

# VOCATIONAL EDUCATION AND LABOUR MARKETS IN DEREGULATED, FLEXIBLY COORDINATED AND PLANNED SOCIETIES

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**ABSTRACT:** This article deals with consequences of different educational and labour market regimes for the matching of people to jobs. It differentiates between flexibly coordinated, planned and deregulated societies, focusing on the Federal Republic of Germany, the German Democratic Republic and the United States of America. The empirical analyses are based on the German Socio-Economic Panel (GSOEP) and the Panel Study of Income Dynamics (PSID). The analyses confirm most of the hypotheses. In all three countries, many employees have to deal with a mismatch between their qualification and the requirements of their jobs. The number of employees with a mismatch is considerably higher in the United States. However, this applies especially to young employees. In Germany, young people have a much better chance of using most of their qualifications in their first jobs, but their position in the labour market will worsen as they grow older. As expected, overqualified people earn considerably less than their colleagues who are working in adequate jobs. However, education is still worthwhile even if one is overqualified.

**Key words:** labour market; job matching; overqualification; income inequality; social stratification

The relation between education and jobs is in many respects an important research topic. It is a component of research into social inequality, mobility, education and labour policy, and transformation processes. The applicability of acquired qualifications is not only important in respect of its causes, but especially in respect to its consequences for the economy as a whole, as well as for individual firms and people.

Nevertheless, this research topic has been generally neglected. For example, there are a number of theories and many empirical analyses

which claim that social inequalities generated in the labour market are mainly caused by the supply side of the labour market. In contrast to that, there are theories and analyses focusing on the demand side of the labour market. Until now, however, less attention has been paid to the consequences for social inequalities if the supply side and the demand side are not linked. In this respect it is not sufficient simply to just discuss the number of employees with adequate or inadequate employment. Regarding social inequalities, it is also very important to focus on the consequences of a non-fit of education to job for employees. This kind of approach also emphasizes the importance of the question of which groups of employees are especially affected by a mismatch.

The lack of research is especially apparent in the case of international comparisons. It is interesting that many previous studies of the situation in the United States deal with this subject by looking at all employees, which means that they employ an overall perspective of a fit between employees and jobs (e.g. Duncan and Hoffman 1981; Clogg and Shockey 1984; Shockey 1989; Sicherman 1991; Halaby 1994). The previous empirical analyses concerned with the 'former' Federal Republic of Germany, however, focus mainly on a specific group of people coupled with a specific phase of their working life, which is most frequently the transition from school to work (thus also dealing with the quality of the German (dual) vocational educational system; e.g. Jansen 1993; Witzel 1993; Büchel 1994). The German-American studies by Büchtemann *et al.* (1993) and Büchel and Witte (1997) also belong to this second group. Other studies, however, concentrate on the labour market situation of (West German) employees who have recently finished university (e.g. iwd 1994; Plicht *et al.* 1994; Brüderl *et al.* 1995). However, studies which approach this subject with a broader perspective and thereby also provide an overall view of the German situation, let alone the situation in the former German Democratic Republic, or even comparative analyses, are very rare (see Witte and Kalleberg 1995).<sup>1</sup> A similar situation applies to comparisons between women and men (for a study on immigrants, see Szydlik 1998).

This article has two main purposes. The first is to provide a general overview of the relation between education and jobs in deregulated, flexibly coordinated and planned societies by taking the United States of America, the Federal Republic of Germany and the German Democratic Republic as examples. The second is to specifically investigate whether social inequalities which are generated in the labour market are dependent on the matching of people to jobs. In this respect, I shall concentrate on earned income differences.

1. Witte and Kalleberg focus on employed persons who have a German vocational education and are not supervisors in West Germany between 1984 and 1990.

## 1 General models and hypotheses

There are a number of reasons behind a (mis)match between education and employment. These reasons are partly intertwined, as are some of the theoretical approaches that can be applied to this question, and which yield general hypotheses for the following empirical analyses.

Starting with *human capital theory* (Schultz 1961; Mincer 1974; Becker 1975), one could argue that a discrepancy between education and job is only a temporary phenomenon if it occurs at all, implying that, in the long run, there should be a fit between acquired and required qualifications. For example, a greater supply of qualified workers would be likely to decrease their incomes, whereupon the companies would adjust their production in order to employ more qualified workers (Duncan and Hoffman 1981; see also Sicherman 1991; Bills 1992). At the same time, rational profit-oriented individuals would invest only in human capital which is likely to yield the highest returns. However, even for rational, profit-oriented individuals it may be rather difficult to foresee, at the beginning of their education, which qualifications will be in demand by the time they will have finished their education (for example, due to technological progress, changing production methods, economic cycles, as well as the number of people simultaneously starting the same course of education).<sup>2</sup>

The fit between education and job is likely to depend on the relation between all of the acquired and required qualifications. Hence, in the *job competition model* (Thurow 1975), the potential employees are seen as competitors concerning the costs for further firm-internal training, meaning that the potential employee who is most successful in this respect will be employed first. On the one hand, this can lead to employees who are indeed overqualified for their jobs because it is likely that overqualified people need the shortest training period.

On the other hand, it may be assumed that these overqualified employees earn less than they would in an adequate job since they can use only part of their acquired qualifications directly.<sup>3</sup> This does not necessarily imply, however, that their additional qualifications are totally useless. Overqualified employees should be more likely to advance to better paid

2. Hence, it may be assumed that there is greater competition for the better paid jobs, i.e. more individuals acquire the necessary qualifications than can be employed.

3. 'Since this allocation is based on available supplies of both individuals and jobs, workers may possess more education and skills than their jobs require. In other words, employers may be unable or unwilling to fully utilize the education and skills of their workers' (Rumberger 1987: 26). In this context, Jovanovic (1979; see also Petersen and Spilerman 1990) also talks about a possible strategy of employers: employees who are not easily laid off are put into jobs for which they are overqualified in order to get them to quit their jobs.

positions. For example, employees with a university degree who work at a job 'only' requiring a vocational education might receive higher wages than employees with a vocational education who are adequately employed. Income analyses explicitly dealing with overqualification prove that additional qualifications still yield interest, though to a smaller degree (see Duncan and Hoffman 1981; Rumberger 1987; Hartog and Oosterbeek 1988; Shockey 1989; Schwarze 1993; Witte and Kalleberg 1995). At the same time, it may be assumed that overqualified employees whose job is still relatively similar to the one they were trained for make more money than if there were little or no similarity.

*Segmentation theory* (e.g. Doeringer and Piore 1971; Lutz 1987; Sengenberger 1987; Szydlík 1990) also offers a number of hypotheses which can be applied to the issue of matching people and jobs. It may be assumed that the secondary, 'unstructured' segment, with its low qualification requirements, includes a large number of overqualified employees. As most Germans have had a vocational education, this might apply especially to the German case. It would probably be extremely difficult for these employees to change to an adequate job (i.e. the primary labour market segment).

Due to firm-internal career ladders, it may be assumed that shorter tenure is often accompanied by overqualification. Employees in the so-called entry ports of the 'firm-internal' segment are not likely to be able to meet these higher requirements right away. Thus, their chance of attaining a position adequate to their education would not increase until they had worked in the same company for some time. On the one hand, this is due to the necessity of attaining firm-specific knowledge and abilities. This is a good example of human capital theory and demand-oriented theories fitting with each other. In principle, this assumption also goes along with the human capital theory (see Sicherman 1991; Bills 1992). On the other hand, overqualified employees usually do not advance to adequate jobs until their superiors advance as well or leave the company (see vacancy chain theory: White 1970, Sørensen 1977). Sometimes, it is even possible to achieve a formal underqualification by means of firm-internal mobility regimes. For example, this might be the case if a position which formerly required a vocational education coupled with on-the-job training now requires a university degree. At the same time, shorter tenure might accompany overqualification because the employees concerned might work in the unstructured segment with its low qualification requirements and its high turnover rates.

Last but not least, it may be assumed that women are more likely to be affected by a mismatch than men. Among some of the reasons might be interruptions to employment through raising a family coupled with a dequalification (due to qualifications not having been used), the shift of

jobs into 'low wage countries' (for example, the tailoring industry), vocational segregation and labour market discrimination. A similar situation applies to ethnic minorities.

To sum up, based on the arguments developed in this section and the available datasets, the following hypotheses will be tested by the empirical analyses. (1) In contrast to assumptions of human capital theory, a considerable number of employees are overqualified for their jobs. (2) The number of inadequately employed people in a specific country not least depends upon the overall relation between acquired and required qualifications. (3) Shorter tenure is accompanied by higher overqualification rates, whereas longer tenure leads to a better fit of initial qualification and current job. Underqualification, although comparatively rare, is accompanied by longer tenure. (4) Women and ethnic minorities are more likely to be affected by overqualification. (5) Overqualified people earn less than their adequately employed colleagues. However, their additional qualifications will still yield interest, though to a smaller degree.

## **2 Fit of acquired and required qualifications in deregulated, flexibly coordinated and planned societies**

Besides specific educational systems, the question to what extent different economic systems show similar or different allocation mechanisms is of special interest. In the competition between different economic systems, it is not only the educational regimes and the specific labour markets which play a significant role but in particular the relation between these two. In this respect, a comparison between the United States, the 'former' Federal Republic of Germany and the former German Democratic Republic is likely to be especially informative. This is due especially to the fact that the three countries represent three different types of economic regimes, namely deregulated, flexibly coordinated and planned regimes.

Mayer (1997), referring to, among others, former publications by Soskice (1991) and Streeck (1992), differentiates between two distinct regimes of modern Western market economies. The general distinction between deregulated and flexibly coordinated corporate systems is based on the amount of trust involved in these systems. Deregulated societies such as the USA

are equipped with little advance of trust. . . . The state stays to a large extent outside the contractual relations between employees and employers. It does not assume much responsibility in the area of occupational training. Individual and firm investments in training are therefore small. There is no quality

standardization and there are no formal degrees and certificates which are accepted across firms. . . . The first jobs in the employment history are usually part of a search process and are, therefore, of a shorter duration. . . . Income trajectories . . . are closely attached to actual productivity.

(Mayer 1997: 219f.)

In contrast, flexibly coordinated societies, such as the FRG, are equipped with

stronger trade unions and a more active role of the state as an agent ensuring high trust relationships between union and employers' associations. . . . Individual investments in training are possible because individuals can rely on ensuing employment and wage rewards. Conversely, companies are prepared to invest in training because they believe that those qualified employees whom they need will remain with the company after training.

(Mayer 1997: 221)<sup>4</sup>

Within this comparison, the educational and economic systems of the USA and that of the German Democratic Republic occupy opposite ends of a large continuum – with the Federal Republic of Germany being located in between these two. The American deregulated economy is clearly closer to the ideal of a free economy than the highly institutionalized and flexibly coordinated West German economy. And vice versa, in comparison to other former Eastern bloc countries, the East German economy comes closest to the ideal of a planned economy. For example, Hungary had experienced a greater degree of freedom at enterprise level since the end of the 1960s/beginning of the 1970s than the German Democratic Republic (see Deppe and Hoß 1989).

A comparison between the Federal Republic of Germany and the USA yields a number of differences which may eventually lead to the identification of specific causes, extents and consequences regarding the fit between education and employment. Looking at the differences between the economic systems examined, the following general hypothesis may be made: a higher degree of regulation of the educational and economic systems leads to a better fit of acquired and required qualifications. This is especially true if vocational education and employment are coordinated, e.g. by easily accessible information about future bottle-necks in specific vocations, by firm-based educational systems and by standardized vocational certificates. Thus, in general, it may be assumed that, as a result of the less regulated education system and the less formalized job requirements in the USA, there is a somewhat greater discrepancy between

<sup>4</sup> Regarding the skill-labour nexus see also Boyer and Caroli 1993; Tessaring 1998.

formal qualifications and jobs in the USA than in the highly institutionalized FRG and in the GDR.

For example, in the GDR the individual had a lesser degree of freedom in choice of qualifications than in the FRG. The number of participants in the various courses of training was centrally defined. If there was a discrepancy between the number wanting to take up any given occupation and the number of places available, supply was matched to the demand. Schools often tried to 'push' future trainees into specific fields (see Klier 1990; Winkler 1990: 43ff.).<sup>5</sup> It may thus be assumed that investments in education can be made more efficiently in planned economies. The future application of these investments would be rather unpredictable in free-market systems due to limited information. This means that those qualification redundancies which were caused by insufficient information should, in theory, have been less frequent in the GDR. Moreover, it may be argued that the slower economic development in the GDR made it easier to foresee what qualifications would be required in future (Trappe and Rosenfeld 1998; Solga and Konietzka 1999).

A significant difference between Germany and the USA is the greater importance of on-the-job training as practised in the USA. Since the USA lacks a developed firm-based vocational educational system with standardized training regulations (such as in the FRG), the necessary qualifications often have to be learned directly on-the-job. This could result in specific consequences for the chances and the risks, respectively, of a (non-) fit during an individual's life course. Thus, within the West German dual education system, younger employees in particular should have a better fit since their vocational knowledge and abilities have only recently been gained – and hence they are not yet prone to be devalued by technological developments.<sup>6</sup> In the USA, however, it may be assumed that employees only attain an adequate job after a certain period of time. An American education which is not firm-based means that specific qualification requirements cannot be fulfilled without on-the-job training. Hence young high school graduates, for example, show a greater degree of job mobility between 'simple' jobs (Amirault 1992; Büchtemann *et al.* 1993: 510; Veum and Weiss 1993; see also Allmendinger 1989). That is, as long as they do not have any additional job-specific qualifications, many young Americans can hardly make use of their qualifications. It is only with the

5. Within the given framework, however, decisions concerning investments in education were also made individually.

6. Older West German employees may be particularly affected by technological development (e.g. computers) or new production methods (i.e. lean production, lean management), the extinction of occupations or their removal to Southeast Asia, not least because their education was completed a long time ago.

aid of such additional qualifications that they have a chance of getting an adequate job.<sup>7</sup>

However, it is not only the differences in the educational systems which leads to the differences in the degree of inadequate employment between societies. Since Taylorist production methods are relatively widespread in the USA (Büchtemann *et al.* 1993: 516), there should be more jobs with low requirements in the USA in comparison to Germany. In other words, the secondary labour market segment in the USA should be larger than in Germany. Thus, on the one hand, there should be more overqualified employees in the USA, but on the other hand, there should also be more people with a lower formal qualification. Once again, on-the-job training is of special importance here.

The significance of system differences, however, does not refer only to the chance of being adequately employed. Indeed, the consequences of a (mis)fit are of special importance, not least in respect of social inequality. The following hypothesis may be made: in deregulated economies, in which formal education certificates play a minor role, the economic consequences of overqualification are greater for the employees than in flexibly coordinated systems, let alone planned economies. In addition, loss of income due to overqualification is likely to depend on the extent of redundant vocational knowledge and abilities. Employing a labour market segmentation framework, one may argue that income losses due to overqualification might be greater in the USA than in Germany. In the USA there are two distinct labour market segments, whereas the special vocational training system in Germany constitutes the basis for a medium, *fachspezifisches* segment. Thus, for example, in the USA overqualified employees with a college degree find themselves working in the relatively large secondary labour market segment, where they can hardly use their qualifications. In Germany, however, overqualified employees with a university degree are likely to work in the medium segment, where they can still use a relatively large part of their qualifications.

Thus, apart from the general hypotheses developed in the last section, the following country-specific hypotheses will be tested by the empirical

7. In the FRG and the USA, the median school-leaving age is 18 years. In the FRG, those students attending a lower secondary school (*Hauptschule*) usually leave school at 16, students attending an intermediate school (*Realschule*) at 17 and grammar school pupils at 19.5 years. In the USA, students generally finish high school at 18, although about 15 to 20 per cent are high school dropouts. The number of *Hauptschule* dropouts in the 'former' FRG was below 7 per cent in 1991 (Büchtemann *et al.* 1993; Kaufman and Frase 1990; BMBW 1992). For more detailed information on the German education system see e.g. Phillips 1995, and Witte and Kalleberg 1995. For a detailed comparison of West German and American vocational educational systems see Hamilton 1990, and Hamilton and Hurrelmann 1993.



analyses. (1) In the USA there is a higher number of overqualified as well as (formally) underqualified employees than in Germany. The highest number of qualified people with a fit of acquired and required qualifications is to be found in the GDR. (2) The highest number of jobs with low requirements can be found in the USA. (3) In Germany, a mismatch increases with age, whereas in the USA exactly the reverse occurs. (4) In the USA, income effects of overqualification are greater than in Germany.

### 3 Method

Research on the fit of acquired and required qualifications is difficult enough when concentrating on only one country. It is even more difficult in the case of international comparisons. Four problems have to be solved. First, one has to define a fit-variable on theoretical grounds which is suitable for all the countries involved. Second, one has to find appropriate datasets. Third, one needs to create a fit-variable based on the first two steps. Fourth, one has to make several decisions on the individuals to be included.

The fit-variable: theoretical considerations

Previous operationalizations of the fit between employees and jobs may be divided into two groups. One approach determines the job requirements by looking at the occupation of the respondent and matching the mean qualification requirements from an outside source. Investigations for the USA often employ the *Dictionary of Occupational Titles* (DOT; e.g. Rumberger 1987; US Department of Labor 1972: 652) or the mean qualification level of the employees within each occupation (e.g. Clogg and Shockey 1984; Shockey 1989). The major disadvantage of this approach is that there are discrepancies between the mean requirements for the occupation and the specific requirements for the respondent's job (see Sicherman 1991: 118; Halaby 1994; Tessaring 1998).

The other approach uses information on job requirements reported by the respondents themselves (e.g. Duncan and Hoffman 1981; Sicherman 1991; Halaby 1994). Using this measure, the different job requirements of employees in the same occupation can be identified; thus one does not need to rely on aggregated data. It may be argued, of course, that the disadvantage of this approach is the reliance on the information provided by the respondents. The same argument, however, applies to all other variables (such as the acquired qualifications). Nevertheless, in my

opinion, the appropriate level of analysis is not occupation but the current job of the respondent.

When comparing different countries, two questions are of especial importance: (1) do the specific situations of the different countries allow a comparison at all, and (2) are the datasets and questionnaires which are available from these countries compatible with one another? Thus, in comparing the FRG, the GDR and the USA, not only the different education systems but also the different labour market regulations and structures must be taken into account.

In principle, one might assume that 100 per cent of qualified employees are actually overqualified for their jobs. Nobody uses every single bit of the qualifications he or she acquired during his or her vocational training every day. In reality, acquired qualifications almost always exceed the typical job requirements. It thus makes sense to develop a threshold model of overqualification. Employees are only defined as being overqualified if their acquired qualification exceeds their job requirements to a specific degree. I thus differentiate between three qualification levels which correspond to three levels of job requirements. In this article the terms 'lower', 'medium' and 'higher' (acquired or required) qualifications often have to be used since, for example, a vocational education (which may be identified as a medium qualification in the FRG and the GDR) hardly exists in the USA. An employee is defined as being overqualified if his or her level of qualification is higher than his or her job requirement level. An employee is defined as being underqualified if his or her level of qualification is lower than his or her job requirement level. A fit of acquired and required qualification exists when the respondent's level of qualification corresponds with the required qualification level of the job.

## Data

Finding data on the proposed subject which are suitable for a comparison between Germany and the USA is extremely difficult. In my opinion, this is the main reason why so few international comparisons on the fit of acquired and required qualifications have so far been conducted. While most datasets offer information on acquired qualification, very few of them include information on job requirements at all and, if they do, the corresponding questions are hardly comparable from a cross-national point of view. The availability of corresponding datasets is also the main reason for the lack of cross-national, longitudinal research on this subject, which does not refer only to specific (younger) age groups.

The empirical analyses are based on data from the German Socio-Economic Panel (GSOEP) and the Panel Study of Income Dynamics

(PSID). These are the best datasets currently available for conducting a cross-national comparison between Germany and the USA regarding the fit of acquired and required qualification. Due to database restrictions of the PSID, the analyses for the USA are based on the year 1985, which is the eighteenth wave of the PSID. For both the FRG and the GDR, the analyses are based on the year 1990, which is the seventh wave of the GSOEP-West and the first wave of the GSOEP-East.

The German Socio-Economic Panel (see Burkhauser *et al.* 1997) is a wide-ranging representative, longitudinal study of private households in Germany. For the 'former' Federal Republic of Germany (including West Berlin), information on individuals, families and households has been collected since 1984. The GSOEP-West started with 12,290 respondents in 5921 households. Since then, the same individuals and households have been interviewed once every year. As early as June 1990, that is, before the currency, economic and social union of 1 July 1990, the survey was extended to include the territory of the former GDR (GSOEP-East). The first wave of the GSOEP-East (all in all 4453 respondents) does not represent a perfect baseline in the sense of a basic survey in a stable planned economy system. But Schwarze (1991: 205) concludes: 'Hence the income generating process has not changed significantly in the first three-quarters of the year after the fall of the Wall'.

The Panel Study of Income Dynamics was started in 1968 at the Institute for Social Research in Ann Arbor, Michigan. Like the GSOEP, the study is a household panel (see Hill 1991). In 1968, information about some 18,000 individuals was gathered (4802 people were interviewed directly). When the analyses were done, questions concerning the fit between acquired and required qualifications which correspond with the GSOEP were addressed only in the surveys of 1978 and 1985. In this article, the eighteenth wave of the PSID is used, that is, the one conducted in 1985. In this wave 7032 heads of households were interviewed as well as (for the second time since the establishment of PSID) their wives or female partners.

The fit-variable: operationalization

The required level of qualification is based on the following GSOEP question: 'What kind of education does one usually need for the job you are doing?' The possible answers are: 'no special qualification necessary'; 'only a short instruction on the job'; 'a longer period of training in the firm'; 'attending special courses'; 'a completed vocational training', or 'a university degree'. The first four answers are combined when generating the fit variable. The PSID asks: 'How much formal education is required

these days to get a job like yours?'.<sup>8</sup> The possible answers lie between '0–5 grades' and 'college, advanced or professional degree'.

The fit-variable employed here is based on the educational degrees of the employees as well as on the qualification requirements of their corresponding jobs. The primary goal is to develop a variable for the three countries as well as for the two datasets which, as far as possible, is based on the same operationalization criteria. There are three categories for each country (FRG, GDR, USA): (1) basic qualification; (2) completed vocational training (GDR and FRG) or high school diploma plus vocational training or attending college without a degree or associate degree (USA) and (3) university degree (GDR and FRG) or college degree (USA).

Respondents are then assigned to one of four categories (Table 1):

- =<sup>a</sup> '*Fit: Basic qualification*': These people are neither vocationally trained nor did they attend a college/university, and their job does not require either of the two.<sup>9</sup>
- =<sup>b</sup> '*Fit: Qualification*': These employees have a fit of acquired and required qualification as well. But these people have a special qualification (which goes beyond the basic abilities and knowledge of the first category), and they also work on jobs where they need such training.
- > '*Overqualification*': The employees in this category are overqualified for their jobs. They have special qualifications. However, they can hardly or not at all use them in their jobs.

8. One might argue that GSOEP respondents would tend to assume in their answers to this question that it referred to the qualification requirements needed to do the job rather than to the requirements necessary to get the job. However, since certificates are less important in the USA and since in the USA hiring tends to be based on actual (prospective) performance, the difference between qualification requirements needed to get the job and the qualifications used on the job should not be that great. Nevertheless, when interpreting the empirical results one has to keep in mind that if one could use exactly the same question for the international comparison, one would expect to see a higher number of overqualified employees in the USA and a lower number of overqualified employees in the FRG – which would lead to even greater differences between the two countries than indicated in this article.

9. I did not further differentiate the lowest qualification category for the USA (e.g. in high school dropouts and people with a high school degree) because of the following three reasons. First, the goal was to identify vocational qualifications which go beyond a basic general education. Second, employing a cross-national perspective and taking Germany as a reference, a high school degree reflects more of a basic than a medium qualification (and job requirement) category. Third, if one split up the lowest qualification/job requirement category for the USA, one would also have to differentiate between German jobs which do not require a secondary school certificate and those which do. However, such a differentiation is not possible with the GSOEP.

< ‘*Underqualification*’: These employees are underqualified for their jobs; that is, they have a lower level of qualification than their job requires.<sup>10</sup>

**TABLE 1. Operationalization of the fit-variable**

	<i>Job requirements</i>		
	<i>Basic qualification</i>	<i>Vocational training/ some college</i>	<i>College/ university</i>
<b>Qualification</b>			
Basic qualification	= <sup>a</sup>	<	<
Vocational training/some college	>	= <sup>b</sup>	<
College/university	>	>	= <sup>b</sup>

*Notes*

- =: Education equals requirements
- <: Person is underqualified
- >: Person is overqualified

Sample

The empirical analyses for the FRG, as well as for the GDR and the USA, are based on the individuals who were employed at the time of the survey. Self-employed persons are excluded because they represent a special group in respect of the match between their acquired and required qualifications. Apprentices are also excluded, in order to avoid an increase in the number of underqualified people by counting people who are currently working on jobs they are in fact training for.

Furthermore, only European Americans and African Americans, and Germans are included in the study (that is, immigrants in Germany are excluded here; see Szydlik 1998). Although the number of Latino and Asian Americans in the USA has been increasing steadily over the last few years, neither of these groups could be included here due to the insufficient number of cases in the PSID (see Hill 1991: 3).

10. One might ask how underqualified people are able to do their jobs. In most cases, underqualified people who are able to keep their jobs are likely to be those who have a lower formal qualification but who have been promoted to their job through a career ladder system and/or by further education and on-the-job training. For example, in Germany employees with a vocational training might work on a job which ‘only’ required a vocational training when they got the job, but which in the meantime requires a university degree.

## 4 Results

Table 2 shows the corresponding percentages of employees with a basic qualification, with a medium qualification and with a college or university degree. Thus each of the columns adds up to 100 per cent. There is a differentiation between acquired and required qualifications (the two columns for the single countries are each based on the same respondents).

As expected, compared to the GDR and the FRG, the percentage of employees with a higher education is significantly lower in the USA. Thirty-six per cent of the American employees have only a high school diploma (i.e. they attended school for twelve years: see n. 8). In the German Democratic Republic, however, only 3.5 per cent of the employees had no vocational training or university degree. In the case of West Germans this applies to nearly 5 per cent.

At the same time, Table 2 shows that there is an obvious discrepancy between all of the acquired and all of the required qualifications in all three countries, implying that the requirements are lower than the qualifications. However, this is less true of the highest degrees. In the case of college and university degrees, the relation between supply and demand is roughly counterbalanced. There are differences, however, in the case of the medium categories. The largest differences can be found in the USA.

By way of further analyses, which are not shown here, it is determined which jobs employees with the corresponding qualifications are employed in. Once again, the most striking differences may be seen in the medium category. In the USA there are relatively few employees with vocational training or who have attended college but did not receive a degree who are adequately employed. These results reflect the fact that, compared to the qualifications acquired within the West German dual system, the qualifications acquired outside the job setting in the USA may be applied

**TABLE 2. Acquired and required qualifications**

	<i>FRG</i>		<i>GDR</i>		<i>USA</i>	
	<i>Acquired</i>	<i>Required</i>	<i>Acquired</i>	<i>Required</i>	<i>Acquired</i>	<i>Required</i>
Basic qualification	5.1	36.8	3.5	27.0	35.5	56.1
Training/vocation	81.6	50.6	87.9	65.6	38.2	16.1
College/university	13.4	12.6	8.5	7.3	26.2	27.8
n	3188	3188	2946	2946	3944	3944

*Database*

German Socio-Economic Panel West (GSOEP-West; wave 7: 1990); German Socio-Economic Panel East (GSOEP-East; wave 1: 1990); Panel Study of Income Dynamics (PSID; wave 18: 1985). Weighted results, own calculations.

to a lesser degree to current job requirements. At the same time it is confirmed that American job requirements place less value on formal educational degrees than is the case in the FRG and the GDR. About 15 per cent of American employees with a medium qualification work in a job which actually requires a college degree. The higher percentage of formal underqualification in the USA is also explicitly documented in Table 3.

Table 3 shows the percentages of overqualified, underqualified and adequately qualified employees in the 'former' FRG, the GDR and the USA. In the case of the USA, there is a differentiation between European Americans and African Americans. Differentiations have also been made between all employees and qualified employees, as well as between women and men. The largest proportion of people with a fit between acquired and required qualifications could be found in the GDR. This supports the

**TABLE 3. Fit of acquired and required qualifications**

	FRG	GDR	USA	
			European Americans	African Americans
All employees				
Fit: basic qualification	4.9	3.2	29.6	44.9
Fit: qualification	59.4	70.6	33.5	19.9
Overqualification	33.8	25.2	26.1	30.9
Underqualification	1.9	0.9	10.7	4.3
Qualified employees				
Fit: qualification	62.6	73.2	51.0	37.0
Overqualification	35.6	26.2	39.7	57.3
Underqualification	1.8	0.6	9.3	5.7
Qualified employees: women				
Fit: qualification	59.4	71.0	49.3	38.5
Overqualification	39.5	28.5	41.2	55.7
Underqualification	1.1	0.5	9.5	5.8
Qualified employees: men				
Fit: qualification	64.8	75.1	52.4	34.4
Overqualification	32.9	24.2	38.5	59.9
Underqualification	2.3	0.7	9.1	5.7
n (all)	3182	2926	2539	1405
n (women)	1349	1401	1214	789
n (men)	1833	1525	1325	616

*Database*

German Socio-Economic Panel West (GSOEP-West; wave 7: 1990); German Socio-Economic Panel East (GSOEP-East; wave 1: 1990); Panel Study of Income Dynamics (PSID; wave 18: 1985). Weighted results, own calculations.

hypothesis that a planned economy such as that which existed in the GDR is accompanied by a better fit between education and job. If the available qualifications are centrally matched with the demands, there should be fewer redundant qualifications due to information deficits or due to pupils or parents who do not make decisions according to a rational profit-oriented calculation (Szydlik 1994).

The USA has the smallest fit between education and labour market.<sup>11</sup> The difference between the USA and the two German countries becomes especially apparent when looking at the qualified employees. According to these analyses, 40 per cent of qualified European American employees are overqualified for their jobs. In the case of African American employees, this number is even greater, at almost 60 per cent. Compared to the USA, the 'former' FRG and the GDR show a significantly better use of the available qualifications.<sup>12</sup>

Concerning the differentiation between women and men, there is no clear picture. According to these results, compared to their male counterparts, qualified European American women as well as women in the FRG and in the GDR are all disadvantaged in regard to the applicability of their qualifications. The reasons for this might include employment interruptions coupled with a dequalification (due to qualifications not being used) as the result of raising a family, the shift of jobs into 'low wage countries' (e.g. the tailoring industry), vocational segregation as well as labour market discrimination.

However, this situation is reversed for African American women. This may be due to occupational segregation of women and men. Where African American women have better chances of better jobs than African American men (such as in teaching, nursing and clerical work) they have better chances of obtaining adequate employment (see Reskin and Padavic 1994). Nevertheless, both female and male African American employees have a much greater risk of being overqualified than female and male European American employees. One important reason for this is the fact that African Americans are much more frequently employed in simple jobs

11. For empirical analyses of corresponding developments in the USA see, e.g. Rumberger 1981; Cappelli 1993.

12. One might argue that a difference of four percentage points is not that great. However, this difference represents rather a conservative estimate. First, one has to bear in mind that the PSID question underestimates the extent of actual overqualification in the USA (see above). Second, when the fit-variable for the FRG is operationalized using vocational degrees and not vocational knowledge and abilities, and when, in addition, some cases are excluded due to a comparison with the answers of the GSOEP participants regarding their vocational position, then the number of overqualified West German employees with vocational training in the year 1993 is reduced to below 29 and 26 per cent respectively (see Szydlik 1996).



with low qualification requirements, which increases considerably their risk of being overqualified.

Table 4 shows the extent to which the percentages given in Table 3 vary according to different age and tenure groups.

The most striking differences between the countries analysed occur when looking at the age groups. In the USA, the percentage of overqualified employees decreases with age, whereas it increases in the FRG. In the GDR, age seems to have been of relatively little influence. The results for the 'former' FRG may be explained by technological and organizational developments; that is, the longer the time between the end of one's education and the actual job, the greater the risk of the qualifications becoming outdated. Further analyses indicate that the results shown in Table 4 can be traced back to the employees with vocational training. The corresponding trends do not apply to university graduates.

In the USA, however, technological and organizational developments apparently do not have a specific influence on the relation between education and job requirements. Here, the youngest employees in particular are often relatively overqualified for their jobs. This may be due to the fact that there is indeed no developed vocational qualification system with standardized education regulations, so that employees often acquire the necessary qualifications directly on-the-job (see section 3). The special significance of on-the-job training may also be seen in the higher percentage of formally underqualified employees in the USA (Table 3).

These explanations are also supported by the results concerning tenure. The longer the tenure of an employee in the same firm, the less frequently he or she is overqualified, and the more frequently there is a fit between education and job. At the same time, a longer tenure increases the probability of underqualification. This means that formerly overqualified employees have the opportunity of achieving adequate jobs by means of firm-internal career ladders – and sometimes they even achieve positions for which they are formally underqualified. Shorter tenures are frequently accompanied by redundant qualifications, which implies the significance of the secondary segment, which has fewer qualification requirements and an unstable employment situation.

Several of the hypotheses mentioned in sections 2 and 3 concern matching processes. Unfortunately, longitudinal data (such as working life histories) which would provide comparable information on the matching of people and jobs in the three countries are not yet available. Nevertheless, in conducting cross-sectional analyses it is possible to obtain an empirical basis for future research using longitudinal data. One might also argue that it is problematic to conclude that employees in one country generally have a better match than employees in another country simply by quoting overqualification percentages like those presented in Table 3.

TABLE 4. Age and tenure: qualified employees only

		USA																			
		FRG					GDR					European Americans					African Americans				
		<30	30-45	>45	<30	30-45	>45	<30	30-45	>45	<30	30-45	>45	<30	30-45	>45	<30	30-45	>45		
Age																					
Fit: qualification		68.9	64.7	55.6	73.7	75.3	70.7	43.1	54.3	52.5	31.9	38.0	44.1								
Overqualification		30.0	33.3	42.3	26.0	24.0	28.5	51.4	36.3	34.1	67.4	56.5	39.9								
Underqualification		1.1	2.0	2.1	0.3	0.7	0.7	5.6	9.4	13.4	0.8	5.5	16.0								
Tenure																					
		<3	3-10	>10	<3	3-10	>10	<3	3-10	>10	<3	3-10	>10	<3	3-10	>10	<3	3-10	>10		
Fit: qualification		58.5	61.5	65.6	59.7	70.9	79.5	46.8	49.1	58.1	39.9	35.7	35.5								
Over qualification		41.0	36.4	32.1	39.5	28.5	20.0	46.0	42.6	28.8	58.1	58.5	53.2								
Under qualification		0.5	2.1	2.3	0.8	0.6	0.6	7.2	8.2	13.1	2.0	5.8	11.3								

Database

German Socio-Economic Panel West (GSOEP-West; wave 7: 1990); German Socio-Economic Panel East (GSOEP-East; wave 1: 1990); Panel Study of Income Dynamics (PSID; wave 18: 1985). Weighted results, own calculations.

For example, it has been argued that employees in the FRG may find an adequate job shortly after finishing their vocational training, whereas in the USA it may take longer. Table 4 shows that the percentage of older qualified Americans with a fit is still below the corresponding percentage of older qualified Germans, let alone young Germans. However, this is not least due to the large percentage of underqualified employees in the USA. Looking at overqualified people only, the percentage of older overqualified Americans is below the corresponding percentage of older Germans, but still higher than the percentage of younger Germans. Thus the results presented in Table 3 are confirmed by Table 4 due to three reasons: (1) in general, overqualification occurs more frequently in the USA than in the FRG; (2) inadequate employment is more likely for all age groups in the USA than in all age groups in Germany, and (3) comparing different age groups, the lowest overqualification rate in the USA is still higher than the lowest overqualification rate in the FRG.

In further analyses, which are not documented explicitly here, the four fit categories were related to economy sectors and to vocational groups. In all three countries, the public sector shows a smaller percentage of overqualified employees. Hence, greater formalization and bureaucracy leads to a better fit between supply and demand for labour. The percentages of overqualified employees in part differ significantly between different vocational groups (see Duncan and Hoffman 1981; Rumberger 1987). Managers (*Leitende Tätigkeiten im Öffentlichen Dienst und in der Wirtschaft* and *Managers and Administrators, Except Farm*, respectively) are seldom overqualified, which may be due to the higher qualification requirements. The situation is different, however, in the case of office workers (in the USA) and the service sector (in the GDR and the FRG). Both of these groups show a relatively high number of overqualified employees. Those employees who are not able to find an adequate job often work in these two fields. This might also be due to the high number of jobs for which no special qualifications are necessary.

Last but not least, an investigation is made into whether a (mis)match of people and jobs has consequences for social inequalities. This examines one of the most important dimensions of social inequalities, namely earned income. Tables 5 and 6 show multivariate income estimations. The dependent variable is the logarithm of the hourly gross incomes.<sup>13</sup>

13. The actual weekly working hours are control variables. The corresponding coefficients may be especially attributed to those who have 'normal' monthly incomes with relatively few or many weekly work hours. It cannot be definitely determined if these outliers are to be attributed to incorrect or to correct data. In the case of very high hourly earnings there is at least no economic necessity to put in longer working time in order to pay for leisure-time expenditure.

**TABLE 5. Overqualification and earned income differences**

	<i>FRG</i>		<i>GDR</i>	
	<i>Women</i>	<i>Men</i>	<i>Women</i>	<i>Men</i>
Constant	2.1118*** (0.0906)	2.4863*** (0.0586)	1.0905*** (0.0702)	1.7910*** (0.0581)
Education	0.0561*** (0.0053)	0.0629*** (0.0026)	0.0598*** (0.0037)	0.0402*** (0.0024)
Experience	0.0128*** (0.0044)	0.0377*** (0.0029)	0.0074*** (0.0027)	0.0147*** (0.0023)
(Experience) <sup>2</sup>	-0.0003*** (0.0001)	-0.0007*** (0.0001)	-0.0001** (0.0001)	-0.0003*** (0.0001)
Tenure	0.0095*** (0.0018)	0.0040*** (0.0009)	0.0037*** (0.0010)	0.0025*** (0.0008)
Hours worked	-0.0048*** (0.0011)	-0.0149*** (0.0009)	-0.0055*** (0.0010)	-0.0133*** (0.0009)
Fit: basic qualification	-0.1217** (0.0497)	-0.0846* (0.0463)	-0.1526*** (0.0444)	-0.0870* (0.0521)
Fit: qualification				
Overqualification	-0.1234*** (0.0281)	-0.0603*** (0.0163)	-0.1379*** (0.0187)	-0.0598*** (0.0166)
Underqualification	0.1303 (0.1088)	0.2051*** (0.0507)	-0.0613 (0.0766)	0.1439** (0.0691)
R <sup>2</sup>	19.47	43.84	31.06	32.84
n	1085	1610	1206	1348

  

	<i>USA: European Americans</i>		<i>USA: African Americans</i>	
	<i>Women</i>	<i>Men</i>	<i>Women</i>	<i>Men</i>
Constant	5.5902*** (0.1212)	6.0068*** (0.1131)	5.4510*** (0.1311)	5.4482*** (0.2036)
Education	0.0523*** (0.0072)	0.0454*** (0.0058)	0.0521*** (0.0078)	0.0701*** (0.0109)
Experience	0.0255*** (0.0045)	0.0384*** (0.0040)	0.0100*** (0.0031)	0.0474*** (0.0072)
(Experience) <sup>2</sup>	-0.0007*** (0.0001)	-0.0008*** (0.0001)	-0.0002*** (0.0001)	-0.0009*** (0.0002)
Tenure	0.0200*** (0.0023)	0.0157*** (0.0015)	0.0143*** (0.0024)	0.0175*** (0.0034)
Hours worked	0.0028** (0.0012)	-0.0004 (0.0012)	0.0075*** (0.0016)	-0.0025 (0.0024)
Fit: basic qualification	-0.2429*** (0.0400)	-0.2774*** (0.0390)	-0.2378*** (0.0444)	-0.2319*** (0.0768)
Fit: qualification				
Overqualification	-0.1817*** (0.0345)	-0.2327*** (0.0318)	-0.1844*** (0.0402)	-0.1595** (0.0687)
Underqualification	0.0877* (0.0468)	0.0611 (0.0436)	0.0540 (0.0658)	0.0308 (0.1255)
R <sup>2</sup>	34.72	42.52	29.15	32.41
n	1075	1169	691	539

*Database*

German Socio-Economic Panel West (GSOEP-West; wave 7: 1990); German Socio-Economic Panel East (GSOEP-East; wave 1: 1990); Panel Study of Income Dynamics (PSID; wave 18: 1985). No weighting factor, own calculations. Dependent variable: Logarithm of hourly gross incomes. Regression coefficient significant to the \*\*\* < 0.01-, \*\* < 0.05- and \* < 0.1-level. Standard error in ( ).

Table 5 shows that overqualified employees have to accept considerably lower incomes. This applies to all three of the countries and to all eight groups of employees. Thus, the corresponding hypotheses are confirmed. The highest income losses due to a mismatch may be found in the United States. For example, overqualified European American men earn 23 per cent less than those who are adequately employed.<sup>14</sup>

With the exception of European Americans, an overqualification means lower income, especially for women. Combined with the former results, this leads to a double find: on the one hand, women are more likely to be employed inadequately; on the other, inadequate employment is accompanied by greater income losses.

One might be surprised by the result that underqualified people (especially men in the 'former' FRG and in the GDR) earn more than those with a fit. Underqualified people are working on jobs with higher formal requirements than those they actually acquired. The higher income is due to the fact that such jobs generally offer higher rewards. For example, Germans with vocational training who are working on a job which requires a university degree are likely to receive higher rewards than those with vocational training who are working on a job which requires vocational training. However, as can be seen in Table 3, there are very few people who are underqualified.

Table 6 presents the results of separate models for adequately and inadequately employed persons. A higher qualification leads to a higher income, even if the employee is overqualified for the job. To employ the 'language' of human capital theory, investments in qualification are still worthwhile even if the employee is overqualified for the job, although to a much smaller degree. The educational benefits lie considerably below those of adequately employed people.<sup>15</sup> For every year of education, European Americans with a fit of qualification and job get an interest rate which is double that of overqualified employees. In the case of African Americans, this discrepancy is even greater. Qualified employees are only able to achieve the highest income if they can actually use most of their qualifications in their jobs. In accordance with Table 5, this difference is significantly greater in the USA than in the FRG or the GDR. These results also imply that the usual 6 per cent per year of education actually represents a mean between the significantly higher benefits for adequately employed and the considerably lower benefits for overqualified people.

14. As expected, the effect of tenure is greater in the USA than in Germany as a result of on-the-job training.

15. This also confirms the corresponding hypotheses mentioned above, as well as the results of other analyses (see e.g. Duncan and Hoffman 1981; Rumberger 1987; Hartog and Oosterbeek 1988; Shockey 1989).

**TABLE 6. Hourly gross incomes: adequate vs. inadequate employment**

	<i>FRG</i>		<i>GDR</i>	
	<i>Adequate</i>	<i>Inadequate</i>	<i>Adequate</i>	<i>Inadequate</i>
Education	0.0672*** (0.0028)	0.0490*** (0.0053)	0.0538*** (0.0024)	0.0340*** (0.0041)
R <sup>2</sup>	42.77	26.82	32.69	27.36
n	1753	894	1893	635
	<i>USA: European Americans</i>		<i>USA: African Americans</i>	
	<i>Adequate</i>	<i>Inadequate</i>	<i>Adequate</i>	<i>Inadequate</i>
Education	0.0851*** (0.0038)	0.0406*** (0.0090)	0.0920*** (0.0061)	0.0359** (0.0141)
R <sup>2</sup>	48.22	34.49	29.99	32.17
n	1430	580	781	392

*Database*

German Socio-Economic Panel West (GSOEP-West; wave 7: 1990); German Socio-Economic Panel East (GSOEP-East; wave 1: 1990); Panel Study of Income Dynamics (PSID; wave 18: 1985). No weighting factor, own calculations. Dependent variable: Logarithm of hourly gross incomes. Regression coefficient significant to the \*\*\* < 0.01- and \*\* < 0.05-level. Standard error in ( ). The models do not include the underqualified employees but exclusively those who are overqualified. The following variables are included in the models, but not shown here: experience, 'experience<sup>2</sup>', tenure, female and hours worked.

## 5 Conclusion

The results indicate that both in the FRG and the GDR, and in the USA, a considerable percentage of employees have to cope with a mismatch between their qualifications and the requirements of their jobs. Nevertheless, the analyses confirm the hypothesis that deregulated economies are associated with a higher number of employees with a mismatch than flexibly coordinated and planned economies. On the one hand, Taylorist production methods and low job requirements are wide spread in the USA. On the other hand, the better match of jobs in the Federal Republic of Germany is an indicator of the dual vocational educational system, through which apprentices are often trained in firms. This becomes especially apparent when looking at young employees.

Deregulated economies on the one hand and flexibly coordinated economies on the other, are associated with different overqualification risks over the life course. Overqualification, especially of older West German employees, may be partly explained by technological and organizational progress after the attainment of the vocational qualification. Looking at the

USA, the picture is the other way around. There, younger employees in particular are overqualified for their jobs. One of the reasons for this empirical result may be the fact that the USA does not employ a developed firm-based vocational educational system with standardized training regulations, so that the necessary requirements often have to be learned on-the-job. This means that the longer the employees are in the labour market, the higher the probability is that they will attain the required qualifications on-the-job – which in turn will enable them to apply for jobs with even higher requirements.

The fit of acquired and required qualifications is an important reason for income inequalities. This applies to all three countries. Overqualified employees earn considerably less than their colleagues who are able to employ most of their qualifications in their jobs. Nevertheless, the analyses indicate that investments in qualification are still worthwhile even if the employee is overqualified for the job – although to a much lesser degree.

Deregulated economies seem to punish overqualification to a greater extent than flexibly coordinated or planned economies. A higher level of trust involved in economic systems leads to relatively smaller income losses in the case of overqualification. In general, fit has a greater influence on earned incomes in the USA than in the FRG or the GDR. One explanation for this result may be the fact that in a labour market where the allocation of employees is less dependent on formal qualification certificates, the actual productivity is of greater importance. Another explanation might be found in the specific segmentation of the American labour market. If – in comparison to the FRG – there is greater segmentation in the USA, in the sense of a dichotomy between the primary and the secondary sector, between good jobs and bad jobs, or between ‘simple’ and ‘difficult’ jobs, then an overqualified American employee would have a relatively high discrepancy between his or her acquired and required qualifications, and thus relatively great income losses due to overqualification.

As the case of the GDR shows, however, a higher percentage of adequately employed people in a country does not necessarily lead to better overall economic performance. This is also a counter-argument to the idea that one could reach a better fit of people and jobs by simply offering fewer qualification opportunities. After all, the empirical analyses have shown that overall more qualifications are available than are required. In order to be able to adapt as quickly as possible to technological and organizational changes, employees have to have the adequate vocational knowledge and abilities. In fact, the innovative potential of economic systems depends upon the skills of the employees. From this perspective, a certain amount of overqualification is even a prerequisite for innovation, and is needed in order to respond to technological and organizational

changes. In the GDR, technological and organizational developments were introduced at a comparatively slow rate. This, however, does not apply to market economies, especially in our age of increased globalization and flexibility.

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