readiness to take up employment. For the sake of linguistic simplicity, the ‘unemployed or hidden reserves’ category is abbreviated to ‘unemployed’ in the remainder of this section.

71 The same type of econometric model is adopted in points 6.2.2 to 6.2.4 below.

72 American researchers occasionally display less sensitivity in their choice of evaluation model. Hersch (1991), for example, evaluates her satisfaction scale, which is graded in the same way as the GSOEP model, on the basis of a regression equation.
The following may be deduced from the findings set out in Table 3 of the annex: both in West and East Germany, overqualified workers report not only significantly higher morale than jobseekers but also significantly lower morale than those workers whose jobs match their qualification levels. Whereas the overqualified workers are roughly equidistant from the other two categories on the satisfaction scale for East Germany, the morale of overqualified workers in West Germany is far closer to that of adequately employed workers than to that of jobseekers.

6.2.3 People’s concern about their own economic prospects

In order to measure the respondents’ assessment of their own prospects for the future, the questionnaire asks whether they are worried about a number of things, one of which is their own economic situation. The responses ‘very worried’ and ‘rather worried’ are interpreted as pessimistic assessments of the respondents’ own economic prospects.

The findings are set out in Table 4 of the annex. Both in West and East Germany, overqualified workers are significantly more optimistic about their expected economic development than jobseekers but significantly more pessimistic than workers with well-matched jobs. One interesting point is that the same pattern emerges as was observed for morale, with equal spacing between the middle category and each of the other two for East Germany, whereas overqualified workers in West Germany are distinctly closer to adequately employed workers than to jobseekers in their assessment of their own economic prospects.

6.2.4 Political involvement

An important observation in the domain of political science is that unemployed persons are liable to turn their backs on the world of politics because they feel betrayed (the ‘political apathy’ hypothesis; see Büchel and Falter, 1994). This is liable to lead to impaired functioning of the democratic system. Besides voting in elections, allegiance to a political party is regarded as an effective indicator of the extent of a person’s political involvement. The purpose of these paragraphs is to extend the conventional examination of the connection between employment status and party allegiance to the category of unemployed workers.

The findings documented in Table 5 of the annex show that, controlling for major socio-economic characteristics, the identification of jobseekers with the party system does not differ significantly from that of overqualified workers. The latter, however, demonstrate significantly less party allegiance than workers with good job/qualification matches.

All in all, the findings of section 6.2 confirm the hypothesis that the redundancy of an individual’s marketable skills does not only have an adverse effect on his or her social well-being in the case of total redundancy (i.e. unemployment). Even partial redundancy of a person’s skills, as happens in the event of overqualification, results in a diminished and sometimes drastically diminished quality of life compared with that enjoyed by employees whose jobs are commensurate with their qualifications. While overqualified workers are significantly better placed than jobseekers and significantly worse off than their adequately employed counterparts in terms of morale and perception of their own economic prospects, once the relevant data has been controlled for important socio-economic characteristics, when it comes to their ability to cope with everyday life (at least for the time being) and their allegiance to political parties, however, overqualified workers demonstrate attitudes that are not far removed from those displayed by jobseekers, whereas people whose jobs fit their qualifications tend to be significantly closer to the ‘social norm’ in these respects.

6.3 Transition to inadequate employment

6.3.1 Preliminary remarks on the dynamics of individual overqualification

Following the presentation of the static perspective in the previous subsection (for a wider range of analyses see Büchel, 1998b),
the following paragraphs deal with the dynamics of changes of employment status at an individual level. Although in the medium term the percentage of overqualified employees in the German labour force has remained fairly stable (see Büchel and Weißhuhn, 1997a and 1998), we cannot rule out the possibility that, as with the phenomenon of unemployment, this overall picture of stability conceals a great deal of movement in and out of overqualification in the course of individual careers (cf. Groot and Maassen van den Brink, 1995, p.14).

Accordingly, the approaches adopted here are based on the longitudinal analyses that characterise modern unemployment research. This means that interest focuses on the phenomena of movements into and out of overqualification, which have seldom been dealt with in research literature, as well as on income effects of overqualification. The main points of interest are transfers in both directions between overqualification and the other main categories of employment status, namely work commensurate with qualifications, unemployment, other economic inactivity and full-time training. The main transition patterns are examined below. When choosing suitable evaluation procedures, we have to remember that the information on job/training congruence is only available for one point in the year, in other words the time of the survey. Since some of the observation periods are very short (1991 to 1995 for the area of the former East Germany, as against 1984 to 1995 for western Germany), the use of hazard-rate models, which is actually the best way to proceed when dealing with this sort of question, would be ill-advised, even for discrete modelling. The use of the panel approach to process the relevant data is also out of the question at almost every stage of the evaluation, since the observed changes of employment status will normally occur only once, if at all, for each person during the examination period. Accordingly, models that control for unobserved heterogeneity would exclude most transitions from the examination, since observations with only one occurrence do not serve any explanatory purpose in this type of model. For that reason, the research designs of the various stages in the evaluation process must be conceived in such a way that the analysis can be performed with conventional probit or regression models.

Our first step is to examine the process whereby individuals become overqualified. This transition is identified when a respondent reports overqualification in a questionnaire after having reported a different employment status the previous year. These situations from which individuals enter into overqualification are the focal point of the present subsection.

6.3.2 Descriptive findings

Table 6 in the annex shows the types of employment status previously held by overqualified workers, broken down into percentage columns by regional labour market, qualification level and sex.

An examination of the totals column shows that the most common previous status of overqualified workers in both East and West Germany is that of adequate employment (just over 40% in each case). Outdated expertise and declining productive capacity may be mooted as reasons for this. This transition pattern is far more characteristic of men than women, reaching a peak for highly qualified male workers in the former East Germany; this reflects a systematic downgrading process as part of the hierarchical ‘cleansing’ operation in the period following reunification. Nevertheless, this seems to refute the oft-repeated hypothesis that overqualification is chiefly a problem for married women who interrupt their careers for family reasons, with the result that their skills become rusty through lack of practice, leaving them no op-

73 For more findings see Büchel, 1998b.

74 See the analyses, broken down by age group, in Büchel and Weißhuhn, 1997a and 1998, which demonstrate a considerably higher percentage of overqualified employees in the oldest age bracket, especially among non-graduates in western Germany.
tion but to re-enter working life at a level for which they are overqualified; while this explains some overqualification, it is clearly not the only explanation.

In western Germany, almost a quarter of those who take up underskilled work are unemployed jobseekers. In the East, this percentage is considerably higher, with some 40% of overqualified recruits having been unemployed the year before. This demonstrates the nature of overqualification as an alternative to unemployed status; even though private placement services for unemployed people are gradually gaining in importance, this sizeable movement of labour from unemployment into overqualification is due not least to the restriction by the national employment authority of the jobseeker’s right to refuse job offers. The findings also testify to an abundance of flexibility on the part of jobseekers. They also reveal striking differences between regions and between levels of formal qualification; for example, underskilled jobs are a very important source of employment for East German workers with mid-range qualifications, whereas for West German graduates, especially males, overqualification has far less empirical significance.

‘Spontaneous’ transitions from economic inactivity to overqualification by people who are not actively seeking work (i.e. who are not registered as unemployed) are only made to any great extent by West German women with mid-range qualifications. West German women graduates lag far behind in second place. Among West German men and East Germans in general, this form of transition has only marginal significance.

Approximately one in eight people take up an underskilled job on completion of a training course. This is the case in both western and eastern Germany. This type of transition has become disturbingly common among West German graduates, both male and female. More than one in four West German graduates working overqualified took up his underskilled job immediately after obtaining their degrees; this situation is somewhat less common in eastern Germany and applies primarily to highly qualified women.

6.3.3 Multivariate findings

The reference category for our multivariate analysis was the length of time spent in one of the other types of employment status besides overqualification. The multivariate analysis of the descriptively acquired findings (Table 7 in the annex) produces a surprising picture in terms of the previous employment status of overqualified workers. Our first task, however, is to discuss the findings in relation to the control variables.

Clearly different behaviour patterns emerge for transitions to overqualification in eastern and western Germany.

In western Germany, first of all, more women than men take jobs for which they are overqualified. Reasons for this may be less employment-centred training courses, lower priority attached to careers, periods of economic inactivity for family reasons with the accompanying depreciation of human capital, etc. (see below). Older employees are seldom observed to make such a switch. It may be expected that, on losing jobs commensurate with their qualifications, for example, older employees may be more inclined to take advantage of early-retirement packages than to ‘struggle through’ to retirement in an underskilled job.

Transitions to overqualification are more frequently observed among individuals with poor school records than among those with better school qualifications. Training in a technical college (Fachschule), which has traditionally been employment-based, affords protection against overqualification, as does civil-service training, which is normally followed by appointment to an appropriate post in one of the public authorities. Individuals who have successfully completed an apprenticeship are also less liable to become overqualified than those who have undergone other forms of vocational training.

A surprising result emerges for graduates of higher technical colleges (Fachhochschulen), who are observed to be more prone to overqualification than holders of apprenticeship certificates. Respondents who attach low
priority to a successful career are also overrepresented among the newly overqualified; the undemanding nature of their jobs corresponds to their own level of demand for professional success.

As the regional unemployment rate rises, the probability of a transition to overqualification is reduced. There are two conceivable ways of explaining this: either unskilled and semi-skilled jobs are disproportionately rare in a tight job market or else individuals who cannot obtain an appropriate job are more inclined simply to register as unemployed, the social stigma of unemployment being diminished as the local jobless rate increases.

In the territory of the former East Germany, the control variables exert an influence in several different ways. Besides older employees, those in the youngest age bracket also move into overqualification less frequently, which means that transitions into overqualification are typically made by workers in the middle age groups. While there are no gender-specific differences of the sort that exist in western Germany, people who only have the certificate awarded on the successful completion of eight years’ schooling are also more likely to be overqualified. Another conspicuous feature is the over-representation of highly qualified employees, who were the victims of large-scale systematic downgrading. The reason given for this measure by employers is the discrepancy between the high level of employees’ formal qualifications, which often depended on a certain degree of identification with the former Communist system, and the actual market value of these qualifications in a competitive economy. In eastern Germany too, transitions to overqualification tend to occur more frequently in areas with relatively low rates of unemployment. Moreover, such transitions are more common in rural than in urban areas, in contrast to the older federal states.

As for the previous employment status of overqualified workers, once the quite heterogeneous descriptive findings have been controlled for important socioeconomic characteristics, surprisingly similar structures emerge for eastern and western Germany. Compared with a transition from appropriate employment – the reference category – a switch from unemployment or the hidden labour reserve is a far more frequent occurrence. Direct transitions from training are also significantly more common than those from appropriate employment, albeit by a somewhat narrower margin. In the west of Germany, moreover, even transitions from other forms of economic inactivity happen more often than transitions from a matched to a mismatched job; in the eastern part of the country, however, other forms of economic inactivity play an insignificant role as a source of overqualified labour.

This shows that the descriptively identified ‘typical’ switch from a well-matched job to a mismatch correlates highly with major socioeconomic characteristics. Controlling for these, we see that this form of transition is actually rather untypical. Hence, overqualification in Germany does not primarily take the form of worker dequalification, for example in the wake of rapid technological change, with the accompanying devaluation of knowledge and skills; on the contrary, underskilled jobs tend to be accepted by those who are economically inactive in whatever form. The motives, which are surely many and varied, for taking such jobs are still uncertain at this stage of the analysis, but more precise information on these will emerge on further examination.

6.4 Selected transitions from overqualification

Our second step involved an examination of the process whereby individuals cease to be overqualified. Here too, the various forms of employment status that were discussed in connection with transitions to overqualification were the main focus of attention. Particular importance attached to the question whether overqualified workers manage to step up into jobs that are commensurate with their training or whether they are more likely to slip down into unemployment.

Descriptive findings

The findings presented in Table 8 of the annex reveal considerable differences between eastern and western Germany.
The most commonly used exit door from overqualification in western Germany leads to appropriate employment. A conspicuously high number of male graduates make that transition. While this can be used as an indicator of the capacity of the career mobility theory to explain overqualification, it is not evidence in itself, since we are only looking here at those who move away from under-skilled jobs, not at those who remain in them. A very similar pattern emerges, albeit at a lower level, in eastern Germany, but this time the main exit route leads to involuntary economic inactivity, i.e. unemployment or a place in the hidden reserve of labour. This type of transition mainly affects people with mid-range qualifications as well as women with higher levels of qualification. In the west of Germany this downward transition is mainly observable among men with vocational diplomas; it hardly ever affects male graduates and seldom happens to female graduates.

There is also a wide East/West disparity in the case of transitions into voluntary economic inactivity. In western Germany, this transition is typically made by women who give up overqualified work. Irrespective of their level of qualification, some 40% of women who give up under-skilled jobs move into voluntary economic inactivity. In eastern Germany, however, this type of transition is not very significant. Percentages vary little among the compared groups, reaching a peak of 10%.

A switch to full-time training is not a characteristic move for those who give up inadequate employment. Neither in the East nor in the West of Germany does this figure reach 10%. Whereas in eastern Germany women are more likely to make such a move, whereas in the West German labour market this transition is chiefly made by men, with holders of academic degrees more frequently being given the opportunity for full-time training (presumably in the form of a second degree course or professional training) than holders of vocational diplomas.

The following paragraphs will take a closer look at transitions from overqualification to the two types of status that are of most interest to us in the context of this study, namely unemployment and adequate employment. For more detailed analyses, see Büchel, 1998b.

### 6.4.1 Transition to unemployment

At this juncture a two-step evaluation was undertaken with a view to answering the following questions:

a) Do people in under-skilled jobs run a greater risk of unemployment than those in appropriate jobs?

b) Does the acceptance of an under-skilled job protect people who have lost an appropriate job from subsequent unemployment? Or, to put it another way, does overqualification offer such people a genuine alternative to unemployment in the longer term?

**Transition to unemployment from inadequate or adequate employment**

The aim here was to examine whether adequate employment affords better protection than overqualification against the risk of unemployment. In the model that was used, the alternative to a transition to unemployment was continued overqualification.

The findings set out in Table 9 of the annex reveal considerable differences between western and eastern Germany in terms of the risk of losing a job and becoming unemployed. They do concur, however, on one key point, namely that this risk is significantly higher for employees in under-skilled jobs than for those whose jobs match their qualifications. The respective risk levels for these two groups diverge more widely in the East than in the West of Germany.

**Transition from adequate employment to unemployment – directly or via overqualification**

We wished to test whether the acceptance of an under-skilled post by a person who had lost a job commensurate with his or her skills and qualifications was likely to protect that person against subsequent unemployment. To
paraphrase the question, we want to know whether overqualification is a genuine alternative to unemployment or whether it is liable only to postpone a descent into unemployment. Those people who remained in adequate employment over the observation period served as the reference category.

What the findings in Table 10 of the annex demonstrate is that people who take an underskilled job on losing an adequate job considerably reduce the risk of subsequent unemployment, particularly in western Germany. This may be deemed to indicate that acceptance of an underskilled job is a deliberate choice on the part of many people as an alternative to unemployment.

6.4.2 Transition to adequate employment

At this point a two-step evaluation was undertaken with a view to answering the following questions:

a) Are individuals more likely to obtain a job commensurate with their qualifications if they are overqualified or if they are unemployed?

b) Does an interim phase of overqualification make it easier for jobseekers to find a post that matches their qualifications?

Transition to adequate employment from overqualification or unemployment

The purpose of this stage in the evaluation process was to establish whether the fact that overqualified people already have one foot in the labour market gives them an advantage over their unemployed counterparts in the quest for adequate employment, assuming they are in competition for the same jobs. People who are economically inactive but not registered as unemployed or in the hidden reserve, or who have just completed a course of training were excluded from this evaluation. For unemployed jobseekers and overqualified workers together, we examined the probability of transition to adequate employment. The reference category comprised those who retained one status – unemployment or overqualification – throughout the observation period. Our primary interest was to discover whether and how a person's original status influenced his or her chances of making the transition to adequate employment. The findings are presented in Table 11 of the annex.

Overqualified workers find adequate jobs less frequently than unemployed jobseekers. The same pattern applies in both parts of Germany. It does not seem easy to interpret these findings. It is conceivable that people in underskilled jobs are under less pressure to find appropriate jobs than those with no job at all, since the job they have, inadequate though it may be, probably provides them with an income above that of unemployed jobseekers. Moreover, as has been shown, the category of overqualified workers includes some people who attach low priority to a successful career; it is conceivable that such people may not be looking for a job that is more commensurate with their qualifications or at least that their efforts to find a better job may be less than wholehearted.

To put it simplistically,\(^{75}\) it may be said of unemployed jobseekers that their status tends to 'testify' to a disinclination to accept any old job – including, of course, underskilled jobs; it is therefore safe to assume a high degree of probability that their job search will be confined to educationally adequate employment, at least in the initial stages. What certainly emerges is that, when employers have job vacancies, they do not seem to let their choice of candidate be governed to any great extent by the stigmatisation effect of unemployment or by the positive signal of willingness to work 'at all costs' that is transmitted by applicants who are overqualified for their current jobs.

Transition from unemployment to adequate employment – directly or via overqualification

The next step was to undertake a more specific examination of the findings described in the previous paragraphs. To this end, jobseekers were studied with a view to ascertain-

\(^{75}\)‘Simplistically’ in the sense that we are assuming the availability of unskilled jobs at minimal wage rates.
ing whether they managed to find education-
ally adequate employment within a particu-
lar period – five years for western Germany
and three years for the territory of the former
East Germany. This means that transition
patterns could be compared between the two
parts of Germany but not the frequency of
transitions. The question at the forefront of
this examination was whether a transitional
phase of overqualification is liable to serve
as a 'bridgehead', in other words whether it
helps jobseekers to gain a foothold in the la-
bour market from where it is easier for them
to move upmarket into the sort of job for which
they are qualified (for a more general treat-
ment of this question, see Büchel, 1994a).

The findings set out in Table 12 of the annex
suggest that, if adequate employment is as-
sumed to be the ultimate aim of a job search,
a temporary ‘makeshift’ transition to over-
qualification tends, in both the East and the
West of Germany, to be a ‘dead end’. The di-
mensions of the estimated parameters indi-
cate that a high volume of state dependence
ensues from this situation.

6.5 Income effects of overqualification

There is already sufficient statistical evidence
that overqualified workers earn lower in-
comes than workers with equivalent qualifi-
cations whose jobs match those qualifications
(see section 4 above), and this point need not
be analysed any further here. What this sub-
section examines is the extent to which in-
come growth differs between overqualified
and appropriately employed workers.

6.5.1 Income growth among people who
are initially overqualified

The first step was to compare the respond-
ents’ first reported income in the observation
period (broken down by degree of job/train-
ing match) with their last reported income;
in the case of the latter figure, the match/mis-
match question was no longer relevant, be-
cause the analysis took account of any upward
mobility from underskilled jobs.

In the evaluation, the initial amount of in-
come was taken into consideration so that we
could control for the fact that the lowest earn-
ers automatically stand a better chance of
improving their income levels. The ratio of the
last to the first reported income was selected
as the dependent variable; these values were
plotted on a logarithmic scale to adapt them
to the model. Given the nature of the depend-
ent variables, extraneous control for the
length of the observation period was also re-
quired. In the vast majority of cases, the du-
ration of this period equalled the number of
years spent in employment. To control for
untypical career histories, intervening peri-
ods of unemployment and other forms of eco-
nomic inactivity were taken into account as
additional covariates, as were any years
missing from the panel records.

The findings set forth in Table 13 of the an-
nex present a very similar picture for eastern
and western Germany in terms of the effect
of adequate employment at the start of the
observation period. Controlling for the initial
income level, we see that the income curve
for overqualified workers rises less steeply
than for workers whose jobs match their training
levels. So the former not only have to en-
dure an income shortfall at any given time in
respect of their unused skills and qualifica-
tions (see the literature cited in section 4 above
or, for Germany, Büchel, 1998b, Table 5.30,
p.238, for example); in addition, the gap be-
tween their earning power and that of their
adequately employed colleagues widens with
length of service.

6.5.2 Erosion of human capital through
overqualification

The second step involved examining whether
a period of overqualification has the same sort
of effect in terms of depreciation of human
capital as a phase of voluntary or involuntary
economic inactivity. This hypothesised affin-
ity is based on the fact that 100% of a per-
son’s acquired human capital lies dormant
during a phase of economic inactivity, while
x% of it lies dormant during a phase of

76 In this context, ‘number of years’ means the
number of annual surveys in which a particular
employment status was reported.
overqualification, $x$ being situated somewhere between 0 and 100. Accordingly, the rate of skill depreciation resulting from overqualification must lie somewhere between the depreciation rate for an economically inactive person and the rate for a person in adequate employment.

Clearly, this hypothesis can only be tested if figures for initial and final income from adequate employment are available and if a phase of overqualification is identifiable at some time between the beginning and end of the observation period. In order to permit a direct comparison with the standard reference value, i.e. a period of unemployment, people with a history of adequate employment followed by a period of unemployment or a period in the hidden labour reserve then another period of adequate employment were included in the analysis. As in the previous step, the reported data were controlled for intervening years of voluntary economic inactivity and for any years that were missing from the panel records.

The findings presented in Table 14 of the annex confirm the aforementioned hypothesis, at least for western Germany.\(^77\) In both parts of Germany, periods of overqualification sandwiched between periods of adequate employment adversely affect income growth. In the West, as expected, the depreciation rate is lower than that for voluntary inactivity (100% absence of training in occupational skills), which in turn is lower than the depreciation rate for unemployed jobseekers (100% non-use of skills plus additional downward pressure on wage demands). This accords with the expectations of the human-capital theory and may also be regarded as tending to confirm the typological affinity between overqualification and unemployment that was postulated in the introduction to the present study.

### 7. Conclusions

#### 7.1 Methodological consequences for employment researchers

Conventional employment research, with its fixation on unemployment, underestimates the volume of skills and qualifications which education systems produce but for which there is no demand in the labour market. By including the hidden reserve of labour in analyses of this type,\(^78\) employment researchers have already taken one major step towards more effective assessment of the efficiency of education systems and of the coordination problem between education systems and labour markets. The purpose of the present study has been to highlight the apparent indispensability of another step, namely consideration of overqualification as an additional category in its own right.

While the category of the hidden reserve has now found its way into official and semi-official statistics and has secured a permanent place alongside registered unemployment (see for example OECD, 1995b, pp.45 ff.), either the overqualified percentage of the labour force is tacitly omitted (as in the official German employment statistics) or its omission is ascribed to unresolved measurement problems: 'Invisible underemployment [i.e. the percentage of the labour force who are overqualified for their jobs] … by its very nature is difficult to measure. For this reason, it is not discussed' (OECD, 1995b, p.45).

A first attempt to close this unsatisfactory information gap was made by the German Ministry of Education, Science, Research and Technology, which began to commission biennial standardised reports on the extent and structure of overqualification in Germany (see Büchel and Weißhuhn, 1997a and 1998).

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\(^{77}\) The unexpected findings for eastern Germany have to be interpreted in the light of the particular situation that still obtains in the labour market there.

\(^{78}\) In this context, however, employment researchers usually disregard the phenomenon of ‘visible underemployment’, i.e. the fact that numerous employees would like to work longer hours (see OECD, 1995a, p.45). This is another situation in which people are prevented from capitalising fully on their skills and qualifications.
The measurement strategy used in these reports, however, relates closely to the specific characteristics of the German education system and cannot answer Rumberger’s call for the development of an internationally comparable indicator (Rumberger, 1994, p.281). Given the wide diversity of national education systems, more could surely be achieved with measurement strategies (less precise though they would necessarily be) which were based on training duration and could therefore be integrated into an extended human-capital approach of the type described in Duncan and Hoffmann (1981).

The extensive omission of the phenomenon of overqualification from European employment research creates problems, some of which are critical, with regard to the validity of the applied examination method. This is especially conspicuous in research into the demand for skills and qualifications.

The problem lies in the almost universal practice of implicitly equating the level of skill required for a job with the formal qualification of the incumbent. A typical statement appears, for example, in iwd (1997): ‘Low-skilled workers are the great losers of structural change. Many unskilled and semi-skilled jobs in industry have already gone’ (p.6). This assimilation would only be valid if overqualification did not exist in the labour market. As long as it does exist – as it does in every industrialised nation of the Western world – and as long as the incidence of overqualification exceeds that of underqualification, there will be more unskilled jobs than unskilled workers. Disregarding this fact can lead to various miscalculations, for instance to overestimation of the dynamics of structural change and the accompanying loss of unskilled jobs. Likewise, the job prospects for unskilled and semi-skilled workers will be systematically presented in an excessively gloomy light. It must be remembered that, alongside unskilled and semi-skilled workers, there are also overqualified workers in semi-skilled and unskilled jobs; the total number of all these workers represents the actual number of unskilled and semi-skilled jobs in the labour market (and the economic demand for such jobs). At the same time, the demand for higher qualifications is systematically overestimated. Certainly the demand for overqualified workers proves that employers expect an overqualified worker to outperform an adequately qualified worker in an equivalent job. The fulfilment of this expectation can be demonstrated empirically (Büchel, 1999a). Nevertheless, it remains undisputed that, where two workers have the same qualifications, the one whose job matches those qualifications will normally be more productive than the one who is formally overqualified for his job.

Although it may be the case that technological progress and the accompanying structural change are raising the average skill level required for jobs in the European market, if the level of demand is deduced on the basis of employees’ formal qualifications, the education boom and the subsequent rise in the average educational attainment level of the labour force will inevitably be the source of misinterpretations unless due account is taken of overqualification. Many different sources of error affecting the accuracy of the predicted demand for labour were quickly recognised and discussed (see for example Tessaring, 1982, or, for a more general treatment, Mertens, 1982, pp.145ff. and pp.563 ff.). However, the serious prediction problems arising from the implicit assimilation of formal qualification and job requirement, problems with consequences for educational planning that must not be underestimated, especially in the domain of higher education, are still only being explicitly discussed in isolated studies (see Adamy and Bosch, 1990, p.118, von Henninges, 1996, p.78, and Weißhuhn 1996, p.86).

Conventional forecasts of educational requirements, i.e. predictions based on the ex post development of the labour force’s formal qualification structure and extrapolating future needs on that basis (see Tessaring, 1994b, Weißhuhn, 1996, and Weißhuhn et al, 1994) plainly cannot do enough to satisfy the need of prospective students and trainees for information on their future employment prospects. One alternative is the production of studies on the fate of graduates in each institution, broken down by disciplines. At least in the academic...
field, the authors of these studies are gradually moving away from the practice of assessing educational success on the sole basis of the 'employed/unemployed' dichotomy and are giving increasing consideration to the quality of the jobs that employees do.

The body of literature on this subject, however, is still far from providing reliable and comprehensive information for prospective students and trainees, even though researchers did not take long to start thinking about strategies for the provision of such information (see Chaberny and Schober, 1982). There is no comprehensive reporting system on all possible training courses at every educational institution in Europe, nor are there any studies on the fate of graduates in the longer term or standardised measurement systems, without which the opportunities and risks of different training courses cannot be compared, while there is also a fairly general lack of academic quality among the few studies that are available at the present time (cf. point 5.2.2 above).

Moreover, even with the present research design, as in the case of conventional educational needs forecasts, it is only possible to draw reliable conclusions for the future from the past if the basic conditions remain constant in the medium term. The prospects of finding a job with a particular qualification are certainly a good example of the sort of information that cannot normally be provided because of changes in these basic conditions. Prospective students and trainees would generally be well advised to choose their courses on the basis of their intrinsic interests than to be guided by predicted labour requirements or the findings of studies on the employment status of previous graduates. Be that as it may, it is still a fact that demand predictions which do not address the problem of overqualification are plagued with an even greater degree of uncertainty than those which are adjusted for overqualification.

On the basis of a few classic questions from the field of unemployment research, the present study has shown that the phenomenon of overqualification, because of its typological affinity with unemployment, can be analysed effectively with the instruments of unemployment research. However, the quantitative evaluation of the representative data sets that are currently available in the field of employment research reaches its limits when it comes to examining precisely what induces employees and employers to consent to overqualification; the present study could only provide some initial leads. A qualitative approach emerged here as an effective means of evaluating the motivation of employees.

The findings of the only studies in which this type of approach was adopted (Schlegelmilch, 1982, 1983a, 1983b and 1987) cannot be generalised because they are restricted to one level of qualification and because their sample is unrepresentative and too small. None the less, the approach displays an interesting analytical thrust, which is able to offer insights that cannot be gleaned from the findings of conventional analyses; this makes it a suitable medium for imparting fresh momentum to quantitative research based on representative data by broadening the scope of surveys to include aspects such as the intrinsic motivation of people to do jobs for which they are overqualified. A first movement in this direction is made in Büchel, 1998b.

With regard to closer investigation of employers' motivation to recruit overqualified job applicants, Haugrund (1990) has been the only author so far to highlight this specific research angle. However, the fact that his survey was limited to a few firms in a single industry and only examines technical staff with fairly high skill levels means that his findings are not amenable to generalisation either. More comprehensive future studies with a broader database, designed to follow up this preliminary work, could deliver important new information.

7.2 Implications for education and employment policies

7.2.1 Implications for education policy

The findings of this study give rise to different postulates for the domains of vocational education and higher education, because these two parts of the education system normally have widely different funding struc-
tures. The German Duales System of alternating practical and theoretical vocational training of apprentices is discussed in somewhat greater detail here, because it is often presented as a model system by numerous public policymakers in the field of vocational training in other European countries.

**Dual vocational training**

In relation to the German dual system, Neubäumer (1993) found that those industries which experience difficulties in recruiting skilled workers tend to train in excess of their needs. These are generally industries with largely unattractive and undemanding jobs. Many of the trainees who are surplus to requirements have no option but to move to underskilled jobs.

The findings of a study by the present author (Büchel, 1998b) confirm this effect, whereby individuals who have completed the basic level of secondary education and possess a certificate of apprenticeship run a disproportionately high risk of overqualification. This shows that the quality of training in the German dual system is far from being as uniform as the advocates of this very characteristically German system of vocational training frequently assert and as might be suggested by the annual discussion that takes place in late summer regarding the situation in the apprenticeship market, a discussion which tends to focus exclusively on the number of training places available and the demand for those places.

The same findings prove, as did those previously obtained by Hofbauer and Nagel (1987), for example, that the volume of skills and qualifications which the system produces but which the labour market does not use has assumed menacing proportions, whether this means that the jobs to which those skills and qualifications relate are insufficiently attractive or that there are simply no suitable jobs available. There is a need to identify the reasons for this inefficiency of the dual system and to seek ways of improving it.

First of all, the perennial criticism of excessive specialisation in the vocational-training system, reflected in a huge number of distinct trades, remains valid today. This specialisation makes it more difficult for individuals to use their acquired skills if they subsequently have to work outside the trade they have learned. It would make better sense if emphasis were placed on imparting selected key skills, which should certainly be relevant to groups of specific occupations; specialisation should be delayed until trainees have begun their careers, when the knowledge and skills required for the performance of specific tasks should be imparted through on-the-job training, as is done in the United States. This point has now been taken on board by education policymakers and initial moves have been made in the postulated direction.

In addition, training courses which are out of date and for which there is consequently little or no market demand should be discontinued, and at the same time courses should be developed in new marketable fields of activity. This process currently takes too long, not least because of the strictly regulated procedures and the large number of interest groups involved in decision-making. These problems are now the subject of critical discussion in Germany, and some very promising proposals have already emerged.

Another strategy focuses on the improvement of the existing information system regarding the marketability of the various training courses. The information provided by careers advice centres is all too frequently confined to a description of training curricula with no details of career prospects. The latter information should be provided before prospective trainees choose their courses. Hofbauer and Nagel (1987) recommend that advice should be available from the employment authorities in the final year of technical college (p.45), but this is clearly the wrong time. By then the fatal chain of events depicted by Neubäumer (1993) has already been set in motion; apprentices training for problem occupations realise too late that they have made the wrong choice.

If the information situation were improved, not only in terms of training curricula but also in terms of subsequent career opportunities,
in accordance with the strategy presented by Chaberny and Schober (1982), this would alter the training decisions of school-leavers, thereby influencing the content and quality of employers’ training programmes and of the trainees’ subsequent jobs. It must be borne in mind, however, that the effectiveness of such a strategy will diminish as the process of change on the demand side of the labour market gathers momentum.

The emphasis in the present study is on overqualification among non-graduates. However, the implications for this level of qualification cannot be identified in isolation, not least because the general public and the academic world closely associate mismatches in the labour market with overqualified university graduates. For this reason, the following paragraphs deal briefly with the implications of the overqualification problem for higher-education policy.

**Higher education**

In the domain of higher education, as in the dual system of vocational education and training, the risk of overqualification is observably dependent on the profession for which the student is training or the discipline he or she is studying (see for example Büchel and Matiaske, 1996, and Alpin et al., 1998). Although in Germany university graduates in general run a somewhat lower risk of overqualification than holders of vocational diplomas, for example, once the data have been controlled for the main personal characteristics the differences become insignificant. Indeed, graduates of higher technical colleges (Fachhochschulen) – again after controlling for personal characteristics – are significantly more prone to overqualification than holders of vocational diplomas (Büchel 1998b, Table 5.8, p.204). There is also evidence to suggest that the problem of overqualification will become more acute for German graduates – especially women graduates – in the future (see Büchel and Weißhuhn, 1997a and 1998, as well as Büchel, 1996a).

The overqualification situation described in this study gives rise to certain postulates with regard to education policy, but these cannot be formulated without reference to the specific discussion on graduate overqualification. The problems reflected in the findings that have been obtained are subject to widely varying interpretations, depending on the observer’s perspective. Nevertheless, the question arises, at least in economic terms, as to whether the skills demanded by the labour market could not be provided by the education system with less effort and at less expense. This question sheds light on three of the main reasons for the present glut of academic qualifications.

First of all, the fact that higher education in the vast majority of European countries is largely funded from the public purse creates profound external effects. The excessive cheapness of university study by market standards systematically produces a surplus of qualifications; the introduction of tuition fees, which are of mere symbolic value when compared with the actual cost of university education, will do little to change this.

Secondly, an academic degree may be regarded as the most valuable formal qualification. According to the postulates underlying the job-competition model, it places graduates quite near the front of the labour queue. This sort of position remains sought after, even when the returns to education and employment prospects in general decline, for example because of a glut of academic qualifications or a drop in the standard of university education. The desire to secure the highest possible educational qualification in a discipline selected on the basis of personal preference therefore remains rational from an individual point of view, even in a climate of deteriorating career prospects (for a detailed treatment of this aspect, see Zwick (forthcoming)); the fact that the aggregate macro-economic effect of such a strategy may be to reduce the general level of well-being is unlikely to have any bearing on the educational decisions that individuals make.79

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79 On the competing aims of the manpower-requirement approach and the social-demand approach, see Kühlewind and Tessaring, 1975.
Thirdly, the positive signal that is emitted by the highest vocational qualification is also very desirable in terms of a person's social profile, irrespective of employment status, and this also stimulates demand.

Demand for the top educational qualifications may therefore be expected to keep on rising as long as the educational attainment seems to be 'cheap' in terms of the required personal effort and financial outlay. This raises the question as to how education policy can be used to combat the resultant excess demand for academic qualifications which is gradually leading more and more university graduates into overqualification.

A restrictive policy could begin with the introduction of tuition fees at market rates. These fees, however, would have to be based on the actual cost of training, unlike the models that are most often discussed at the present time. In terms of market economics, there is no logical reason why the same fee should be payable for a (cheap) law course as for a course in medicine, for example. In addition, the intended effect of reducing the level of demand for education can only be achieved in conjunction with an absolute repayment obligation which must apply irrespective of subsequent career success, although provision would certainly have to be made for a mechanism designed to avoid social hardship. The overall effect of such linkage between the demand for education and self-financing would be to reduce the size of the group of overqualified employees who report that a successful career 'is not so important'.

This, however, raises the problem of the social acceptability of tuition fees at market rates, which, as the current public discussion has shown, is a tough nut to crack. A more realistic means of restricting the demand for education would seem to be a reform of the university course and examination regulations based on the modular acquisition of certificates (for a discussion of this option in the German context, see Büchel and Helberger, 1995).

As in the domain of non-graduate employment, the proposed academic reforms would have to be accompanied by a further improvement of the system whereby prospective students can obtain information on career prospects for graduates of specific departments and institutions in each federal state; a new certification system would also entail the provision of information on the various types of certificate offered by each department and institution.80 This might prevent prospective students from choosing courses in 'high-risk' subjects, depending on the level of risk they were prepared to contemplate and on whether the 'low-risk' option was overridden by their flair for a particular subject, which would still have to be recognised as a legitimate selection criterion. The studies on graduates in employment that exist at the present time (see subsection 5.2 above) could serve as useful methodological guides, but the cumulative data they contain are still far from constituting the desired comprehensive information mechanism.

7.2.2 Implications for employment policy

Compared with the range of political mechanisms that are available in the educational field, the armoury of employment policies is less well equipped to improve the general match between training levels and job requirements. The forms of direct intervention proposed by Tsang and Levin (1985, p.101), such as tax breaks for employers of appropriately qualified workers, hardly seem to be practicable. A cautionary example of this type of hapless external intervention in the labour market is the levy imposed on German companies which do not employ their statutory quota of disabled workers. This measure has failed to achieve its intended aim of encouraging the recruitment of disabled persons. It seems likely that the introduction of a similar levy on training places, which was under serious discussion in Germany until very recently, would have posed similar problems.

Measures designed to broaden the skills and qualifications of overqualified workers are

80 For a summary of the official system in Germany as it now stands, see Dostal et al., 1999, pp.57 ff.
The role of further education as a means of reducing the risk inherent in underemployment is discussed in Büchel, 1998b.
pay for unskilled and semi-skilled work. While greater differentiation of wage rates at the lower end of the pay scale, accompanied by a reduction in transfer payments, would certainly increase the number of jobs – especially in the service sector, with its high job-creation potential – we could also expect an increase in the numbers of the ‘working poor’, as has happened in the United States.

This strategy, however, can only operate within certain limits, which are set by social policy or by society itself. For example, most of the European population would surely feel rather uncomfortable with the idea that, as often happens in the United States, every store checkout would have an auxiliary – who might be overqualified for the job – standing by to pack customers’ shopping into bags and carry it to their cars, even though there might be a market for this service at a suitably low rate of pay. The introduction of a combined wage, made up of income from employment and transfer payments, which is currently under discussion, could be an effective means of creating more jobs.

The present study has shown that significant links exist between overqualification and unemployment. So the question whether the percentage of overqualification in a national economy is ‘too high’ or ‘too low’ must always be answered by reference to the unemployment rate. The ideal ratio between the overqualified and unemployed percentages of the labour force cannot be determined by a scientific study but needs to be established normatively in the light of society’s collective values. The same applies to the percentage of overqualified workers when considered in isolation. Overqualification must not be seen as an entirely bad thing; it also has positive effects, for example in the form of spillover effects in connection with the skill upgrading of certain occupations.\(^82\) It is conceivable that, like the rate of ‘natural’ unemployment, an optimum level of overqualification could be identified on the basis of structural models, although this too would surely spark off a discussion on the considerations that should determine whether the labour market is functioning at maximum efficiency.

**Summary**

Section 1 begins by setting out the purpose of the study, which is to investigate the reasons for the occurrence of overqualification and to address the problem of finding a valid means of identifying cases of overqualification. At the same time, the author takes the innovative step of trying to establish a typological affinity between overqualification and unemployment (including the hidden labour reserve). This affinity derives on the one hand from the fact that both situations involve a mismatch between qualifications and job requirements. It may be assumed that both phenomena impose a heavy financial burden on national economies, since economies do not operate at full capacity when part of their stock of human capital lies dormant. This implies that overqualification is a problem that needs to be addressed in the same way as unemployment, although there can be no disputing that unemployment is the more serious problem. In terms of the human capital theory, the analogy may be seen as follows: in the case of unemployment, 100% of a person’s acquired formal vocational qualifications remain unused; in the case of overqualification, \(x\%\) of those qualifications are unused, \(x\) being a significant quantity which can certainly be measured empirically, for instance by means of income analyses.

Another common feature of the two situations is that they are potentially temporary in nature and that the vast majority of people in them are not there out of choice. It may also be assumed that people in either situation will tend to aspire to a move into employment commensurate with their level of qualification. This means that it is possible in principle to analyse the phenomenon of overqualification with the same dynamic research strategy that was developed in the seventies to study un-

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\(^82\) On this point, see the study by Planas et al. in the present volume. However, the question whether the skill upgrading referred to here or a competitive ‘bumping down’ is the dominant process is essentially determined by the elasticity of market demand for higher qualifications (for more details, see Borghans and de Grip, 1999).
employment. This standpoint, however, is still very rarely encountered in the field of employment research.

Section 2 deals with terminological matters. Even at this stage, overqualification research is complicated by an unwieldy mass of concepts.

Section 3 briefly presents the various theories with which researchers have tried to explain the persistence of overqualification in the labour market. Some unorthodox approaches are also outlined. Most of the theories can only claim to explain part of the phenomenon. This section also discusses sets of influential factors that have scarcely ever been treated in the existing body of literature: institutional conditions such as the rules governing the system of unemployment benefit, basic economic conditions such as the trade cycle or the situation in the regional labour market, the personal preferences of those who offer their labour, in terms of the utility they ascribe to career success, etc., and the productivity calculations of employers, who need to know whether overqualified workers are liable to outperform their less-qualified colleagues.

In section 4, the problem of identifying instances of overqualification is systematically discussed. The discussion starts with an explanation of the two main measurement strategies – the ‘objective’ and the ‘subjective’ approach – and their diverse variants; the presentation includes unorthodox measurement processes.

The so-called ‘objective’ approach identifies overqualification by comparing the employees’ formal qualification levels with the reported information concerning their occupations. This approach depends on precise knowledge of the training that exists for particular occupations. Changes in the level of occupational requirements in the course of time, a high degree of variation between job requirements within the same occupational category and the typically high number of missing data on occupations that results from the conversion into ISCO codes of occupations that respondents are normally asked to report in words all pose considerable problems when this approach is adopted.

The so-called ‘subjective’ approach, on the other hand, compares the employees’ formal qualification levels with their own subjective assessments of the qualifications required for their respective jobs. The disadvantage here is undoubtedly the greater element of uncertainty that always accompanies subjective assessments. A major advantage of this approach, however, lies in the assumption that the employees themselves are the best people to ask about the real requirements of their jobs. The methodological discussion that was largely conducted in U.S. research journals during the eighties essentially came to the conclusion that the subjective approach possessed greater validity than the objective approach. Accordingly, research designs based on the objective approach are hardly ever encountered in contemporary studies.

Once these strategies have been explained, the author’s own refinement of the conventional subjective measurement strategy is described. This is principally based on the introduction of a third variable – occupational status – into the categorisation process. This variable serves to validate the standard comparison between the formal qualification and the employee’s subjectively reported job-re- quirement level. The overqualification variable created by this measurement process, which still takes the dichotomous form ‘overqualified? yes/no’, turns out to be considerably more selective than the variable generated by the conventional two-variable process.

The validity of the construct was tested with the aid of job characteristics (about 50 items) of overqualified and adequately employed workers; differences – usually substantial – between these two categories were observed for almost every item. The only disadvantage is the emergence of two additional categories. The first of these covers cases that cannot be definitively assigned to either of the original categories, because the combination of the three input variables does not permit a clear classification as overqualification or adequate employment, while the second category cov-
ers cases where the combination of the three variable characteristics is implausible. These two categories are generally excluded from the empirical evaluation. The reduction in the total number of cases, however, is fairly small.

Section 5 provides a comprehensive review of the literature that deals with the subject of overqualification. Special emphasis is placed on the origins of this discussion in the wake of the expansion of education systems in the seventies and eighties. The beginnings of the academic investigation of the problem of overqualification are retraced for the United States first of all. This is the country from which the main contributions to this field of research have come, contributions which, above all else, set the methodological standard.

The early development of overqualification research outside the United States is described, the German situation being used as an example. Thereafter, more recent works from the United States and Europe – including international comparative studies – are presented. It emerges that European overqualification researchers have only begun in recent times to draw upon the methodological groundwork that was produced in the United States. It is also noticeable that, apart from the Dutch, British and German research, the work that has been done on overqualification in Europe is still at a very rudimentary stage.

In section 6, on the basis of German longitudinal data, some selected examples of issues in the field of overqualification research are examined empirically in the light of the postulated affinity between unemployment and overqualification.

It emerges first of all from cross-section analyses that, once the data have been controlled for the main social characteristics, overqualified workers do not differ significantly from jobseekers in their problem-solving capacity and level of political involvement but that both lag far behind workers whose jobs match their qualifications. In terms of morale and concerns about the future, the overqualified group is positioned halfway between the unemployed and adequately employed groups.

The second stage of the examination involves the use of the instruments of dynamic unemployment research to analyse overqualification. Firstly, transitions into overqualification from various other types of employment status are examined. The multivariate analyses show that, when the data are controlled for the respondents’ socioeconomic background, unemployment is the status from which individuals most frequently move into overqualification. This is evidence of important exchange processes between these two types of employment status. Transitions from overqualification to unemployment (downward mobility) and to educationally adequate employment (upward mobility) are then analysed.

These analyses demonstrate that transitions into unemployment occur more frequently than transitions to adequate employment. This finding, which is consistent with the postulates of the segmentation approach, can be seen as further proof of exchange process between overqualification and unemployment. In an additional analysis, the study examines whether a phase of overqualification following a period of adequate employment is likely to afford protection against unemployment or whether it tends to be one step in a downward process. The former is the case, which indicates that employees with a strong desire to work who see their educationally adequate job at risk or who have already been made redundant will protect themselves against unemployment if they take a flexible approach and accept a second-best option in the form of overqualification.

A transition into adequate employment, however, is a more frequently observable occurrence among unemployed than overqualified individuals. An additional analysis also demonstrates that acceptance of an underskilled job does not bring jobseekers any closer to adequate employment. On the one hand, this may mean that many underskilled jobs can be regarded as dead-end jobs. On the other hand, this finding could indicate that a significant number of unemployed people are pursuing an inflexible job-search strategy and will only accept jobs commensurate with their qualifications. This possibility touches on the
question of the institutional rules governing unemployment benefit.

Lastly, longer-term income effects of overqualification are examined. It emerges that the incomes of overqualified workers grow more slowly than those of their adequately employed counterparts. This remains the case even after the basic income level has been controlled for numerous socioeconomic characteristics. A final additional analysis is then conducted to establish whether – as would be expected – a period spent in overqualification creates income effects that lie somewhere between those of adequate employment and those of unemployment. The expectations of the human capital theory are indeed fulfilled: if periods of overqualification or unemployment intervene in the course of a career spent mainly in adequate employment, while the phases of overqualification generate significant income losses by comparison with unbroken adequate employment, these losses are lower than those that result from a period of unemployment.

The study is rounded off in section 7 with methodological conclusions addressed to employment researchers and substantive implications for education and employment policies. The first postulate addressed to employment researchers is that the typological affinity between overqualification and unemployment should be recognised; this would result in far greater diversity of research strategies for the analysis of overqualification, particularly longitudinal analysis, than has hitherto been observable in the relevant literature. The second postulate is that predictions of future demand for labour should no longer be based, as has hitherto been customary, on a prolongation of the development of an employee’s level of qualification but rather on the development of the skill level required for his or her job. Neglecting the aspect of mismatch by disregarding the problem of overqualification could lead to glaring errors in the assessment of future labour requirements. The likelihood of such miscalculation will be greater if overqualification rates rise over a period of time.

A host of suggestions are made to policymakers in the fields of education and employment as to how the percentage of overqualified workers in the labour force can be reduced. These are largely extracted by means of partial analysis from the empirical findings set out in the available literature. For details of these suggestions, the reader is referred to the short subsection 7.2 of the study. Here too, the crux of the matter is that the problem of overqualification should be considered relevant in macroeconomic terms and that political pressure should be applied with a view to solving it; such pressure should be structured in the same way as the mechanisms used to combat unemployment, although lower priority will naturally be given to overqualification. Both overqualification and unemployment are signs of inadequate coordination within the labour market, in which the inefficiencies of the education system play a significant role. Accordingly, both problems lend themselves to treatment with similar sets of mechanisms.
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Spiegel: see Der Spiegel.


Von Henninges: see Henninges.


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### Annex

**Classification model of overqualification (West Germany, qualification level by job-requirement level by occupational status)**

<table>
<thead>
<tr>
<th>Job-requirement level</th>
<th>Occupational status</th>
<th>Classification with regard to the degree of congruence between job and education</th>
<th>Qualification level gained</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Vocational degree</td>
<td>University or post-secondary technical college degree</td>
</tr>
<tr>
<td>No special training required/ Only a short induction on the job</td>
<td>Unskilled/semi-skilled worker</td>
<td>ov</td>
<td>ov</td>
</tr>
<tr>
<td></td>
<td>Skilled worker/foreman/master craftsman</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>White-collar worker in an unskilled job</td>
<td>ov</td>
<td>ov</td>
</tr>
<tr>
<td></td>
<td>White-collar worker in a skilled job</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>White-collar worker in a highly skilled job</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Self-employed person</td>
<td>ov</td>
<td>ov</td>
</tr>
<tr>
<td></td>
<td>Civil servant</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>A lengthy period of coaching at my place of work</td>
<td>Unskilled/semi-skilled worker</td>
<td>ov</td>
<td>ov</td>
</tr>
<tr>
<td></td>
<td>Skilled worker/foreman/master craftsman</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>White-collar worker in an unskilled job</td>
<td>ov</td>
<td>ov</td>
</tr>
<tr>
<td></td>
<td>White-collar worker in a skilled job</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>White-collar worker in a highly skilled job</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Self-employed person</td>
<td>ov</td>
<td>ov</td>
</tr>
<tr>
<td></td>
<td>Civil servant</td>
<td>+</td>
<td>–</td>
</tr>
<tr>
<td>Attendance at special theoretical or practical courses/A certificate of vocational training</td>
<td>Unskilled/semi-skilled worker</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Skilled worker/foreman/master craftsman</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>White-collar worker in an unskilled job</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>White-collar worker in a skilled job</td>
<td>–</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>White-collar worker in a highly skilled job</td>
<td>ad</td>
<td>ad</td>
</tr>
<tr>
<td></td>
<td>Self-employed person</td>
<td>ad</td>
<td>ad</td>
</tr>
<tr>
<td></td>
<td>Civil servant</td>
<td>ad</td>
<td>ad</td>
</tr>
<tr>
<td>A university or post-sec. technical college degree</td>
<td>Unskilled/semi-skilled worker</td>
<td>ad</td>
<td>ad</td>
</tr>
<tr>
<td></td>
<td>Skilled worker/foreman/master craftsman</td>
<td>ad</td>
<td>ad</td>
</tr>
<tr>
<td></td>
<td>White-collar worker in an unskilled job</td>
<td>ad</td>
<td>ad</td>
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<tr>
<td></td>
<td>White-collar worker in a skilled job</td>
<td>ad</td>
<td>ad</td>
</tr>
<tr>
<td></td>
<td>White-collar worker in a highly skilled job</td>
<td>ad</td>
<td>ad</td>
</tr>
<tr>
<td></td>
<td>Self-employed person</td>
<td>ad</td>
<td>ad</td>
</tr>
<tr>
<td></td>
<td>Civil servant</td>
<td>ad</td>
<td>ad</td>
</tr>
</tbody>
</table>

- **ov**: Overqualification = underemployment.
- **+**: Degree of mismatch not clearly determinable.
- **–**: Implausible combination.
- **ad**: Adequate employment = congruence between job and education (including underqualification). 

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1) including: Apprentice degree (Lehre); in former GDR: including Berufsausbildung/Facharbeiterabschluß; Master craftsmen degree [former GDR] (Meister DDR); Full-time vocational school degree (Berufsfachschule); School of public health degree (Schule des Gesundheitswesens); Technical college degree (FRG) (Fachhochschule); School for civil servants (Beamtenausbildung); Other vocational degree (sonstiger berufsbildender Abschluß).

2) including: Technical college degree (former GDR) (Ingenieur-/Fachschule DDR); Post-sec. technical college degree (Fachhochschule); University degree (Hochschule/Universität).

Other qualification levels used in Tables 1 to 14:
- Lower general schooling (Hauptschulabschluß / 8. Klasse)
- Intermediate general schooling (Realschulabschluß / 10. Klasse; including Fachabitur)
- Higher general schooling (Abitur)

For East German Classification see Büchel/Weißhuhn (1997a).
Source: Büchel/Weißhuhn (1997a).
Table 1: Workers broken down by formal vocational skills, the degree of congruence between job and education, and various job characteristics and group-related averages from these characteristic groups (West Germany and East Germany, 1995).

<table>
<thead>
<tr>
<th>Job characteristics</th>
<th>West Germany (Without any vocational degree)</th>
<th>West Germany (With vocational qualification)</th>
<th>East Germany (Without any vocational degree)</th>
<th>East Germany (With vocational qualification)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pay characteristics:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– potential gross monthly salary (average, in DM) <strong>1</strong></td>
<td>3,397</td>
<td>2,395</td>
<td>4,499</td>
<td>4,806</td>
</tr>
<tr>
<td>– actual net monthly salary (average, in DM)</td>
<td>1,956</td>
<td>1,917</td>
<td>2,084</td>
<td>4,605</td>
</tr>
<tr>
<td>– net hourly pay (average in DM) <strong>2</strong></td>
<td>13.0</td>
<td>12.3</td>
<td>14.8</td>
<td>27.5</td>
</tr>
<tr>
<td>– pay social security contributions <strong>3</strong></td>
<td>84%</td>
<td>84%</td>
<td>72%</td>
<td>74%</td>
</tr>
<tr>
<td>– no agreed wage structure; freely agreed wages</td>
<td>27%</td>
<td>31%</td>
<td>69%</td>
<td>18%</td>
</tr>
<tr>
<td>– pay determined by length of service <strong>4</strong></td>
<td>36%</td>
<td>26%</td>
<td>26%</td>
<td>66%</td>
</tr>
<tr>
<td>– have entitlement to company pension <strong>5</strong></td>
<td>26%</td>
<td>20%</td>
<td>21%</td>
<td>30%</td>
</tr>
<tr>
<td>Occupational status:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– Blue-collar worker</td>
<td>60%</td>
<td>55%</td>
<td>19%</td>
<td>0%</td>
</tr>
<tr>
<td>– White-collar worker</td>
<td>30%</td>
<td>25%</td>
<td>47%</td>
<td>53%</td>
</tr>
<tr>
<td>– Civil servant</td>
<td>2%</td>
<td>0%</td>
<td>0%</td>
<td>36%</td>
</tr>
<tr>
<td>– Self-employed</td>
<td>9%</td>
<td>10%</td>
<td>34%</td>
<td>11%</td>
</tr>
<tr>
<td>Employment status:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– full-time employment</td>
<td>71%</td>
<td>70%</td>
<td>84%</td>
<td>61%</td>
</tr>
<tr>
<td>– part-time employment</td>
<td>18%</td>
<td>21%</td>
<td>14%</td>
<td>9%</td>
</tr>
<tr>
<td>– minimal/irregular employment</td>
<td>11%</td>
<td>9%</td>
<td>2%</td>
<td>2%</td>
</tr>
<tr>
<td>Working time:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– agreed weekly working time (average, in hours)</td>
<td>33.1</td>
<td>33.4</td>
<td>35.6</td>
<td>36.4</td>
</tr>
<tr>
<td>– no firmly agreed working time</td>
<td>15%</td>
<td>26%</td>
<td>44%</td>
<td>11%</td>
</tr>
<tr>
<td>– actual weekly working time (average, in hours)</td>
<td>35.3</td>
<td>36.2</td>
<td>39.2</td>
<td>30.2</td>
</tr>
<tr>
<td>– overtime worked during the last month (average, in hours)</td>
<td>5.3</td>
<td>6.8</td>
<td>9.7</td>
<td>4.0</td>
</tr>
<tr>
<td>– number of agreed working days per week (average, in days)</td>
<td>4.9</td>
<td>5.1</td>
<td>5.0</td>
<td>4.9</td>
</tr>
<tr>
<td>– variable/irregular number of working days per week</td>
<td>9%</td>
<td>12%</td>
<td>33%</td>
<td>9%</td>
</tr>
<tr>
<td>– number of working hours per day, if fixed (average, in hours)</td>
<td>7.3</td>
<td>7.3</td>
<td>7.9</td>
<td>8.0</td>
</tr>
<tr>
<td>– changeable/irregular number of hours per day</td>
<td>8%</td>
<td>16%</td>
<td>10%</td>
<td>26%</td>
</tr>
<tr>
<td>– Work in the evening or at night (after 19.00)</td>
<td>17%</td>
<td>24%</td>
<td>22%</td>
<td>13%</td>
</tr>
<tr>
<td>– Weekend working (Saturday or Sunday)</td>
<td>26%</td>
<td>27%</td>
<td>29%</td>
<td>22%</td>
</tr>
<tr>
<td>– desired reduction in working time (average, in hours) <strong>7</strong></td>
<td>3.3</td>
<td>3.4</td>
<td>5.2</td>
<td>0.8</td>
</tr>
<tr>
<td>– Compatibility between working time and family life is a problem <strong>8</strong></td>
<td>16%</td>
<td>20%</td>
<td>20%</td>
<td>26%</td>
</tr>
</tbody>
</table>

1. With vocational degree
2. With univ. or post-secondary technical college degree
3. Pay social security contributions
4. No agreed wage structure, freely agreed wages
5. Pay determined by length of service
6. Blue-collar worker
7. Civil servant
8. Self-employed
9. Occupational status
10. Employment status
11. Working time
12. West Germany
13. East Germany
14. With university or technical college degree
15. With vocational qualification
16. With univ. or post-secondary technical college degree
17. Pay characteristics
18. Occupational status
19. Employment status
20. Working time
21. West Germany
22. East Germany
23. With university or technical college degree
24. With vocational qualification
25. With univ. or post-secondary technical college degree
26. Pay characteristics
27. Occupational status
28. Employment status
29. Working time
30. West Germany
31. East Germany
32. With university or technical college degree
33. With vocational qualification
34. With univ. or post-secondary technical college degree
35. Pay characteristics
36. Occupational status
37. Employment status
38. Working time
39. West Germany
40. East Germany
41. With university or technical college degree
42. With vocational qualification
43. With univ. or post-secondary technical college degree
44. Pay characteristics
45. Occupational status
46. Employment status
47. Working time
48. West Germany
49. East Germany
50. With university or technical college degree
51. With vocational qualification
52. With univ. or post-secondary technical college degree
53. Pay characteristics
54. Occupational status
55. Employment status
56. Working time
57. West Germany
58. East Germany
59. With university or technical college degree
60. With vocational qualification
61. With univ. or post-secondary technical college degree
62. Pay characteristics
63. Occupational status
64. Employment status
65. Working time
66. West Germany
67. East Germany
68. With university or technical college degree
69. With vocational qualification
70. With univ. or post-secondary technical college degree
71. Pay characteristics
72. Occupational status
73. Employment status
74. Working time
75. West Germany
76. East Germany
77. With university or technical college degree
78. With vocational qualification
79. With univ. or post-secondary technical college degree
80. Pay characteristics
81. Occupational status
82. Employment status
83. Working time
84. West Germany
85. East Germany
86. With university or technical college degree
87. With vocational qualification
88. With univ. or post-secondary technical college degree
89. Pay characteristics
90. Occupational status
91. Employment status
92. Working time
93. West Germany
94. East Germany
95. With university or technical college degree
96. With vocational qualification
97. With univ. or post-secondary technical college degree
98. Pay characteristics
99. Occupational status
100. Employment status
101. Working time
102. West Germany
103. East Germany
104. With university or technical college degree
105. With vocational qualification
106. With univ. or post-secondary technical college degree
107. Pay characteristics
108. Occupational status
109. Employment status
110. Working time
<table>
<thead>
<tr>
<th>Table 1 (continued)</th>
<th>Job characteristics</th>
<th>West Germany</th>
<th>East Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td>Payment of overtime</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– paid in lieu</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– time off in lieu</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– party paid/paid time off in lieu</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– no compensation given</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– do not work overtime</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>Sectors:</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– agriculture/fisheries/mining/energy</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– chemical industry</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– construction, quarrying, minerals</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– commerce, banking, insurance</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– metalworking, electrical engineering, automobile industry</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– public service, transport, tourism</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– service sector</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>Size of enterprise:</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– small enterprise (less than 20 employees)</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– medium-sized enterprise (between 20 and 200 employees)</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– large enterprise (200 employees or more)</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>Length of service:</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– average (in years)</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>Duration of employment:</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– temporary employment</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>Job setup:</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– job-sharing</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>Journey from home to work:</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– long journey to work (average, in km)</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– length of journey (average, in minutes)</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– current job not in vicinity of home</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– variable place of employment</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– journey to work is a great hardship: in financial terms</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– journey to work is a great hardship: in terms of time</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
<tr>
<td>– journey to work is a great hardship: in physical/mental terms</td>
<td>31% 41% 20% 12% 5%</td>
<td>31% 27% 21% 15% 5%</td>
<td></td>
</tr>
</tbody>
</table>
### Table 1 (continued)

<table>
<thead>
<tr>
<th>Job characteristics</th>
<th>West Germany</th>
<th>East Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(Without any vocational degree)</td>
<td>With vocational degree</td>
</tr>
<tr>
<td></td>
<td>With vocational over-qualified</td>
<td>adequate</td>
</tr>
<tr>
<td><strong>Work requirements:</strong> (in each case: &quot;fully applies&quot;)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>– variety in the job</td>
<td>45%</td>
<td>39%</td>
</tr>
<tr>
<td>– heavy physical work</td>
<td>19%</td>
<td>23%</td>
</tr>
<tr>
<td>– self-determined structure of the working day</td>
<td>31%</td>
<td>35%</td>
</tr>
<tr>
<td>– working time depends on the amount of work</td>
<td>24%</td>
<td>33%</td>
</tr>
<tr>
<td>– strict monitoring of work performance</td>
<td>13%</td>
<td>10%</td>
</tr>
<tr>
<td>– rotating work shifts</td>
<td>14%</td>
<td>17%</td>
</tr>
<tr>
<td>– often get angry/have conflicts with hierarchical superior</td>
<td>20%</td>
<td>14%</td>
</tr>
<tr>
<td>– good relationship with work colleagues</td>
<td>75%</td>
<td>66%</td>
</tr>
<tr>
<td>– pay codetermination/promotion of the workforce</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>– can always undertake training to advance occupational skills</td>
<td>19%</td>
<td>13%</td>
</tr>
<tr>
<td>– exposed to noxious substances in the environment</td>
<td>25%</td>
<td>26%</td>
</tr>
<tr>
<td>– high mental effort</td>
<td>24%</td>
<td>21%</td>
</tr>
<tr>
<td>– increased risk of accidents at work</td>
<td>39%</td>
<td>43%</td>
</tr>
<tr>
<td><strong>Subjective estimations:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– satisfaction with work</td>
<td>6.8</td>
<td>6.7</td>
</tr>
<tr>
<td>– willingness to take on extra, unpaid work</td>
<td>43%</td>
<td>43%</td>
</tr>
<tr>
<td>– great concern over safety in the workplace</td>
<td>9%</td>
<td>12%</td>
</tr>
<tr>
<td>– easy to find a similar job</td>
<td>26%</td>
<td>24%</td>
</tr>
<tr>
<td>Number of respondents (N = maximum, unweighted)</td>
<td>1,080</td>
<td>540</td>
</tr>
<tr>
<td>Total</td>
<td>4112</td>
<td></td>
</tr>
</tbody>
</table>

All percentages: column percentages (100% divergence rounded up to the next figure). All results weighted.

1) Potential gross monthly salary. In the case of part-time and minimum-time employees, the monthly equivalent, calculated over an agreed working period. Excluding minimum-time employees working less than five hours per week and the self-employed.

2) Excluding minimum-time employees working less than five hours per week and the self-employed.

3) Dependent employees = 100 percent.

4) Pay determined by length of service (as well as performance) "on a regular basis" or "sometimes".

5) Excluding the "don’t know"s = 100 percent.

6) Including self-employed farmers and members of their family working on the farm.

7) The question was: "If you could choose the number of hours you worked, taking into account that your salary would be commensurate to the number of hours worked, how many hours a week would you prefer to work?" (Compare their answers with their actual working times.)

8) The question was: "It is not always so easy for workers to reconcile working time with family responsibilities and household tasks. Do you find that to be a problem?" The respondents answered: "yes".

9) Dependent employees = 100 percent.

10) Employees with a fixed workplace = 100 percent.

11) The respondents answered: "fully applies" or "partly applies".

12) On a scale from 0 ("totally unsatisfied") to 10 ("totally satisfied").

13) The question was: "Would you put in extra hours to finish off a task you had already begun, even if it meant working for another hour and would not be paid as overtime?" The respondents answered: "yes, of course".

14) The question was: "If you were to lose your current job, would it be easy, difficult or practically impossible for you to find at least one other job that was equivalent?" The respondents answered: "easy".

Only employees below the age of 65. Excluding internees, persons receiving training or further training, and migrants between East and West Germany since 1989. West Germany: excluding immigrants included in the "D" sample of the German Socio-Economic Panel (GSOEP).

Source: own evaluation carried out by the German Socio-Economic Panel (GSOEP).
**Table 2: Determinants of the probability of possessing subjectively limited problem-solving capacity, depending on employment status and other personal characteristics (West Germany and East Germany, 1995, probit model)**

<table>
<thead>
<tr>
<th>Covariates</th>
<th>West Germany</th>
<th></th>
<th>East Germany</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Std.dev.</td>
<td>Average</td>
<td>Coefficient</td>
</tr>
<tr>
<td>Constant</td>
<td>0.031</td>
<td>(0.330)</td>
<td>–</td>
<td>0.830+</td>
</tr>
<tr>
<td>Male</td>
<td>0.074</td>
<td>(0.048)</td>
<td>0.60</td>
<td>0.009</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>–0.011</td>
<td>(0.016)</td>
<td>39.03</td>
<td>–0.035</td>
</tr>
<tr>
<td>Age$^2$/100</td>
<td>0.015</td>
<td>(0.020)</td>
<td>16.45</td>
<td>0.054+</td>
</tr>
<tr>
<td>Foreigner</td>
<td>0.102</td>
<td>(0.078)</td>
<td>0.15</td>
<td>.</td>
</tr>
<tr>
<td>Married$^1$</td>
<td>–0.147**</td>
<td>(0.052)</td>
<td>0.65</td>
<td>0.043</td>
</tr>
<tr>
<td>Restricted on account of health reasons$^2$</td>
<td>0.518**</td>
<td>(0.053)</td>
<td>0.24</td>
<td>0.249**</td>
</tr>
<tr>
<td>Hauptschulabschluß/8. Klasse</td>
<td>0.121*</td>
<td>(0.054)</td>
<td>0.43</td>
<td>0.247**</td>
</tr>
<tr>
<td>Abitur$^4$</td>
<td>–0.072</td>
<td>(0.123)</td>
<td>0.04</td>
<td>0.207</td>
</tr>
<tr>
<td>(Lehre)$^5$</td>
<td>.</td>
<td>( . )</td>
<td>.</td>
<td>( . )</td>
</tr>
<tr>
<td>Meister (GDR)</td>
<td>–0.754*</td>
<td>(0.316)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Berufsfachschule</td>
<td>0.027</td>
<td>(0.084)</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>Schule des Gesundheitswesens</td>
<td>0.070</td>
<td>(0.132)</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>Fachschule (FRG)</td>
<td>0.133</td>
<td>(0.085)</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>Beamtenausbildung</td>
<td>0.036</td>
<td>(0.119)</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Sonstiger berufsbildender Abschluß</td>
<td>0.112</td>
<td>(0.106)</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>Ingenieur-/Fachschule (GDR)$^6$</td>
<td>–0.244*</td>
<td>(0.122)</td>
<td>0.05</td>
<td></td>
</tr>
<tr>
<td>Fachhochschule</td>
<td>–0.411**</td>
<td>(0.105)</td>
<td>0.10</td>
<td>–0.336**</td>
</tr>
<tr>
<td>Hochschule/Universität$^6$</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed/in the hidden labour reserve$^7$</td>
<td>0.134</td>
<td>(0.100)</td>
<td>0.08</td>
<td>0.018</td>
</tr>
<tr>
<td>(Underemployed)</td>
<td>.</td>
<td>( . )</td>
<td>.</td>
<td>( . )</td>
</tr>
<tr>
<td>Adequately employed</td>
<td>–0.222**</td>
<td>(0.065)</td>
<td>0.61</td>
<td>–0.223*</td>
</tr>
<tr>
<td>Number of respondents (unweighted): n =</td>
<td></td>
<td></td>
<td></td>
<td>3,285</td>
</tr>
<tr>
<td>Log-Likelihood</td>
<td>–2149.8</td>
<td></td>
<td>–1265.4</td>
<td></td>
</tr>
<tr>
<td>Likelihood-Ratio-Statistic</td>
<td>222.1**</td>
<td></td>
<td>118.4**</td>
<td></td>
</tr>
<tr>
<td>Dependent variables average (weighted)</td>
<td>0.430</td>
<td></td>
<td>0.631</td>
<td></td>
</tr>
</tbody>
</table>

Dependent variable: subjectively limited problem-solving capacity (1 = yes; 0 = no). For the exact research strategies, see text. Significance level: ** = p < 0.01, * = p < 0.05, + = p < 0.10.

1) Including persons living as a married couple.
2) “Slightly”/“greatly” restricted on account of health reasons in carrying out daily tasks.
3) Including Fachabitur.
4) Only in combination with nonacademic vocational qualification.
5) East Germany: Berufsausbildung/Facharbeiterabschluß, including nonacademic vocational qualifications from 1991.
7) Hidden labour reserve: persons not having registered as unemployed, but wanting to take up a job “as soon as possible”.

Legend for German expressions: see table 0.

Covariates in brackets = reference category. Unweighted averages as model documentation.

Only persons with a vocational qualification from Germany below the age of 65. Excluding internees, persons receiving training or further training, and migrants between East and West Germany since 1989. West Germany: excluding immigrants included in the "D" sample of the German Socio-Economic Panel (GSOEP).

Source: own evaluation carried out by the German Socio-Economic Panel (GSOEP).
### Table 3: Determinants of the probability of possessing high morale, depending on employment status and other personal characteristics (West Germany and East Germany, 1995, probit model)

<table>
<thead>
<tr>
<th>Covariates</th>
<th>West Germany</th>
<th></th>
<th></th>
<th>East Germany</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>(Std.dev.)</td>
<td>Average</td>
<td>Coefficient</td>
<td>(Std.dev.)</td>
<td>Average</td>
</tr>
<tr>
<td>Constant</td>
<td>1.188**</td>
<td>(0.333)</td>
<td></td>
<td>0.628</td>
<td>(0.470)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>−0.059</td>
<td>(0.048)</td>
<td>0.60</td>
<td>−0.061</td>
<td>(0.062)</td>
<td>0.51</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>−0.061**</td>
<td>(0.017)</td>
<td>39.03</td>
<td>−0.060*</td>
<td>(0.023)</td>
<td>40.70</td>
</tr>
<tr>
<td>Age²/100</td>
<td>0.071**</td>
<td>(0.020)</td>
<td>16.45</td>
<td>0.069*</td>
<td>(0.028)</td>
<td>17.66</td>
</tr>
<tr>
<td>Foreigner</td>
<td>0.063</td>
<td>(0.079)</td>
<td>0.15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married?</td>
<td>0.303**</td>
<td>(0.052)</td>
<td>0.65</td>
<td>0.129+</td>
<td>(0.079)</td>
<td>0.74</td>
</tr>
<tr>
<td>Restricted on account of health reasons²</td>
<td>−0.709**</td>
<td>(0.055)</td>
<td>0.24</td>
<td>−0.514**</td>
<td>(0.070)</td>
<td>0.33</td>
</tr>
<tr>
<td>Hauptschulabschluß/8. Klasse</td>
<td>−0.067</td>
<td>(0.054)</td>
<td>0.43</td>
<td>0.050</td>
<td>(0.087)</td>
<td>0.25</td>
</tr>
<tr>
<td>(Realschulabschluß/10. Klasse)⁵</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abitur⁴</td>
<td>0.014</td>
<td>(0.123)</td>
<td>0.04</td>
<td>−0.073</td>
<td>(0.184)</td>
<td>0.03</td>
</tr>
<tr>
<td>(Lehrabschluß)²</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meister (GDR)</td>
<td></td>
<td></td>
<td></td>
<td>0.352</td>
<td>(0.293)</td>
<td>0.01</td>
</tr>
<tr>
<td>Berufsfachschule</td>
<td>−0.026</td>
<td>(0.084)</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schule des Gesundheitswesens</td>
<td>−0.161</td>
<td>(0.133)</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fachschule (FRG)</td>
<td>−0.054</td>
<td>(0.086)</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beamtenausbildung</td>
<td>0.113</td>
<td>(0.120)</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sonstiger berufsbildender Abschluß</td>
<td>−0.196+</td>
<td>(0.107)</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ingenieur-/Fachschule (GDR)</td>
<td></td>
<td></td>
<td></td>
<td>0.121</td>
<td>(0.124)</td>
<td>0.14</td>
</tr>
<tr>
<td>Fachhochschule</td>
<td>0.040</td>
<td>(0.121)</td>
<td>0.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hochschule/Universität⁶</td>
<td>0.187+</td>
<td>(0.103)</td>
<td>0.10</td>
<td>0.289*</td>
<td>(0.128)</td>
<td>0.11</td>
</tr>
<tr>
<td>Unemployed/in the hidden labour reserve²</td>
<td>−0.343**</td>
<td>(0.102)</td>
<td>0.08</td>
<td>−0.292*</td>
<td>(0.121)</td>
<td>0.17</td>
</tr>
<tr>
<td>(Underemployed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adequately employed</td>
<td>0.136*</td>
<td>(0.066)</td>
<td>0.61</td>
<td>0.246*</td>
<td>(0.097)</td>
<td>0.45</td>
</tr>
<tr>
<td>Number of respondents (unweighted): n =</td>
<td></td>
<td></td>
<td></td>
<td>3,283</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log-Likelihood</td>
<td>−2138.5</td>
<td></td>
<td></td>
<td>−1143.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likelihood-Ratio-Statistic</td>
<td>296.2**</td>
<td></td>
<td></td>
<td>124.2**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependent variables average (weighted)</td>
<td>0.492</td>
<td></td>
<td></td>
<td>0.282</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dependent variable: morale (1 = high; 0 = [other]). For the exact research strategies, see text.
Significance level: ** = p < 0.01, * = p < 0.05, + = p < 0.10.

1) Including persons living as a married couple.
2) “Slightly”/“greatly” restricted on account of health reasons in carrying out daily tasks.
3) Including Fachabitur.
4) Only in combination with nonacademic vocational qualification.
7) Hidden labour reserve: persons not having registered as unemployed, but wanting to take up a job “as soon as possible”.

Legend for German expressions: see table 0.
Covariates in brackets = reference category. Unweighted averages as model documentation.
Only persons with a vocational qualification from Germany below the age of 65. Excluding internes, persons receiving training or further training, and migrants between East and West Germany since 1989. West Germany: excluding immigrants included in the "D" sample of the German Socio-Economic Panel (GSOEP).

Source: own evaluation carried out by the German Socio-Economic Panel (GSOEP).
Table 4: Determinants of the probability of people’s concern about their own economic prospects, depending on employment status and other personal characteristics (West Germany and East Germany, 1995, probit model)

<table>
<thead>
<tr>
<th>Covariates</th>
<th>West Germany</th>
<th></th>
<th>East Germany</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>(Std.dev.)</td>
<td>Average</td>
<td>Coefficient</td>
</tr>
<tr>
<td>Constant</td>
<td>–0.177</td>
<td>(0.352)</td>
<td>–</td>
<td>0.864</td>
</tr>
<tr>
<td>Male</td>
<td>0.048</td>
<td>(0.050)</td>
<td>0.60</td>
<td>–0.009</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>0.050**</td>
<td>(0.017)</td>
<td>39.03</td>
<td>0.026</td>
</tr>
<tr>
<td>Age^2/100</td>
<td>–0.081**</td>
<td>(0.021)</td>
<td>16.45</td>
<td>–0.043</td>
</tr>
<tr>
<td>Foreigner</td>
<td>0.251**</td>
<td>(0.088)</td>
<td>0.15</td>
<td>–</td>
</tr>
<tr>
<td>Married</td>
<td>–0.008</td>
<td>(0.055)</td>
<td>0.65</td>
<td>0.099</td>
</tr>
<tr>
<td>Restricted on account of health reasons^2</td>
<td>0.415**</td>
<td>(0.060)</td>
<td>0.24</td>
<td>0.449**</td>
</tr>
<tr>
<td>Hauptschulabschluß/8. Klasse</td>
<td>0.146**</td>
<td>(0.057)</td>
<td>0.43</td>
<td>0.122</td>
</tr>
<tr>
<td>(Realschulabschluß/10. Klasse)^3</td>
<td>–</td>
<td>( . )</td>
<td>–</td>
<td>( . )</td>
</tr>
<tr>
<td>Abitur^4</td>
<td>–0.136</td>
<td>(0.126)</td>
<td>0.04</td>
<td>0.093</td>
</tr>
<tr>
<td>(Lehrabschluß)^5</td>
<td>–</td>
<td>( . )</td>
<td>–</td>
<td>( . )</td>
</tr>
<tr>
<td>Meister (GDR)</td>
<td>–0.006</td>
<td>(0.358)</td>
<td>0.01</td>
<td>–</td>
</tr>
<tr>
<td>Berufsfachschule</td>
<td>0.008</td>
<td>(0.090)</td>
<td>0.08</td>
<td>–</td>
</tr>
<tr>
<td>Schule des Gesundheitswesens</td>
<td>0.184</td>
<td>(0.144)</td>
<td>0.03</td>
<td>–</td>
</tr>
<tr>
<td>Fachschule (FRG)</td>
<td>–0.089</td>
<td>(0.089)</td>
<td>0.08</td>
<td>–</td>
</tr>
<tr>
<td>Beamtenausbildung</td>
<td>–0.650**</td>
<td>(0.119)</td>
<td>0.04</td>
<td>–</td>
</tr>
<tr>
<td>Sonstiger berufsbildender Abschluß</td>
<td>0.043</td>
<td>(0.117)</td>
<td>0.08</td>
<td>–</td>
</tr>
<tr>
<td>Ingenieur-/Fachschule (GDR)</td>
<td>–0.331*</td>
<td>(0.157)</td>
<td>0.14</td>
<td>–</td>
</tr>
<tr>
<td>Fachhochschule</td>
<td>–0.529**</td>
<td>(0.124)</td>
<td>0.05</td>
<td>–</td>
</tr>
<tr>
<td>Hochschule/Universität^6</td>
<td>–0.668**</td>
<td>(0.107)</td>
<td>0.10</td>
<td>–0.635**</td>
</tr>
<tr>
<td>Unemployed/in the hidden labour reserve^7</td>
<td>0.431**</td>
<td>(0.121)</td>
<td>0.08</td>
<td>0.348*</td>
</tr>
<tr>
<td>(Underemployed)</td>
<td>–1.45*</td>
<td>(0.072)</td>
<td>0.61</td>
<td>–0.404**</td>
</tr>
<tr>
<td>Number of respondents (unweighted): n = 3,281</td>
<td>1,990</td>
<td></td>
<td>3,281</td>
<td>1,990</td>
</tr>
<tr>
<td>Log-Likelihood</td>
<td>–1900.9</td>
<td>–727.7</td>
<td>333.2**</td>
<td>104.8**</td>
</tr>
<tr>
<td>Likelihood-Ratio-Statistic</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Dependent variables average (weighted)</td>
<td>0.666</td>
<td>0.869</td>
<td></td>
<td>0.666</td>
</tr>
</tbody>
</table>

Dependent variable: great concern about their own economic prospects (1 = yes; 0 = no). For the exact research strategies, see text. Significance level: ** = p < 0.01, * = p < 0.05, + = p < 0.10.

1) Including persons living as a married couple.
2) “Slightly”/”greatly” restricted on account of health reasons in carrying out daily tasks.
3) Including Fachabitur.
4) Only in combination with nonacademic vocational qualification.
7) Hidden labour reserve: persons not having registered as unemployed, but wanting to take up a job “as soon as possible”.

Legend for German expressions: see table 0.

Covariates in brackets = reference category. Unweighted averages as model documentation.

Only persons with a vocational qualification from Germany below the age of 65. Excluding internees, persons receiving training or further training, and migrants between East and West Germany since 1989. West Germany: excluding immigrants included in the "D" sample of the German Socio-Economic Panel (GSOEP).

Source: own evaluation carried out by the German Socio-Economic Panel (GSOEP).
Table 5: Determinants of the probability of allegiance to a political party, depending on employment status and other personal characteristics (West Germany and East Germany, 1995, probit model)

<table>
<thead>
<tr>
<th>Covariates</th>
<th>West Germany</th>
<th>East Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient (Std.dev.)</td>
<td>Average</td>
</tr>
<tr>
<td>Constant</td>
<td>−2.235** (0.357)</td>
<td>−0.154 (0.475)</td>
</tr>
<tr>
<td>Male</td>
<td>0.154** (0.050)</td>
<td>0.60</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>0.083** (0.018)</td>
<td>39.03</td>
</tr>
<tr>
<td>Age^2/100</td>
<td>−0.073** (0.021)</td>
<td>16.45</td>
</tr>
<tr>
<td>Foreigner</td>
<td>−0.389** (0.083)</td>
<td>0.15</td>
</tr>
<tr>
<td>Married†</td>
<td>0.131* (0.054)</td>
<td>0.65</td>
</tr>
<tr>
<td>Restricted on account of health reasons†</td>
<td>0.070 (0.056)</td>
<td>0.24</td>
</tr>
<tr>
<td>Hauptschulabschluß/8. Klasse</td>
<td>−0.066 (0.056)</td>
<td>0.43</td>
</tr>
<tr>
<td>(Realschulabschluß/10. Klasse)³</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Abitur³</td>
<td>0.218+ (0.127)</td>
<td>0.04</td>
</tr>
<tr>
<td>(Lehrabschluß)²</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Meister (GDR)</td>
<td>−0.383** (0.112)</td>
<td>0.08</td>
</tr>
<tr>
<td>Berufsfachschule</td>
<td>0.022 (0.086)</td>
<td>0.08</td>
</tr>
<tr>
<td>Schule des Gesundheitswesens</td>
<td>−0.031 (0.136)</td>
<td>0.03</td>
</tr>
<tr>
<td>Fachschule (FRG)</td>
<td>0.063 (0.089)</td>
<td>0.08</td>
</tr>
<tr>
<td>Beamtenausbildung</td>
<td>0.187 (0.125)</td>
<td>0.04</td>
</tr>
<tr>
<td>Sonstiger berufsbildender Abschluß</td>
<td>−0.383** (0.112)</td>
<td>0.08</td>
</tr>
<tr>
<td>Ingenieur-/Fachschule (GDR)</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Fachhochschule</td>
<td>0.468** (0.127)</td>
<td>0.05</td>
</tr>
<tr>
<td>Hochschule/Universität⁶</td>
<td>0.573** (0.109)</td>
<td>0.10</td>
</tr>
<tr>
<td>Unemployed/in the hidden labour reserve⁷</td>
<td>0.115 (0.104)</td>
<td>0.08</td>
</tr>
<tr>
<td>(Underemployed)</td>
<td>.</td>
<td>.</td>
</tr>
<tr>
<td>Adequately employed</td>
<td>0.216** (0.069)</td>
<td>0.61</td>
</tr>
<tr>
<td>Number of respondents (unweighted): n</td>
<td>= 3,113</td>
<td>1,849</td>
</tr>
<tr>
<td>Log-Likelihood</td>
<td>−1962.9</td>
<td>−1199.1</td>
</tr>
<tr>
<td>Likelihood-Ratio-Statistic</td>
<td>377.0**</td>
<td>94.8**</td>
</tr>
<tr>
<td>Dependent variables average (weighted)</td>
<td>0.601</td>
<td>0.399</td>
</tr>
</tbody>
</table>

Dependent variable: allegiance to a political party (1 = yes; 0 = no). For the exact research strategies, see text.
Significance level: ** = p < 0.01, * = p < 0.05, + = p < 0.10.
1) Including persons living as a married couple.
2) "Slightly"/"greatly" restricted on account of health reasons in carrying out daily tasks.
3) Including Fachabitur.
4) Only in combination with nonacademic vocational qualification.
7) Hidden labour reserve: persons not having registered as unemployed, but wanting to take up a job "as soon as possible".

Legend for German expressions: see table 0.
Covariates in brackets = reference category. Unweighted averages as model documentation.
Only persons with a vocational qualification from Germany below the age of 65. Excluding internees, persons receiving training or further training, and migrants between East and West Germany since 1989. West Germany: excluding immigrants included in the "D" sample of the German Socio-Economic Panel (GSOEP).

Source: own evaluation carried out by the German Socio-Economic Panel (GSOEP).
Table 6: Types of employment status previously held by underemployed workers, broken down by qualification level and sex (West Germany and East Germany, 1984–1995 and 1991–1995, in %)

<table>
<thead>
<tr>
<th>West Germany</th>
<th>Access from:</th>
<th>With vocational degree</th>
<th>With university or post-secondary technical college degree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Total</td>
<td>Men</td>
</tr>
<tr>
<td>Work commensurate with qualifications</td>
<td>52</td>
<td>33</td>
<td>41</td>
<td>59</td>
</tr>
<tr>
<td>Unemployment/ Hidden labour reserve</td>
<td>29</td>
<td>22</td>
<td>25</td>
<td>13</td>
</tr>
<tr>
<td>Other economic inactivity</td>
<td>6</td>
<td>37</td>
<td>24</td>
<td>0</td>
</tr>
<tr>
<td>(Full-time) training</td>
<td>13</td>
<td>8</td>
<td>10</td>
<td>28</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Number of respondents</td>
<td>398</td>
<td>524</td>
<td>922</td>
<td>69</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>East Germany</th>
<th>Access from:</th>
<th>With vocational degree</th>
<th>With university or post-secondary technical college degree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Total</td>
<td>Men</td>
</tr>
<tr>
<td>Work commensurate with qualifications</td>
<td>48</td>
<td>30</td>
<td>39</td>
<td>70</td>
</tr>
<tr>
<td>Unemployment/ Hidden labour reserve</td>
<td>45</td>
<td>51</td>
<td>48</td>
<td>20</td>
</tr>
<tr>
<td>Other economic inactivity</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>(Full-time) training</td>
<td>7</td>
<td>13</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Number of respondents</td>
<td>153</td>
<td>177</td>
<td>330</td>
<td>56</td>
</tr>
</tbody>
</table>

Only persons with a vocational qualification from Germany below the age of 65. Excluding internees, persons receiving training or further training, and migrants between East and West Germany since 1989. West Germany: excluding immigrants included in the "D" sample of the German Socio-Economic Panel (GSOEP).

Weighted frequency. Unweighted number of respondents.

Source: own evaluation carried out by the German Socio-Economic Panel (GSOEP).
Table 7: Determinants of the probability of transition to underemployment, depending on the various types of employment status previously held and other characteristics (West Germany and East Germany, 1984–1995 and 1991–1995, probit model)

<table>
<thead>
<tr>
<th>Covariates</th>
<th>West Germany (Std.dev.)</th>
<th>Average</th>
<th>East Germany (Std.dev.)</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>–0.669* (0.278)</td>
<td>–</td>
<td>0.303 (0.472)</td>
<td>–</td>
</tr>
<tr>
<td>Male</td>
<td>–0.269** (0.048)</td>
<td>0.58</td>
<td>–0.032 (0.066)</td>
<td>0.51</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>0.006 (0.014)</td>
<td>37.82</td>
<td>0.058* (0.023)</td>
<td>40.43</td>
</tr>
<tr>
<td>Age^2/100</td>
<td>–0.035* (0.017)</td>
<td>15.83</td>
<td>–0.094** (0.028)</td>
<td>17.79</td>
</tr>
<tr>
<td>Foreigner</td>
<td>0.063 (0.067)</td>
<td>0.15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married^1</td>
<td>0.082 (0.054)</td>
<td>0.63</td>
<td>0.115 (0.082)</td>
<td>0.74</td>
</tr>
<tr>
<td>Health restrictions^2</td>
<td>–0.036 (0.052)</td>
<td>0.28</td>
<td>0.033 (0.071)</td>
<td>0.32</td>
</tr>
<tr>
<td>Hauptschulabschluß/8. Klasse</td>
<td>0.390** (0.052)</td>
<td>0.46</td>
<td>0.181* (0.090)</td>
<td>0.26</td>
</tr>
<tr>
<td>(Realschulabschluß/10. Klasse)^3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abitur^4</td>
<td>–0.416** (0.135)</td>
<td>0.04</td>
<td>–0.181 (0.200)</td>
<td>0.03</td>
</tr>
<tr>
<td>(Lehre)^5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meister (GDR)</td>
<td></td>
<td></td>
<td>–0.126 (0.145)</td>
<td>0.07</td>
</tr>
<tr>
<td>Berufsforschung</td>
<td>0.023 (0.075)</td>
<td>0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schule des Gesundheitswesens</td>
<td>–0.129 (0.139)</td>
<td>0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fachschule (FRG)</td>
<td>–0.301** (0.102)</td>
<td>0.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beamtenausbildung</td>
<td>–0.562** (0.175)</td>
<td>0.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sonst. berufsbildender Abschluß</td>
<td>0.327** (0.098)</td>
<td>0.07</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ingenieur-/Fachschule (GDR)</td>
<td></td>
<td></td>
<td>0.354** (0.096)</td>
<td>0.15</td>
</tr>
<tr>
<td>Fachhochschule</td>
<td>0.618** (0.110)</td>
<td>0.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hochschule/Universität^6</td>
<td>0.122 (0.091)</td>
<td>0.09</td>
<td>0.257* (0.113)</td>
<td>0.10</td>
</tr>
<tr>
<td>Profess. success is not important^7</td>
<td>0.112+ (0.063)</td>
<td>0.16</td>
<td>0.008 (0.109)</td>
<td>0.12</td>
</tr>
<tr>
<td>Regional unemployment figures^8</td>
<td>–0.039** (0.008)</td>
<td>8.41</td>
<td>–0.170** (0.013)</td>
<td>15.27</td>
</tr>
<tr>
<td>Rural area^9</td>
<td>0.028 (0.046)</td>
<td>0.56</td>
<td>0.161* (0.074)</td>
<td>0.73</td>
</tr>
<tr>
<td>(Access from adequate empl.)^10</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acc. from (other) econ. inactivity</td>
<td>0.497** (0.065)</td>
<td>0.16</td>
<td>–0.129 (0.167)</td>
<td>0.10</td>
</tr>
<tr>
<td>Access from unemployment/ the hidden labour reserve</td>
<td>0.979** (0.067)</td>
<td>0.10</td>
<td>0.783** (0.075)</td>
<td>0.22</td>
</tr>
<tr>
<td>Access from (full-time) training</td>
<td>0.546** (0.080)</td>
<td>0.08</td>
<td>0.431** (0.121)</td>
<td>0.08</td>
</tr>
<tr>
<td>No. of respond. (unweighted): n =</td>
<td></td>
<td></td>
<td>4,982</td>
<td>2,615</td>
</tr>
<tr>
<td>Log-Likelihood</td>
<td>–2144.6</td>
<td>–</td>
<td>–1008.4</td>
<td>–</td>
</tr>
<tr>
<td>Likelihood-Ratio-Statistic</td>
<td>1325.0**</td>
<td></td>
<td>546.6**</td>
<td></td>
</tr>
<tr>
<td>Depend. var. average (weighted)</td>
<td>0.155</td>
<td></td>
<td>0.173</td>
<td></td>
</tr>
</tbody>
</table>

Dependent variable: 1 = transition, from one observation year to the next, from one of the various types of employment status (previous employment status) to underemployment; 0 = retention of employment status (transitions between employment status allowed).
Significance level: ** = p < 0.01, * = p < 0.05, + = p < 0.10.
1) Including persons living as a married couple.
2) ‘Slightly’/‘greatly’ restricted on account of health reasons in carrying out daily tasks.
3) Including Fachabitur.
4) Only in combination with nonacademic vocational qualification.
5) East Germany: Berufsausbildung/Facharbeiterschluß; including nonacademic vocational qualifications from 1991.
7) ‘Professional success’ is ‘not so important’ or ‘quite unimportant’, according to German nationals (foreigners were not asked).
8) West Germany: at regional level (BfLR data - [Bundesforschungsanstalt für Landeskunde und Raumordnung - Federal Research Institute for Regional Studies and Town and Country Planning]); East Germany: at Land level (relating to place of residence).
9) Number of inhabitants in place of residence < 50000 inhabitants.
10) Reference date for access status: survey carried out in the previous year to that in which the person’s transition to underemployment was first observed. Legend for German expressions: see table 0.
Covariates in brackets = reference category. Reference date for encoding the covariates: first year. Unweighted averages as model documentation.

Only persons having held one of the types of employment status examined (previous employment status) for two consecutive years (in the second year, underskilled work, in addition, is allowed). One observation at the most per person (first occurrence of a possible movement). Only persons with a vocational qualification from Germany below the age of 65. Excluding internees, persons receiving training or further training, and migrants between East and West Germany since 1989. West Germany: excluding immigrants included in the “D” sample of the German Socio-Economic Panel (GSOEP).

Source: own evaluation carried out by the German Socio-Economic Panel (GSOEP).
Table 8: Exit doors from underemployment, broken down by qualification level and sex (West Germany and East Germany, 1984–1995 and 1991–1995, in %)

### West Germany

<table>
<thead>
<tr>
<th>Access from:</th>
<th>With vocational degree</th>
<th>With university or post-secondary technical college degree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Total</td>
</tr>
<tr>
<td>Work commensurate with qualifications</td>
<td>43</td>
<td>40</td>
<td>41</td>
</tr>
<tr>
<td>Unemployment/Hidden labour reserve</td>
<td>33</td>
<td>17</td>
<td>24</td>
</tr>
<tr>
<td>Other economic inactivity</td>
<td>16</td>
<td>40</td>
<td>30</td>
</tr>
<tr>
<td>(Full-time) training</td>
<td>9</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

| Number of respondents               | 367        | 458   | 825   | 64         | 47    | 111   | 431        | 505   | 936   |

### East Germany

<table>
<thead>
<tr>
<th>Access from:</th>
<th>With vocational degree</th>
<th>With university or post-secondary technical college degree</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>Women</td>
<td>Total</td>
</tr>
<tr>
<td>Work commensurate with qualifications</td>
<td>38</td>
<td>26</td>
<td>31</td>
</tr>
<tr>
<td>Unemployment/Hidden labour reserve</td>
<td>49</td>
<td>57</td>
<td>54</td>
</tr>
<tr>
<td>Other economic inactivity</td>
<td>9</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>(Full-time) training</td>
<td>4</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

| Number of respondents               | 124        | 175   | 299   | 38         | 49    | 87    | 162        | 224   | 386   |

Only persons having been underemployed in the exit year and observed in one of the types of employment status examined in the following year. Only persons with a vocational qualification from Germany below the age of 65. Excluding internees, persons receiving training or further training, and migrants between East and West Germany since 1989. West Germany: excluding immigrants included in the "D" sample of the German Socio-Economic Panel (GSOEP).

Weighted frequency. Unweighted number of respondents.

Source: own evaluation carried out by the German Socio-Economic Panel (GSOEP).
Table 9: Determinants of the probability of transition from underemployment or adequate employment to unemployment/the hidden labour reserve, depending on exit status and other characteristics (West Germany and East Germany, 1984–1995 and 1991–1995, probit model)

<table>
<thead>
<tr>
<th>Covariates</th>
<th>West Germany</th>
<th></th>
<th>East Germany</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Std.dev.</td>
<td>Average</td>
<td>Coefficient</td>
</tr>
<tr>
<td>Constant</td>
<td>0.166</td>
<td>(0.289)</td>
<td>–</td>
<td>1.314**</td>
</tr>
<tr>
<td>Male</td>
<td>–0.010</td>
<td>(0.050)</td>
<td>0.60</td>
<td>–0.269**</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>–0.085**</td>
<td>(0.014)</td>
<td>39.52</td>
<td>0.002</td>
</tr>
<tr>
<td>Age$^2$/100</td>
<td>0.094**</td>
<td>(0.017)</td>
<td>17.08</td>
<td>–0.001</td>
</tr>
<tr>
<td>Foreigner</td>
<td>0.100</td>
<td>(0.076)</td>
<td>0.15</td>
<td>(          )</td>
</tr>
<tr>
<td>Married</td>
<td>–0.070</td>
<td>(0.054)</td>
<td>0.67</td>
<td>–0.026</td>
</tr>
<tr>
<td>Restricted on account of health reasons$^2$</td>
<td>0.154**</td>
<td>(0.052)</td>
<td>0.29</td>
<td>0.021</td>
</tr>
<tr>
<td>Hauptschulabschluß/8. Klasse</td>
<td>0.286**</td>
<td>(0.057)</td>
<td>0.47</td>
<td>0.182*</td>
</tr>
<tr>
<td>(Realschulabschluß/10. Klasse)$^3$</td>
<td>(          )</td>
<td>(          )</td>
<td>(          )</td>
<td>(          )</td>
</tr>
<tr>
<td>Abitur$^4$</td>
<td>–0.162</td>
<td>(0.148)</td>
<td>0.04</td>
<td>0.070</td>
</tr>
<tr>
<td>(Lehre)$^5$</td>
<td>(          )</td>
<td>(          )</td>
<td>(          )</td>
<td>(          )</td>
</tr>
<tr>
<td>Meister (GDR)</td>
<td>–0.197</td>
<td>(0.128)</td>
<td>0.08</td>
<td>(          )</td>
</tr>
<tr>
<td>Berufsfachschule</td>
<td>0.172*</td>
<td>(0.080)</td>
<td>0.09</td>
<td>(          )</td>
</tr>
<tr>
<td>Schule des Gesundheitswesens</td>
<td>–0.159</td>
<td>(0.159)</td>
<td>0.03</td>
<td>(          )</td>
</tr>
<tr>
<td>Fachschule (FRG)</td>
<td>0.117</td>
<td>(0.091)</td>
<td>0.08</td>
<td>(          )</td>
</tr>
<tr>
<td>Beamtenausbildung</td>
<td>–0.332*</td>
<td>(0.159)</td>
<td>0.04</td>
<td>(          )</td>
</tr>
<tr>
<td>Sonstiger berufsbildender Abschluß</td>
<td>0.340**</td>
<td>(0.101)</td>
<td>0.09</td>
<td>(          )</td>
</tr>
<tr>
<td>Ingenieur-/Fachschule (GDR)</td>
<td>–0.359**</td>
<td>(0.098)</td>
<td>0.17</td>
<td>(          )</td>
</tr>
<tr>
<td>Fachhochschule</td>
<td>–0.148</td>
<td>(0.149)</td>
<td>0.04</td>
<td>(          )</td>
</tr>
<tr>
<td>Hochschule/Universität$^6$</td>
<td>–0.097</td>
<td>(0.110)</td>
<td>0.09</td>
<td>–0.465**</td>
</tr>
<tr>
<td>Profess. success is not important$^7$</td>
<td>0.103</td>
<td>(0.066)</td>
<td>0.15</td>
<td>–0.008</td>
</tr>
<tr>
<td>Regional unemployment figures$^8$</td>
<td>0.027**</td>
<td>(0.008)</td>
<td>8.33</td>
<td>–0.148**</td>
</tr>
<tr>
<td>Rural area$^9$</td>
<td>–0.015</td>
<td>(0.049)</td>
<td>0.57</td>
<td>0.039</td>
</tr>
<tr>
<td>Exit status: underemployment$^{10}$</td>
<td>0.120*</td>
<td>(0.055)</td>
<td>0.24</td>
<td>0.367**</td>
</tr>
<tr>
<td>Number of respondents (unweighted): n =</td>
<td></td>
<td></td>
<td>4,939</td>
<td></td>
</tr>
<tr>
<td>Log-Likelihood</td>
<td>–1828.5</td>
<td></td>
<td>1053.1</td>
<td></td>
</tr>
<tr>
<td>Likelihood-Ratio-Statistic</td>
<td>634.2**</td>
<td></td>
<td>335.2**</td>
<td></td>
</tr>
<tr>
<td>Dependent variables average (weighted)</td>
<td>0.115</td>
<td></td>
<td>0.212</td>
<td></td>
</tr>
</tbody>
</table>

Dependent variable: 1 = transition, from one observation year to the next, from underemployment or adequate employment to unemployment/the hidden labour reserve; 0 = (other).
Significance level: ** = p < 0.01, * = p < 0.05, + = p < 0.10.
1) Including persons living as a married couple.
2) "Slightly"/"greatly" restricted on account of health reasons in carrying out daily tasks.
3) Including Fachabitur.
4) Only in combination with nonacademic vocational qualification.
7) "Professional success" is "not so important" or "quite unimportant", according to German nationals (foreigners were not asked).
8) West Germany: at regional level (BfLR data - Bundesforschungsanstalt fuer Landeskunde und Raumordnung - Federal Research Institute for Regional Studies and Town and Country Planning); East Germany: at Land level (relating to place of residence).
9) Number of inhabitants in place of residence < 50 000 inhabitants.
10) Alternative status: adequate employment.

Legend for German expressions: see table 0.
Covariates in brackets = reference category. Reference date for encoding the covariates: first year. Unweighted averages as model documentation.

Only persons having been underemployed or adequately employed in one observation year and interviewed the following year. One observation at the most per person (first occurrence of a possible movement). Only persons with a vocational qualification from Germany below the age of 65. Excluding internees, persons receiving training or further training, and migrants between East and West Germany since 1989. West Germany: excluding immigrants included in the "D" sample of the German Socio-Economic Panel (GSOEP).

Source: own evaluation carried out by the German Socio-Economic Panel (GSOEP).
Table 10: Determinants of the probability of transition from adequate employment within five years (three years for the former East Germany) to unemployment/the hidden labour reserve, depending on a possible interim phase of underemployment and other characteristics (West Germany and East Germany, 1984–1995 and 1991–1995, probit model)

<table>
<thead>
<tr>
<th>Covariates</th>
<th>West Germany</th>
<th></th>
<th>East Germany</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient (Std.dev.)</td>
<td>Average</td>
<td>Coefficient (Std.dev.)</td>
<td>Average</td>
</tr>
<tr>
<td>Constant</td>
<td>0.508 (0.393)</td>
<td>–</td>
<td>–0.237 (0.588)</td>
<td>–</td>
</tr>
<tr>
<td>Male</td>
<td>–0.284** (0.071)</td>
<td>0.64</td>
<td>–0.279** (0.078)</td>
<td>0.56</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>–0.096** (0.022)</td>
<td>35.65</td>
<td>–0.065* (0.028)</td>
<td>39.29</td>
</tr>
<tr>
<td>Age²/100</td>
<td>0.111** (0.028)</td>
<td>14.00</td>
<td>0.097** (0.035)</td>
<td>16.49</td>
</tr>
<tr>
<td>Foreigner</td>
<td>–0.029 (0.138)</td>
<td>0.09</td>
<td>.</td>
<td>( . )</td>
</tr>
<tr>
<td>Married</td>
<td>0.031 (0.080)</td>
<td>0.63</td>
<td>0.068 (0.106)</td>
<td>0.80</td>
</tr>
<tr>
<td>Restricted on account of health reasons²</td>
<td>0.143+ (0.080)</td>
<td>0.23</td>
<td>0.122 (0.088)</td>
<td>0.25</td>
</tr>
<tr>
<td>Hauptschulabschluß/8. Klasse</td>
<td>0.189* (0.077)</td>
<td>0.47</td>
<td>0.106 (0.109)</td>
<td>0.23</td>
</tr>
<tr>
<td>(Realschulabschluß/10. Klasse)³</td>
<td>.</td>
<td>( . )</td>
<td>.</td>
<td>( . )</td>
</tr>
<tr>
<td>Abitur³</td>
<td>–0.087 (0.182)</td>
<td>0.04</td>
<td>–0.113 (0.246)</td>
<td>0.03</td>
</tr>
<tr>
<td>(Lehre)⁴</td>
<td>.</td>
<td>( . )</td>
<td>.</td>
<td>( . )</td>
</tr>
<tr>
<td>Meister (GDR)</td>
<td>–0.113 (0.138)</td>
<td>0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Berufsfachschule</td>
<td>0.085 (0.112)</td>
<td>0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schule des Gesundheitswesens</td>
<td>–0.244 (0.211)</td>
<td>0.03</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fachschule (FRG)</td>
<td>0.030 (0.125)</td>
<td>0.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beamtenausbildung</td>
<td>–0.548** (0.208)</td>
<td>0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sonst. berufsbildender Abschluß</td>
<td>0.562** (0.170)</td>
<td>0.05</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ingenieur-/Fachschule (GDR)</td>
<td>–0.320** (0.121)</td>
<td>0.17</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fachhochschule</td>
<td>–0.003 (0.211)</td>
<td>0.04</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hochschule/Universität⁶</td>
<td>–0.008 (0.135)</td>
<td>0.10</td>
<td>–0.359* (0.144)</td>
<td>0.12</td>
</tr>
<tr>
<td>Profess. success is not important⁷</td>
<td>0.292** (0.088)</td>
<td>0.14</td>
<td>0.449+ (0.140)</td>
<td>0.06</td>
</tr>
<tr>
<td>Regional unemployment figures⁸</td>
<td>0.012 (0.010)</td>
<td>8.96</td>
<td>0.032 (0.019)</td>
<td>11.00</td>
</tr>
<tr>
<td>Rural area⁹</td>
<td>0.018 (0.068)</td>
<td>0.55</td>
<td>0.112 (0.087)</td>
<td>0.71</td>
</tr>
<tr>
<td>Interim phase: underemploymt.¹⁰</td>
<td>–0.856** (0.134)</td>
<td>0.15</td>
<td>–0.307* (0.123)</td>
<td>0.13</td>
</tr>
<tr>
<td>No. of respond. (unweighted): n =</td>
<td>2,911</td>
<td>1,536</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Log-Likelihood</td>
<td>–894.0</td>
<td>–702.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likelihood-Ratio-Statistic</td>
<td>223.0**</td>
<td>57.2**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependent variables average (weighted)</td>
<td>0.106</td>
<td>0.215</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dependent variable: 1 = transition within five years (three years for the former East Germany) from adequate employment to unemployment/the hidden labour reserve; 0 = (other).

Significance level: ** = p < 0.01, * = p < 0.05, + = p < 0.10.

1) Including persons living as a married couple.
2) "Slightly/greatly" restricted on account of health reasons in carrying out daily tasks.
3) Including Fachabitur.
4) Only in combination with nonacademic vocational qualification.
7) "Professional success" is "not so important" or "quite unimportant", according to German nationals (foreigners were not asked).
8) West Germany: at regional level (BfLR data - [Bundesforschungsanstalt fuer Landeskunde und Raumordnung - Federal Research Institute for Regional Studies and Town and Country Planning]); East Germany: at Land level (relating to place of residence).
9) Number of inhabitants in place of residence < 50 000 inhabitants.
10) Transition to unemployment/the hidden labour reserve following a phase of underemployment.

Legend for German expressions: see table 0.

Covariates in brackets = reference category. Reference date for encoding the covariates: first year. Unweighted averages as model documentation.

Only persons having been in adequate employment in one of the observation years (1984–1995) (East Germany: 1991–1995) and interviewed within the following five years (three years for the former East Germany). One observation at the most per person (first occurrence of a possible movement). Only persons with a vocational qualification from Germany below the age of 65. Excluding internees, persons receiving training or further training, and migrants between East and West Germany since 1989. West Germany: excluding immigrants included in the "D" sample of the German Socio-Economic Panel (GSOEP).

Source: own evaluation carried out by the German Socio-Economic Panel (GSOEP).
Table 11: Determinants of the probability of transition from underemployment or unemployment/the hidden labour reserve to adequate employment, depending on exit status and other characteristics (West Germany and East Germany, 1984–1995 and 1991–1995, probit model)

<table>
<thead>
<tr>
<th>Covariates</th>
<th>West Germany</th>
<th></th>
<th></th>
<th>East Germany</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient (Std.dev.)</td>
<td>Average</td>
<td>Coefficient (Std.dev.)</td>
<td>Average</td>
<td>Coefficient (Std.dev.)</td>
<td>Average</td>
</tr>
<tr>
<td>Constant</td>
<td>-0.409 (0.357)</td>
<td>-</td>
<td>-0.023 (0.611)</td>
<td>-</td>
<td>-0.304 (0.109)</td>
<td>0.75</td>
</tr>
<tr>
<td>Male</td>
<td>0.239** (0.059)</td>
<td>0.52</td>
<td>0.292** (0.086)</td>
<td>0.44</td>
<td>0.374** (0.094)</td>
<td>0.70</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>0.057** (0.018)</td>
<td>38.96</td>
<td>0.104** (0.030)</td>
<td>40.91</td>
<td>0.129** (0.030)</td>
<td>42.11</td>
</tr>
<tr>
<td>Age2/100</td>
<td>-0.092** (0.023)</td>
<td>16.73</td>
<td>-0.152** (0.037)</td>
<td>18.15</td>
<td>-0.181** (0.040)</td>
<td>20.01</td>
</tr>
<tr>
<td>Foreigner</td>
<td>-0.444** (0.088)</td>
<td>0.24</td>
<td>-</td>
<td>-</td>
<td>-0.142** (0.088)</td>
<td>0.33</td>
</tr>
<tr>
<td>Married1</td>
<td>-0.085 (0.067)</td>
<td>0.67</td>
<td>0.304** (0.109)</td>
<td>0.75</td>
<td>0.414* (0.198)</td>
<td>0.04</td>
</tr>
<tr>
<td>Restricted on account of health reasons2</td>
<td>-0.142* (0.065)</td>
<td>0.33</td>
<td>-0.263** (0.094)</td>
<td>0.35</td>
<td>-0.263** (0.094)</td>
<td>0.35</td>
</tr>
<tr>
<td>Hauptschulabschluß/8. Klasse</td>
<td>-0.169* (0.072)</td>
<td>0.54</td>
<td>-0.212+ (0.115)</td>
<td>0.33</td>
<td>-0.169* (0.072)</td>
<td>0.54</td>
</tr>
<tr>
<td>(Realschulabschluß/10. Klasse)3</td>
<td>-0.169* (0.072)</td>
<td>0.54</td>
<td>-0.212+ (0.115)</td>
<td>0.33</td>
<td>-0.169* (0.072)</td>
<td>0.54</td>
</tr>
<tr>
<td>Abitur4</td>
<td>0.156 (0.224)</td>
<td>0.02</td>
<td>-0.033 (0.273)</td>
<td>0.02</td>
<td>-0.033 (0.273)</td>
<td>0.02</td>
</tr>
<tr>
<td>(Lehre)5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Meister (GDR)</td>
<td>0.038 (0.097)</td>
<td>0.09</td>
<td>0.414* (0.198)</td>
<td>0.04</td>
<td>0.414* (0.198)</td>
<td>0.04</td>
</tr>
<tr>
<td>Berufsfachschule</td>
<td>0.141 (0.206)</td>
<td>0.02</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Schule des Gesundheitswesens</td>
<td>0.157 (0.141)</td>
<td>0.04</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fachschule (FRG)</td>
<td>0.397 (0.246)</td>
<td>0.01</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Beamtenausbildung</td>
<td>0.118 (0.135)</td>
<td>0.05</td>
<td>-0.116 (0.158)</td>
<td>0.08</td>
<td>-0.116 (0.158)</td>
<td>0.08</td>
</tr>
<tr>
<td>Sonst. berufsbildender Abschluß</td>
<td>-0.345** (0.082)</td>
<td>0.17</td>
<td>-0.371** (0.137)</td>
<td>0.15</td>
<td>-0.371** (0.137)</td>
<td>0.15</td>
</tr>
<tr>
<td>Ingenieur-/Fachschule (GDR)</td>
<td>-0.122 (0.128)</td>
<td>0.15</td>
<td>-0.122 (0.128)</td>
<td>0.15</td>
<td>-0.122 (0.128)</td>
<td>0.15</td>
</tr>
<tr>
<td>Fachhochschule</td>
<td>0.017 (0.149)</td>
<td>0.05</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Hochschule/Universität</td>
<td>0.118 (0.135)</td>
<td>0.05</td>
<td>-0.116 (0.158)</td>
<td>0.08</td>
<td>-0.116 (0.158)</td>
<td>0.08</td>
</tr>
<tr>
<td>Professional success</td>
<td>-0.358** (0.059)</td>
<td>0.61</td>
<td>-0.261** (0.086)</td>
<td>0.43</td>
<td>-0.261** (0.086)</td>
<td>0.43</td>
</tr>
<tr>
<td>Number of respondents (unweighted):</td>
<td>n = 2,375</td>
<td>1,320</td>
<td>2,375</td>
<td>1,320</td>
<td>2,375</td>
<td>1,320</td>
</tr>
<tr>
<td>Log-Likelihood</td>
<td>-1305.3</td>
<td>-608.0</td>
<td>-1305.3</td>
<td>-608.0</td>
<td>-1305.3</td>
<td>-608.0</td>
</tr>
<tr>
<td>Likelihood-Ratio-Statistic</td>
<td>584.6**</td>
<td>263.4**</td>
<td>584.6**</td>
<td>263.4**</td>
<td>584.6**</td>
<td>263.4**</td>
</tr>
<tr>
<td>Dependent variables average (weighted)</td>
<td>0.301</td>
<td>0.226</td>
<td>0.301</td>
<td>0.226</td>
<td>0.301</td>
<td>0.226</td>
</tr>
</tbody>
</table>

Dependent variable: 1 = transition, from one observation year to the next, from underemployment or unemployment/the hidden labour reserve to adequate employment; 0 = (other).

Significance level: ** = p < 0.01, * = p < 0.05, + = p < 0.10.

1) Including persons living as a married couple.
2) ‘Slightly’/‘greatly’ restricted on account of health reasons in carrying out daily tasks.
3) Including Fachabitur.
4) Only in combination with nonacademic vocational qualification.
7) ‘Professional success’ is ‘not so important’ or ‘quite unimportant’, according to German nationals (foreigners were not asked).
8) West Germany: at regional level (BfLR data - Bundesforschungsanstalt fuer Landeskunde und Raumordnung - Federal Research Institute for Regional Studies and Town and Country Planning); East Germany: at Land level (relating to place of residence).
9) Number of inhabitants in place of residence < 50 000 inhabitants.
10) Alternative status: unemployment/the hidden labour reserve.

Legend for German expressions: see table 0.

Covariates in brackets = reference category. Reference date for encoding the covariates: first year. Unweighted averages as model documentation.

Only persons having been underemployed or unemployed/in the hidden labour reserve in one observation year and interviewed the following year. One observation at the most per person (first occurrence of a possible movement). Only persons with a vocational qualification from Germany below the age of 65. Excluding interns, persons receiving training or further training, and migrants between East and West Germany since 1989. West Germany: excluding immigrants included in the "D" sample of the German Socio-Economic Panel (GSOEP).

Source: own evaluation carried out by the German Socio-Economic Panel (GSOEP).
Table 12: Determinants of the probability of transition from unemployment/the hidden labour reserve within five years (three years for the former East Germany) to adequate employment, depending on a possible interim phase of underemployment and other characteristics (West Germany and East Germany, 1984–1995 and 1991–1995, probit model)

<table>
<thead>
<tr>
<th>Covariates</th>
<th>West Germany</th>
<th>East Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Coefficient</td>
</tr>
<tr>
<td></td>
<td>(Std.dev.)</td>
<td>(Std.dev.)</td>
</tr>
<tr>
<td>Constant</td>
<td>–0.948</td>
<td>–3.253**</td>
</tr>
<tr>
<td></td>
<td>(0.674)</td>
<td>(1.002)</td>
</tr>
<tr>
<td>Male</td>
<td>0.640**</td>
<td>0.401**</td>
</tr>
<tr>
<td></td>
<td>(0.122)</td>
<td>(0.152)</td>
</tr>
<tr>
<td>Age (in years)</td>
<td>0.142**</td>
<td>0.258**</td>
</tr>
<tr>
<td></td>
<td>(0.037)</td>
<td>(0.052)</td>
</tr>
<tr>
<td>Age²/100</td>
<td>–0.222**</td>
<td>–0.350**</td>
</tr>
<tr>
<td></td>
<td>(0.047)</td>
<td>(0.064)</td>
</tr>
<tr>
<td>Foreigner</td>
<td>–0.676**</td>
<td>.</td>
</tr>
<tr>
<td></td>
<td>(0.196)</td>
<td>(. .)</td>
</tr>
<tr>
<td>Married†</td>
<td>–0.247+</td>
<td>–0.038</td>
</tr>
<tr>
<td></td>
<td>(0.132)</td>
<td>(0.185)</td>
</tr>
<tr>
<td>Restricted on account of</td>
<td></td>
<td></td>
</tr>
<tr>
<td>health reasons²</td>
<td>–0.265*</td>
<td>–0.465**</td>
</tr>
<tr>
<td></td>
<td>(0.133)</td>
<td>(0.179)</td>
</tr>
<tr>
<td>Hauptschulabschluß/8. Klasse</td>
<td>–0.232+</td>
<td>–0.380*</td>
</tr>
<tr>
<td></td>
<td>(0.143)</td>
<td>(0.197)</td>
</tr>
<tr>
<td>(Realschulabschluß/10. Klasse)⁶</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(. .)</td>
<td>(. .)</td>
</tr>
<tr>
<td>Abitur⁷</td>
<td>–0.197</td>
<td>0.212</td>
</tr>
<tr>
<td></td>
<td>(0.346)</td>
<td>(0.422)</td>
</tr>
<tr>
<td>(Lehre)⁵</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(. .)</td>
<td>(. .)</td>
</tr>
<tr>
<td>Meister (GDR)</td>
<td></td>
<td>0.291</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.338)</td>
</tr>
<tr>
<td>Berufsfachschule</td>
<td>0.093</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td>(0.193)</td>
<td></td>
</tr>
<tr>
<td>Schule des Gesundheitswesens</td>
<td>0.372</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>(0.377)</td>
<td></td>
</tr>
<tr>
<td>Fachschule (FRG)</td>
<td>0.471+</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>(0.256)</td>
<td></td>
</tr>
<tr>
<td>Beamtenausbildung</td>
<td>0.445</td>
<td>0.02</td>
</tr>
<tr>
<td></td>
<td>(0.465)</td>
<td></td>
</tr>
<tr>
<td>Sonst. berufsbildender Abschluß</td>
<td>–0.473+</td>
<td>0.11</td>
</tr>
<tr>
<td></td>
<td>(0.274)</td>
<td></td>
</tr>
<tr>
<td>Ingenieur-/Fachschule (GDR)</td>
<td></td>
<td>–0.057</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.241)</td>
</tr>
<tr>
<td>Fachhochschule</td>
<td>–0.445</td>
<td>0.03</td>
</tr>
<tr>
<td></td>
<td>(0.405)</td>
<td></td>
</tr>
<tr>
<td>Hochschule/Universität⁶</td>
<td>–0.385</td>
<td>–0.017</td>
</tr>
<tr>
<td></td>
<td>(0.253)</td>
<td>(0.303)</td>
</tr>
<tr>
<td>Profess. success is not important⁷</td>
<td>–0.541**</td>
<td>–0.093</td>
</tr>
<tr>
<td></td>
<td>(0.146)</td>
<td>(0.217)</td>
</tr>
<tr>
<td>Regional unemployment figures⁸</td>
<td>–0.036*</td>
<td>–0.063*</td>
</tr>
<tr>
<td></td>
<td>(0.018)</td>
<td>(0.029)</td>
</tr>
<tr>
<td>Rural area⁹</td>
<td>–0.055</td>
<td>–0.371*</td>
</tr>
<tr>
<td></td>
<td>(0.120)</td>
<td>(0.162)</td>
</tr>
<tr>
<td>Interim phase:</td>
<td></td>
<td>–1.409**</td>
</tr>
<tr>
<td>underemployment¹⁰</td>
<td>–1.582**</td>
<td>(0.133)</td>
</tr>
<tr>
<td></td>
<td>(0.35)</td>
<td>(0.182)</td>
</tr>
<tr>
<td>Number of respondents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(unweighted): n = 707</td>
<td></td>
<td>463</td>
</tr>
<tr>
<td>Log-Likelihood</td>
<td>–317.7</td>
<td>–212.3</td>
</tr>
<tr>
<td>Likelihood-Ratio-Statistic</td>
<td>373.0**</td>
<td>163.2**</td>
</tr>
<tr>
<td>Dependent variables average</td>
<td>0.456</td>
<td>0.307</td>
</tr>
<tr>
<td>(weighted)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dependent variable: 1 = transition within five years (three years for the former East Germany) from unemployment/the hidden labour reserve to adequate employment; 0 = (other). Significance level: ** = p < 0.01, * = p < 0.05, + = p < 0.10.  

1) Including persons living as a married couple.  
2) "Slightly"/"greatly" restricted on account of health reasons in carrying out daily tasks.  
3) Including Fachabitur.  
4) Only in combination with nonacademic vocational qualification.  
7) "Professional success" is "not so important" or "quite unimportant", according to German nationals (foreigners were not asked).  
8) West Germany: at regional level (BfLR data: Bundesarbeitsamt fuer Bundesgebiet und Raumordnung - Federal Research Institute for Regional Studies and Town and Country Planning); East Germany: at Land level (relating to place of residence).  
9) Number of inhabitants in place of residence < 50 000 inhabitants.  
10) Transition from unemployment/the hidden labour reserve following a phase of underemployment.  

Legend for German expressions: see table 0. Covariates in brackets = reference category. Reference date for encoding the covariates: first year. Unweighted averages as model documentation. Only persons having been unemployed in the hidden labour reserve in one of the observation years (1984–1995) (East Germany: 1991–1995) and interviewed within the following five years (three years for the former East Germany). One observation at the most per person (first occurrence of a possible transition). Only persons with a vocational qualification from Germany below the age of 65. Excluding internes, persons receiving training or further training, and migrants between East and West Germany since 1989. West Germany: excluding immigrants included in the "D" sample of the German Socio-Economic Panel (GSOEP).  

Source: own evaluation carried out by the German Socio-Economic Panel (GSOEP).
Table 13: Determinants of income growth, depending on adequate employment at the beginning of the observation period and other influential factors (West Germany and East Germany, 1984–1995 and 1991–1995, OLS)

<table>
<thead>
<tr>
<th>Covariates</th>
<th>West Germany</th>
<th></th>
<th></th>
<th>East Germany</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient (Std.dev.)</td>
<td>Average</td>
<td>Coefficient (Std.dev.)</td>
<td>Average</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.449** (0.064)</td>
<td>–</td>
<td>0.418** (0.134)</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0.070** (0.009)</td>
<td>0.61</td>
<td>–0.015 (0.013)</td>
<td>0.54</td>
<td></td>
</tr>
<tr>
<td>Age (in years)</td>
<td>0.005 (0.003)</td>
<td>40.04</td>
<td>0.001 (0.005)</td>
<td>40.64</td>
<td></td>
</tr>
<tr>
<td>Age2/100</td>
<td>–0.008* (0.003)</td>
<td>17.42</td>
<td>–0.0002 (0.006)</td>
<td>17.50</td>
<td></td>
</tr>
<tr>
<td>Foreigner</td>
<td>–0.044** (0.014)</td>
<td>0.16</td>
<td>. ( . )</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>Married¹</td>
<td>0.013 (0.009)</td>
<td>0.67</td>
<td>0.009 (0.016)</td>
<td>0.77</td>
<td></td>
</tr>
<tr>
<td>Restr. on acc. of health reasons²</td>
<td>–0.024 (0.009)</td>
<td>0.28</td>
<td>–0.027+ (0.014)</td>
<td>0.28</td>
<td></td>
</tr>
<tr>
<td>Hauptschulabschluß/8. Klasse</td>
<td>–0.073* (0.010)</td>
<td>0.46</td>
<td>–0.064** (0.018)</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>(Realschulabschluß/10. Klasse)³</td>
<td>. ( . )</td>
<td>.</td>
<td>. ( . )</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>Abitur⁴</td>
<td>0.081** (0.021)</td>
<td>0.04</td>
<td>0.059 (0.037)</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>(Lehre)⁵</td>
<td>. ( . )</td>
<td>.</td>
<td>. ( . )</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>Meister (GDR)</td>
<td>0.009 (0.026)</td>
<td>0.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Berufs­fach­schule</td>
<td>0.031* (0.015)</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Schule des Gesundheitswesens</td>
<td>–0.014 (0.025)</td>
<td>0.03</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fach­schule (FFG)</td>
<td>0.074** (0.017)</td>
<td>0.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beamten­aus­bildung</td>
<td>–0.023 (0.020)</td>
<td>0.05</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sonst. berufsbildender Abschluß</td>
<td>–0.067** (0.019)</td>
<td>0.09</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ingenieur-/Fach­schule (GDR)</td>
<td>0.127** (0.018)</td>
<td>0.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fach­hoch­schule</td>
<td>0.193** (0.023)</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hoch­schule/Universität⁶</td>
<td>0.271** (0.018)</td>
<td>0.08</td>
<td>0.266** (0.022)</td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td>Profess. success is not important⁷</td>
<td>–0.021+ (0.012)</td>
<td>0.13</td>
<td>0.010 (0.025)</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>Regional unemployment figures⁸</td>
<td>–0.003* (0.001)</td>
<td>8.35</td>
<td>0.001 (0.005)</td>
<td>15.12</td>
<td></td>
</tr>
<tr>
<td>Rural area⁹</td>
<td>0.001 (0.008)</td>
<td>0.57</td>
<td>–0.056** (0.014)</td>
<td>0.70</td>
<td></td>
</tr>
<tr>
<td>Initial income/100¹⁰</td>
<td>–0.014** (0.0005)</td>
<td>29.21</td>
<td>–0.022** (0.001)</td>
<td>18.24</td>
<td></td>
</tr>
<tr>
<td>Observation period (in years)</td>
<td>0.041** (0.001)</td>
<td>6.27</td>
<td>0.140** (0.006)</td>
<td>3.06</td>
<td></td>
</tr>
<tr>
<td>Number of times the person has switched companies¹¹</td>
<td>0.014** (0.003)</td>
<td>0.92</td>
<td>–0.036** (0.007)</td>
<td>0.68</td>
<td></td>
</tr>
<tr>
<td>No. of years of econ. inactivity¹²</td>
<td>–0.037** (0.007)</td>
<td>0.10</td>
<td>–0.045 (0.050)</td>
<td>0.01</td>
<td></td>
</tr>
<tr>
<td>Number of years the person could not be observed¹³</td>
<td>0.016 (0.011)</td>
<td>0.09</td>
<td>0.009 (0.032)</td>
<td>0.04</td>
<td></td>
</tr>
<tr>
<td>Number of years unemployed/ in the hidden labour reserve</td>
<td>–0.066** (0.009)</td>
<td>0.11</td>
<td>–0.054** (0.015)</td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td>At the beginning of the income observation period: in an underskilled job¹⁴</td>
<td>–0.049** (0.011)</td>
<td>0.21</td>
<td>–0.056** (0.016)</td>
<td>0.18</td>
<td></td>
</tr>
<tr>
<td>No. of respond. (unweighted): n =</td>
<td>3,396</td>
<td>1,625</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R²adj.</td>
<td>.45</td>
<td>.47</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>F value</td>
<td>113.8**</td>
<td>73.6**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depend. var. average (weighted)</td>
<td>0.3556</td>
<td>0.4895</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Dependent variable: plotted on a logarithmic scale (final income/initial income) covering the longest possible observation period; “Income”: potential gross monthly salary, based on information relating to working time (full-time equivalent). Significance level: ** = p < 0.01, * = p < 0.05, + = p < 0.10.

Footnotes 1 to 9: see Table 12
10) Gross monthly salary in DM (full-time equivalent). ¹¹) During the observation period. ¹²) “Number of years” below: number of years the person held the corresponding employment status during the observation period. ¹³) Years missing from the panel records (non-response unit). ¹⁴) Research strategies: see text. Reference category: adequate employment.

Legend for German expressions: see table 0. Covariates in brackets = reference category. Unweighted averages as model documentation. Reference date for encoding the covariates: final year. Full-time equivalents on the basis of a 40-hour working week. Only persons with a vocational qualification from Germany below the age of 65. Excluding internees, persons receiving training or further training, and migrants between East and West Germany since 1989. West Germany: excluding immigrants included in the “D” sample of the German Socio-Economic Panel (GSOEP).

Source: own evaluation carried out by the German Socio-Economic Panel (GSOEP).
Table 14: Determinants of income growth among adequately employed people, depending on possible interim phases of underemployment and other influential factors (West Germany and East Germany, 1984–1995 and 1991–1995, OLS)

<table>
<thead>
<tr>
<th>Covariates</th>
<th>West Germany</th>
<th>East Germany</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>Coefficient</td>
</tr>
<tr>
<td></td>
<td>(Std.dev.)</td>
<td>(Std.dev.)</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>Average</td>
</tr>
<tr>
<td><strong>Constant</strong></td>
<td>0.496**</td>
<td>0.440**</td>
</tr>
<tr>
<td><strong>Male</strong></td>
<td>0.056**</td>
<td>0.002</td>
</tr>
<tr>
<td><strong>Age (in years)</strong></td>
<td>-0.000</td>
<td>0.002</td>
</tr>
<tr>
<td><strong>Age/100</strong></td>
<td>0.002</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Foreigner</strong></td>
<td>-0.047**</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Married</strong></td>
<td>0.014</td>
<td>0.004</td>
</tr>
<tr>
<td>Restricted on account of health</td>
<td>-0.040**</td>
<td>0.002</td>
</tr>
<tr>
<td>reasons**</td>
<td>-0.005</td>
<td>0.002</td>
</tr>
<tr>
<td><strong>Hauptschulabschluß/8. Klasse</strong></td>
<td>-0.070**</td>
<td>-0.004**</td>
</tr>
<tr>
<td>(Realschulabschluß/10. Klasse)**</td>
<td>-0.034+</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Abitur</strong></td>
<td>0.074**</td>
<td>0.007</td>
</tr>
<tr>
<td>(Lehre)**</td>
<td>0.045**</td>
<td>0.019</td>
</tr>
<tr>
<td><strong>Meister (GDR)</strong></td>
<td>0.023</td>
<td>0.008</td>
</tr>
<tr>
<td><strong>Schule des Gesundheitswesens</strong></td>
<td>-0.020</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Fachschule (FRG)</strong></td>
<td>0.045**</td>
<td>0.009</td>
</tr>
<tr>
<td><strong>Beamtenausbildung</strong></td>
<td>-0.034+</td>
<td>-0.001</td>
</tr>
<tr>
<td><strong>Sonst. berufsbildender Abschluß</strong></td>
<td>-0.042+</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Ingenieur-/Fachschule (GDR)</strong></td>
<td>0.167**</td>
<td>0.17</td>
</tr>
<tr>
<td><strong>Fachhochschule</strong></td>
<td>0.177**</td>
<td>0.002</td>
</tr>
<tr>
<td><strong>Hochschule/Universität</strong></td>
<td>0.225**</td>
<td>0.018</td>
</tr>
<tr>
<td><strong>Profess. success is not important</strong></td>
<td>-0.005</td>
<td>0.013</td>
</tr>
<tr>
<td><strong>Regional unemployment figures</strong></td>
<td>-0.004**</td>
<td>0.001</td>
</tr>
<tr>
<td><strong>Rural area</strong></td>
<td>0.008</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>Initial income/100</strong></td>
<td>-0.012**</td>
<td>0.000</td>
</tr>
<tr>
<td>Observation period (in years)</td>
<td>0.045**</td>
<td>0.001</td>
</tr>
<tr>
<td>Number of times the person has</td>
<td>0.020**</td>
<td>0.003</td>
</tr>
<tr>
<td>switched companies</td>
<td>-0.041**</td>
<td>0.011</td>
</tr>
<tr>
<td>No. of years of econ. inactivity</td>
<td>-0.041**</td>
<td>0.007</td>
</tr>
<tr>
<td>Number of years the person could</td>
<td>0.016</td>
<td>0.008</td>
</tr>
<tr>
<td>not be observed</td>
<td>0.033</td>
<td>0.003</td>
</tr>
<tr>
<td>No. of years unemployed/</td>
<td>-0.071**</td>
<td>0.001</td>
</tr>
<tr>
<td>in the hidden labour reserve</td>
<td>-0.018+</td>
<td>0.009</td>
</tr>
<tr>
<td>No. of respond. (unweighted): n =</td>
<td>2,835</td>
<td>1,295</td>
</tr>
<tr>
<td>R2adj.</td>
<td>.48</td>
<td>.50</td>
</tr>
<tr>
<td>F value</td>
<td>107.5**</td>
<td>65.5**</td>
</tr>
<tr>
<td>Depend. var. average (weighted)</td>
<td>0.3505</td>
<td>0.4917</td>
</tr>
</tbody>
</table>

Dependent variable: plotted on a logarithmic scale (final income/initial income) covering the longest possible observation period; “Income”: potential gross monthly salary, based on information relating to working time (full-time equivalent).

Significance level: ** = p < 0.01, * = p < 0.05, + = p < 0.10.

Footnotes 1 to 9: see Table 12
10) Gross monthly salary in DM (full-time equivalent).
11) During the observation period.
12) “Number of years” below: number of years the person held the corresponding employment status during the observation period.
13) Years missing from the panel records (non-response unit).
14) Research strategies: see text.

Legend for German expressions: see table 0.

Covariates in brackets = reference category. Unweighted averages as model documentation. Reference date for encoding the covariates: final year. Full-time equivalents on the basis of a 40-hour working week. Only persons adequately employed from the beginning to the end of the examination period.

Only persons with a vocational qualification from Germany below the age of 65. Excluding internees, persons receiving training or further training, and migrants between East and West Germany since 1989. West Germany: excluding immigrants included in the “D” sample of the German Socio-Economic Panel (GSOEP).

Source: own evaluation carried out by the German Socio-Economic Panel (GSOEP).