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The Incidence and Consequences of Overeducation among Young Workers in the United States and Germany: A Comparative Panel Analysis

By Felix Büchel and James Witte*

Summary

As Europe and the United States underwent rapid economic change during the 1980s, overeducation emerged as a key manpower policy issue. This paper focuses on overeducation using two ongoing, nationally representative, longitudinal studies for the United States and Germany. Our results point to cross-national similarities and differences. The most notable differences are rooted in the differing educational systems in the two countries. Our income analyses suggest that in both countries overeducation is associated with smaller gains in income. Moreover, in both countries higher levels of education reduce the risk of overeducation. Increasing education as a solution to overeducation is not a paradox once one understands that the real issue is not simply getting more education, but getting the right education.

1. Introduction

The 1980s brought striking economic change in Europe and the United States. Important technological developments, particularly in the computer, information, and telecommunications industries, as well as continued globalization of the economy, including access to new labor markets, initiated a process of widespread economic adjustment. Under varying names, including restructuring, reengineering, down-sizing and right-sizing, this period of rapid adjustment has been aptly described as the age of the "permanently new economy" (Ritzer 1989).

Against a backdrop of rapid economic change, overeducation has emerged as an important theme in discussions of manpower policy in the industrialized West. Overeducation occurs when workers with skills, particularly younger workers who have recently finished their education, are unable to find employment that makes use of their skills. This paper focuses on overeducation using two ongoing, nationally representative, longitudinal studies, the U.S. National Center for Education Statistics' High School and Beyond (HS&B) and the German Socio-Economic Panel (GSOEP). In both countries, we focus on young people entering the labor market in the 1980s and track their progress between the ages of 22 and 28. Additional analyses then consider the dynamics of overeducation between these two ages. We examine the factors that influence transitions in and out of overeducation and consider the effects of overeducation on changes in income between the ages of 22 and 28.

The analyses presented here are an important addition to the growing body of literature on overeducation and more generally, on the education and employment matching process. Our focus is on young workers. While matching people to positions, as a process of adjustment and realignment, continues throughout the course of careers, the initial match is of particular individual and social significance: "What this comes down to is that the flexibility of the labor market in terms of mobility is mainly flexibility over what to do with the new cohort — people between twenty and thirty . . . How this group settles in will heavily determine what the labor market looks like thirty to forty years from now" (Stinchcombe 1990, p. 254). Moreover, the analyses presented here view early career processes from a dynamic perspective that is rare in this literature. The longitudinal data used allow us to treat overeducation as more than a simple static outcome with particular consequences. We are also able to consider the processes associated with movements into and out of overeducation and the impact of these transitions as well.

In addition, the comparative nature of this work ought to be emphasized. A comparative approach is critical for economists and sociologists who recognize that aspects of social structure are valid complements to measures of individual attributes in their efforts to understand labor market processes. Indeed, comparative and historical analyses provide the fundamental means to introduce the variation necessary to adequately assess the importance of social structure. In this case, obvious differences in the educational and vocational training systems as well as the basic organization of labor markets lend United States/German comparisons considerable analytical leverage.

Finally, these differences aside, there is one important similarity between the German and American cases. Both countries are entering periods of active employment policy reorientation and implementation. In Germany, record unemployment rates and the economic pressures of reunification leave little room for the inefficiencies associated with overeducation. In the United States, the dramatic reform of the welfare system is likely to lead to the most ambitious job creation efforts in over fifty years. These new jobs are likely to be the product of a combination of federal programs, federal grants to states and municipalities, and a system of incentives to induce private sector job growth. Making the most of the available human capital will be a key theme in the policy debate. Insights gained from comparative studies of overeducation will better inform the policy discussions in both countries.

2. Models of Labor Allocation and Matching

Academic interest in overeducation, also discussed as underemployment and skill underutilization, arose in the mid-1970s in the United States. As the baby boom cohorts moved their way through a system of higher education that had expanded in the 1950s and 1960s, many began to fear

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that the demand for highly educated workers would not keep pace with the increasing supply of college graduates.

Efforts to understand the issue of overeducation and its implications have drawn on a number of theoretical perspectives. Some treat overeducation from an allocation theory perspective (see Tinbergen 1956), where the complex issue of allocating people to positions is compounded by the fact that the composition of supply of labor changed far more rapidly than the makeup of the demand for labor (see Clogg and Shockey 1984). Human capital theory, on the other hand, downplays the problematic, structural aspects of the allocation process as normal features of a labor market working its way to equilibrium. Others view the issue from the perspective of signaling theory, in which employers increasingly rely on educational qualifications as imperfect proxies for worker productivity, as in Arrow (1973) and Stiglitz (1975). An important variant of this approach, the job competition model, considers the implications of signaling in a buyer's market, where employers are able to use their market advantage to rank candidates according to qualifications and choose the most qualified applicant regardless of the qualifications required for the job (see Thurow 1975). Still others see overeducation as the logical middle-run consequence of short-term efforts to use education as a means to "warehouse" young people in times of weak labor demand (Walters 1984). Finally, the career mobility approach views overeducation within the context of individual careers. This perspective emphasizes that the short-term costs of overeducation may be overshadowed by long-term advantages. Individuals working in positions beneath their qualifications may acquire experience and skills on the job that put them in the position to realize an appropriate return to their formal qualification in the next stage of their careers (see Sicherman 1991; Alba-Ramirez 1993).

Regardless of the theoretical perspective employed, most empirical analyses of overeducation take a standard human capital approach that compares the returns to required education with the returns to overeducation. In most cases these studies, in Germany as well as the United States, find that the positive returns to education and training may diminish, but are not eliminated, if individuals work outside the area in which they have been trained (see Duncan and Hoffman 1981; Rumberger 1987; Witte and Kalleberg 1995; Büchel and Weißhuhn 1996).

Compared to analyses in the United States, studies of overeducation in Germany have adopted a stronger institutional perspective, looking beyond the return to individual human capital to consider the relative allocative efficiency of institutional mechanisms (Büchel and Matiaske 1996). The differing arrangements in the United States and Germany with regard to the institutional space in which the matching process takes place and the manner in which education is used and underused provide the rationale for the comparative approach of this paper.

3. Data and Variables

The United States data in this paper come from the High School and Beyond (HS&B) data set. Initial data collection for HS&B began in 1980 with a nationally representative sample of nearly 30,000 sophomores and seniors at over 1,200 public and private American high schools. Our analyses are based on over 12,000 members of the class of 1982[1], who participated in subsequent follow-up surveys including the most recent data collection effort in 1992. Information regarding postsecondary enrollment and attainment and employment were a part of each HS&B follow-up survey. Our analyses are based on data from the 1986 and 1992 surveys. The definition of overeducation draws on a series of questions asked in each year. Respondents were asked if they had received formal training for their current or past jobs. Respondents were also queried whether or not they could have gotten their job without the training they had received. Those persons who had gotten training but could have obtained their job without their training are considered overeducated.

The GSOEP data were then organized to produce an analytical file that closely matched the HS&B data. Simply choosing the same years of observation as in HS&B, studying all 22-year-olds in 1986 and all 28-year-olds in 1992, was ruled out because the sample sizes would have been too small. Instead, the data from 1984 to 1994 were pooled and information from all 22- and 28-year-olds in each year was combined. Theoretically, this approach is sensible, because the incidence of overeducation in Germany was largely unchanged over this period (see Büchel and Weißhuhn 1996). Moreover, the general statistical problems associated with pooled data are avoided as information from individuals is not included for each year, but only from those years when they are aged 22 or 28. The GSOEP data used in the analysis of overeducation are based on a comparison of formal vocational education acquired and the training typically required for each respondent's current job. Typical vocational education requirements were explicitly asked of each respondent and these responses were then checked for validity based on occupation, occupational status, and income (for details, see Büchel and Weißhuhn 1996).

4. The Incidence and Determinants of Overeducation in Germany and the United States

Table 1A summarizes the patterns of education and overeducation found among our sample of young people in Germany. There is often the perception that the typical

[1] All sophomores in 1980 are referred to as the class of 1982. Since this sample includes high school dropouts as well as early graduates, not all are 1982 high school graduates. The data used here come from the 1992 CD-ROM Restricted Use Data Files. Information on this data set, including distribution and access requirements, are available through the U.S. Department of Education World Wide Web site <http://www.ed.gov>.

Table 1A

Level of Education and the Incidence of Overeducation among Germans[1)]

in percent

	Age 22	Age 28
Educational Level of All Persons		
No vocational degree	45.9	21.3
Vocational degree	54.1	67.5
Fachhochschule/University degree	—	11.2
Total	100.0	100.0
Educational Level of Employed Persons		
No vocational degree	27.9	17.4
Vocational degree	72.1	70.2
Fachhochschule/University degree	—	12.4
Total	100.0	100.0
Training and Job Requirements		
No skills required	17.1	15.6
Some training required	10.1	9.3
Vocational degree required	72.7	62.8
Fachhochschule/ University degree required	—	12.4
Total	100.0	100.0
Incidence of Overeducation among Persons with Vocational/*Fachhochschule*/University degree:		
No overeducation	87.0	84.0
Overeducation	13.0	16.0
Total	100.0	100.0

1) Number of cases (aged 22/28): all persons (2,251/2,308); employed persons (1,285/1,663); training and job requirements (1,204/1,603); incidence of overeducation (722/1,083).

Source: Authors' calculations using GSOEP, years 1984 to 1994 (ages 22, 28: pooled over those years).

Table 1B

Level of Education and the Incidence of Overeducation among Americans[1)]

in percent

	Age 22	Age 28
Educational Level of All Persons		
No high school degree	9.4	7.4
High school degree	67.3	49.6
Vocational certificate	6.9	10.1
Associate's degree	7.1	8.0
Bachelor's degree or more	9.3	24.9
Total	100.0	100.0
Educational Level of Employed Persons		
No high school degree	8.5	5.8
High school degree	68.4	48.2
Vocational certificate	7.4	9.7
Associate's degree	7.5	9.0
Bachelor's degree or more	8.3	27.3
Total	100.0	100.0
Training and Job Requirements		
Not trained and none required	75.3	52.8
Trained but not required	3.6	18.4
Trained and required	21.1	28.8
Total	100.0	100.0
Incidence of Overeducation among Trained Persons		
No overeducation	85.4	61.0
Overeducation	14.6	39.0
Total	100.0	100.0

1) Number of cases (aged 22/28): all persons (11,922/12,470), employed persons (9,920/8,762), training and job requirements (9,345/8,816), incidence of overeducation (722/1,083).

Source: Authors' calculations using High School and Beyond years 1986 (age 22) and 1992 (age 28).

German finishes his or her secondary schooling at age 16 and then completes a three-year apprenticeship. However, Table 1A shows that during the 1980s approximately 46 percent of German young people had not yet obtained a vocational degree by the age of 22. But, by age 28 nearly 80 percent of this cohort had obtained a vocational or university degree. Looking at the educational level of employed persons at this age, 82.6 percent have at least a vocational degree. Fewer than one in five Germans employed at the age of 22 are working in jobs that require no training and 10.1 percent are employed in jobs that require some training but not a vocational degree. Among those employed at age 28, these proportions shrink further and fully three-quarters of the 28-year-old employed Germans are in positions that require a vocational or university degree. Finally, Table 1A indicates that 13 percent of those individuals with a vocational, Fachhochschule or university degree at the age of 22 are overeducated. The proportion of overeducated persons with these levels of education increases only slightly, to 16 percent, by age 28.

Table 1B presents comparable results for American young people. Here, too, the findings point to an outdated misperception about the rate at which young people complete their education. Though between the ages of 22 and 28 there is little change in the proportion of young people who complete a high school degree, vocational certificate, or associate's degree, there is a dramatic increase in the proportion of persons with a bachelor's degree or higher from 9.3 to 24.9 percent. This finding is consistent with other sources that show more than half of today's college graduates take at least five years to complete a "four-year" bachelor's degree.

Table 1B also indicates that the American labor market, like the German labor market, may be characterized by a positive selection process according to educational qualifications: less qualified persons are underrepresented and more highly qualified persons are overrepresented among employed persons. A clear difference between Germany and the United States is apparent when one considers the training and job requirements of employed persons. Fully three-quarters of employed 22-year-olds in the United States have not completed a course of training and are in positions that require no training while fewer than one in five Germans employed at age 22 are in positions that

Table 2A

Logistic Regression for Overeducation in Germany[1)]

	Age 22			Age 28		
	Estimated Coefficient	Standard Error	Mean (weighted)	Estimated Coefficient	Standard Error	Mean (weighted)
Demographic Characteristics						
Male	0.04	0.21	0.49	−0.12	0.18	0.58
Foreigner	0.98***	0.22	0.05	0.95***	0.20	0.03
Schooling						
Apprenticeship	—	—	0.79	—	—	0.58
Berufsfachschule	0.40	0.30	0.10	0.02	0.28	0.08
School of health-system	−1.17	1.08	0.05	−0.29	0.47	0.05
Fachschule	0.33	0.64	0.02	−0.89**	0.42	0.08
Civil service school	−1.05	1.09	0.03	−1.29*	0.76	0.05
Other vocational degree	1.94***	0.54	0.02	1.68***	0.36	0.02
Fachhochschule	—	—	0.00	0.13	0.43	0.04
University degree	—	—	0.00	0.004	0.32	0.11
Job Characteristics						
Public sector	−0.34**	0.30	0.19	−0.60	0.25	0.23
Self-employed	−0.58	0.74	0.03	0.26	0.32	0.06
Part-time-working	2.11***	0.47	0.04	1.50***	0.24	0.11
Job tenure <18 months	0.59***	0.21	0.33	0.25	0.20	0.21
Year of observation	−0.07**	0.03	88.21	0.02	0.02	89.22
Constant	4.33	3.13	—	−3.25	2.35	—

[1)] Dependent variable: 0 = no overeducation, 1 = overeducation; Dependent mean (weighted): age 22 = 0.13; (age 28) = 0.16; Levels of significance: ***($p<0.01$); ** ($p<0.05$); * ($p<0.10$). Log Likelihood: model (age 22) = −316.5; model (age 28) = −466.4. Sample is limited to persons with vocational/Fachhochschule/University degree, 722 observations (age 22), and 1,083 observations (age 28).

Source: Authors' calculations using GSOEP, years 1984 to 1994 (ages 22 and 28: pooled over those years).

require no training. In part, this difference may be attributed to the greater likelihood that Americans will enter the labor force prior to completing their education as compared to Germans (Witte 1992). And yet this accounts for only part of the difference: at age 28, still more than half of the employed American young people are in positions that require no training and another 18 percent could have gotten their job without their current level of training. Concentrating only on those persons with training, another important cross-national difference is apparent; although the incidence of overeducation among trained persons increases only slightly between the ages of 22 and 28 in Germany, in the United States the incidence of overeducation is nearly three times as great at age 28 as at age 22.

Tables 2A and 2B summarize the determinants of overeducation in the two countries. In Germany (Table 2A) at age 22, foreigners, persons with less common vocational degrees ("other vocational degrees"), part-time workers, and relatively new workers (with job tenure less than 18 months) were significantly more likely to be overeducated. With the exception of job tenure, each of the factors that increases the likelihood of overeducation in Germany at age 22 remains statistically significant at age 28. The findings do suggest, however, that by the age of 28 the process of overeducation has become further differentiated: the *Fachschule* and civil service training also serve to significantly reduce the likelihood of overeducation at age 28. Moreover, public sector employment reduces this probability still further. It is also interesting to note that at age 28 individuals who have a degree from a *Fachhochschule* or a university are no more or less likely to be overeducated than individuals with apprenticeship training.

Turning to the determinants of overeducation in the United States, one notes that, at age 22, males are significantly more likely to be overeducated than females, perhaps because the same constraints that require them to enter the labor market at a relatively early age also lead them to ignore the longer-term human capital payoff that may come with a prolonged search to find a job that fits one's education. Reasoning of this type, along with the effects of discrimination, could also explain the greater likelihood of overeducation among African Americans at age 22. However, this does not explain why African Americans are significantly less likely to be in a job that they could have obtained without their training at age 28.

In the United States, the effects of schooling on overeducation are apparent at the age of 22 and remain strong at age 28. Compared to students with a high school degree, at age 22 trained persons with an associate's or bachelor's degree are significantly less likely to be employed in a position that they could have obtained without their training. Not only is this relationship observed at age 28 as well, but in

Table 2B

Logistic Regression for Overeducation in the United States[1)]

	Age 22			Age 28		
	Estimated Coefficient	Standard Error	Mean (weighted)	Estimated Coefficient	Standard Error	Mean (weighted)
Demographic Characteristics						
Male	0.43***	0.13	0.49	0.01	0.06	0.53
(White)	—	—	0.81	—	—	0.80
African American	0.42***	0.18	0.12	−0.23**	0.10	0.12
Native American	−1.04	1.25	0.01	−0.18	0.35	0.01
Hispanic American	0.61**	0.24	0.05	−0.05	0.14	0.05
Asian American	0.54	0.45	0.01	−0.17	0.24	0.02
Schooling						
No high school degree	0.18	0.33	0.03	0.71***	0.19	0.03
(High school degree)	—	—	0.57	—	—	0.37
Vocational certificate	−0.18	0.17	0.16	−0.35***	0.11	0.11
Associate's degree	−0.52**	0.20	0.14	−0.48***	0.11	0.11
Bachelor's degree or more	−0.72***	0.28	0.09	−0.71***	0.07	0.38
Job Characteristics						
Public sector	−0.51***	0.15	0.25	−0.01	0.09	0.16
Part-time-working	−0.13	0.17	0.18	—	—	—
Job tenure <18 months	0.04	0.13	0.49	−0.03	0.07	0.30
Constant	−1.85	0.14	—	−0.07	0.07	—

[1)] Dependent variable: 0 = no overeducation, 1 = overeducation; Dependent mean (weighted): age 22 = 0.14; (age 28) = 0.376; Levels of significance: *** ($p<0.01$); ** ($p<0.05$); * ($p<0.10$). Log Likelihood: model (age 22) = −917.4; model (age 28) = −2,530.9. *Sample is limited to trained employees excluding part-time* and self-employed workers, 2,212 (age 22) and 4,113 (age 28).

Source: Authors' calculations using High School & Beyond years 1986 (age 22) and 1992 (age 28).

addition, persons with vocational certificates are also significantly less likely to be overeducated. Furthermore, those persons with some training but without a high school degree are significantly more likely to be overeducated. In other words, in the United States the higher the level of schooling a individual obtains, the greater the likelihood that he or she will be employed in a position that could not have been obtained without training.

5. Transitions In and Out of Overeducation in Germany and the United States

In this section of the paper, we exploit the longitudinal character of these two data sets to consider patterns of movement in and out of overeducation over time. The transitions in Table 3 represent an important subset of the processes that account for the incidence of overeducation at age 28 as described in Tables 1A and 1B. Table 3 considers persons who had some training and were employed at age 22 and at age 28[2]. According to the figures in Table 3, in Germany just under one-quarter (around 22 percent) and in the United States just over one-quarter (about 27 percent) of this cohort of young people were overeducated at either one or both ages. Among those who move in or out of overeducation, in both countries the proportion who enter into overeducation is greater (about double in Germany and over triple in the United States) than the proportion of persons who move from being overeducated into a position that fits their training. Table 3 also illustrates an important difference in the dynamics of overeducation between Germany and the United States. The risk of becoming overeducated is greater in the United States than in Germany — 12.9 percent of the German young people who were not overeducated at age 22 were overeducated at age 28, as compared to 20.9 percent of Americans. However, among those Americans who were already overeducated at age 22, only 24.7 percent remained overeducated at age 28, while 43.9 percent of the German young people who were overeducated at age 22 were still in positions that did not match their training at age 28.

Tables 4A (Germany) and 4B (United States) present results modeling the determinants of transitions from no overeducation at age 22 to overeducation at age 28 (the left side of the tables) and from overeducation at age 22 to no overeducation at age 28 (the right side of the tables). Looking at transitions to overeducation in Germany, the risk is higher for foreigners and graduates of civil-service schools. Occupational change also increases the risk of

[2] A comprehensive treatment of the overeducation issue would also consider people who are not employed and those who enter the labor force after age 22. However, our goal here is to look specifically at processes internal to the interaction of working and overeducation, rather than the effect of overeducation on participation and employment.

Table 3

Transitions In and Out of Overeducation between the Ages of 22 and 28 in Germany and the United States[1)]

in percent

Transition Pattern	Germany	United States
Not overeducated (age 22), not overeducated (age 28)	77.7	73.1
Not overeducated (age 22), overeducated (age 28)	11.5	19.3
Overeducated (age 22), not overeducated (age 28)	6.0	5.8
Overeducated (age 22), overeducated (age 28)	4.7	1.9
Number of cases	335	3,085

[1)] In this and the following tables, the German sample includes transitions from ages 23 to 29, 21 to 27, 24 to 30, 20 to 26, with a maximum of 1 observation per person. Expressions "Age 22" and "Age 28" are used for easier readability.

Source: Authors' calculations using GSOEP, years 1984 to 1994 (ages 22, 28: pooled over those years), and High School & Beyond, years 1986 (age 22) and 1992 (age 28).

overeducation; a fact that is not surprising given that vocational training in Germany is strongly tied to specific occupations. An episode of temporary unemployment significantly increases the likelihood of overeducation, presumably because workers are more willing to take jobs that do not fit with their education if the alternative is unemployment. Finally, there is a significant negative coefficient attached to further vocational training; that is, workers who receive additional training after the age of 22 are less likely to be overeducated at the age of 28.

The left side of Table 4B shows the factors affecting whether American young people who are employed at age 22 find themselves in positions for which they are overeducated at age 28. In the United States, there is a clear relationship between the level of schooling a young person has completed and the likelihood that they will find themselves in a position for which they are overeducated at the age of 28. Young people with the lowest level of education those who have not received a high school degree — are significantly more likely to become overeducated; young people with the highest level of education (a bachelor's degree or higher) are significantly less likely to become overeducated.

Table 4A

Logistic Regression for Transitions Into and Out of Overeducation in Germany[1)]

	No Overeducation (Age 22) to Overeducation (Age 28)			Overeducation (Age 22) to No Overeducation (Age 28)		
Covariates	Coefficient	Standard Error	Mean (weighted)	Coefficient	Standard Error	Mean (weighted)
Demographic Characteristics						
Male	−0.98**	0.45	0.57	0.57	0.78	6.62
Foreigner	1.05**	0.51	0.02	−1.47*	0.86	0.08
Schooling						
(Apprenticeship)	—	—	0.76	—	—	—
Berufsfachschule	0.03	0.65	0.11	—	—	—
School of health-system	−0.86	1.28	0.06	—	—	—
Fachschule	0.01	1.28	0.03	—	—	—
Civil service school	2.44**	1.23	0.04	—	—	—
Other vocational degree	1.30	1.61	0.01	—	—	—
Job Characteristics Age 22						
Public sector	−1.30	0.82	0.20	—	—	—
Self-employed	1.20	1.08	0.02	—	—	—
Part-time employed	−1.23	1.72	0.01	—	—	—
Occupational Experience from Age 22 to Age 28						
Received vocational training	−0.97	0.54	0.31	2.46*	1.16	0.22
Was temporarily out of labor force	−0.69	0.69	0.21	−0.38	1.13	0.24
Was temporarily unemployed	2.38***	0.81	0.10	−0.14	1.46	0.05
Had an occupational change	1.12**	0.50	0.69	−0.82	0.74	0.60
"Real age" at age 22	−0.09	0.24	22.24	0.36	0.41	22.49
Year of observation age 22	−0.25	0.17	85.45	0.15	0.24	85.34
(Constant)	21.45	17.57	—	−21.35	26.35	—

[1)] Part time and self-employed, and persons without formal occupational qualifications at either time are excluded. Number of cases: left-hand-side model = 280; right-hand-side model = 55; Log Likelihood: left-hand-side model = 88.3; right-hand-side model = 29.4; Dependent variables: left-and-side model: 0 = No Overeducation at age 28, 1 = Overeducation at age 28; Dependent mean (weighted) = 0.129. Right-hand-side model: 0 = overeducation at age 28; 1 = No Overeducation at age 28; Dependent mean (weighted) = 0.564. Reduced set of covariates in the right-side model due to small number of cases. Levels of significance: ***(p <0.01); **(p <0.05; *(p <0.10).

Source: Authors' calculations using GSOEP, years 1984 to 1994 (ages 22, 28: pooled over those years).

Table 4B

Logistic Regression for Transitions Into and Out of Overeducation in the United States[1)]

Covariates	No Overeducation (Age 22) to Overeducation (Age 28)			Overeducation (Age 22) to No Overeducation (Age 28)		
	Coefficient	Standard Error	Mean (weighted)	Coefficient	Standard Error	Mean (weighted)
Demographic Characteristics						
Male	−0.10	0.17	0.57	−0.71	0.55	0.67
(White)	—	—	0.84	—	—	0.80
African American	0.19	0.27	0.10	—	—	—
Native American	−0.37	0.82	0.01	—	—	—
Hispanic American	−0.12	0.45	0.04	—	—	—
Asian American	−1.64	1.58	0.01	—	—	—
Minority	—	—	—	1.71***	0.70	0.20
Schooling						
No high school degree	1.79***	0.62	0.03	−0.10	1.40	0.03
(High school degree)	—	—	0.50	—	—	0.64
Vocational certificate	−0.39*	0.24	0.18	−0.36	0.67	0.17
Associate's degree	−0.17	0.24	0.18	−3.28***	−1.12	0.09
Bachelor's degree or more	0.64***	0.31	0.11	−0.66	0.97	0.05
Job Characteristics Age 22						
Public sector	0.02	0.20	0.27	0.29	0.57	0.26
Occupational Experience from Age 22 to Age 28						
Received vocational training	−0.50***	0.25	0.18	1.04*	0.59	0.29
Was temporarily out of labor force	−0.09	0.18	0.69	−1.41**	0.63	0.72
Was temporarily unemployed	1.02	1.04	0.01	−0.12**	1.25	0.04
Had an occupational change	−0.36**	0.19	0.70	−0.21	0.62	0.78
(Constant)	−0.001	0.24	—	1.94**	0.95	—

1) Part time and self-employed, and persons without training at age 22 are excluded. Dummy variable for temporarily unemployed takes the value of 1 when unemployed for more than 10 percent of the period. Number of cases: left-hand-side model = 646, right-hand-side model = 111; Log Likelihood: left-hand-side model = −406.2, right-hand-side model = −61.4; Dependent variables: left-hand-side model, 0 = No Overeducation at age 28, 1 = Overeducation at age 28, Dependent mean (weighted) = 0.36. Right-hand-side model: 0 = Overeducation at age 28, 1 = No Overeducation at age 28, Dependent mean (weighted) = 0.63. Reduced set of covariates in the right-hand-side model due to small number of cases. Levels of significance: ***($p < 0.01$); **($p < 0.05$; *($p < 0.10$).

Source: Authors' calculations using High School & Beyond, years 1986 (age 22) and 1992 (age 28).

As was the case in Germany, young Americans who receive additional education after age 22 are significantly less likely to be overeducated at age 28. Similarly, the effects of unemployment in the United States are positive, but are not statistically significant as was the case in Germany. However, there is one important difference between transitions into overeducation across the two countries. In the United States, the coefficient attached to occupational change between 22 and 28 is negative, indicating that young people who change jobs are less likely to become overeducated; while in Germany the occupational change coefficient is positive and significant. This suggests very different processes of employment and education matching in the two countries.

The models of the transitions out of overeducation appear in the right-hand columns of the tables[3]. Interestingly, minority respondents in the United States were significantly more likely to move out of overeducation than nonminority young people, while in Germany foreign respondents were less likely to be classified as not overeducated at age 28 when they had been so classified at age 22. Most importantly, however, the results reveal that in both countries obtaining additional vocational training or education after age 22 increases the probability that a young person who was employed in a job that did not match his or her education at age 22 would no longer be overeducated at age 28. It should also be noted that in the United States there is a significant, negative coefficient associated with holding an associate's degree at age 22. Once graduates of America's two-year colleges are employed in a job that they

[3] In both countries, we use a simpler, smaller set of control variables, as the criteria used to select cases (respondents with training who were employed at aged 22 and 28 and overeducated at age 22) leave us with relatively few degrees of freedom. In Germany, distinctions are not made according to level of schooling or job characteristics at age 22; in the United States, a single distinction between minority and nonminority is used rather than separating out individual types of minority respondents.

could have gotten without their training, it is unlikely that in subsequent years they will be in a position that they only could have gotten because of the training they received.

To consider the consequences of overeducation, models of proportional deflated income change between the ages of 22 and 28 were estimated for the two countries. (Full results are not presented here, but are available from the authors). These models regress the ratio of 1992 to 1986 earnings on a vector of independent variables including demographic characteristics, schooling, job characteristics at age 22, and occupational experience from age 22 to age 28. The covariates also included earnings in 1986 and three variables indicating different patterns of overeducation status transition; those who were not overeducated at either age served as the reference category.

Two aspects of these results are worthy of mention. First, in Germany this model yielded significant, negative coefficients for persons who were not overeducated at age 22 but were overeducated at age 28 and for those who were overeducated at both ages. In the United States we find a significant, positive coefficient for persons who were overeducated at the age of 22 but were no longer classified as overeducated at age 28. Thus, in both countries overeducation matters to young people in terms of real income change. Secondly, in both countries additional vocational education and training between the ages of 22 and 28 produce positive and significant effects on earnings growth. Therefore, in both countries, additional vocational training not only reduces the likelihood of overeducation (as seen in Tables 4A and 4B) but also independently contributes to real income growth between the ages of 22 and 28.

6. Conclusions and Policy Implications

The analyses of overeducation in this paper reveal cross-national similarities as well as differences. The most striking differences are in the processes whereby young people come to find themselves overeducated or not. To a great extent, these differences may be explained by the characteristics of the educational system in each country and the manner in which it articulates with the occupational structure, particularly at the outset of individuals' careers. In Germany, vocational training is tied to a specific occupation and is intended to serve as an entry port into that occupation. Given this system, subsequently changing occupations — regardless of whether the change is voluntary or involuntary — will quite often leave training underutilized. In the United States, on the other hand, training is quite general and a young person may only have an approximate idea of the occupation that best fits his or her training. This institutional arrangement is thus consistent with the negative relationship found between occupational change and overeducation in the United States. The general nature of vocational training in the United States promotes a search process early in the career to find the occupation that best fits the training received.

The extent to which the incidence of overeducation is stratified by the level of education received, particularly higher education, is another important difference between Germany and the United States. In Germany, university and *Fachhochschule* graduates are no less likely to be overeducated than young people with an apprenticeship training. In the United States, however, at age 22 and age 28, college graduates are significantly more likely to be in positions where they use the human capital they have obtained. The German and American education systems are both stratified in the sense that only a limited proportion of each cohort receives the highest level of education available (Allmendinger 1989). However, the American system adds a further dimension of stratification in that the least educated are also the least likely to be in positions that require the training they have obtained.

Despite these differences, our cross-national analyses also show important similarities with regard to overeducation. Our income analyses indicate that avoiding overeducation, in both countries, is associated with greater increases in income. But even more importantly, our results for Germany and the United States show that additional education after entering the labor force directly increases income and indirectly increases income by decreasing the risk of overeducation. At first, it may appear paradoxical to suggest that more education is a solution to overeducation. The paradox disappears, however, once it is understood that the real issue is not simply getting more education, but getting the right education. The critical manpower policy issue facing both Germany and the United States in the immediate future is to expand the educational system in those areas that are well suited to the human capital needs of each country's labor market.

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