Burkhauser, Richard V.; Wasylenko, Michael J.; Weathers, Robert R.

The Importance of Education on the Labor Market Mobility of Prime Age Males in the United States and Germany in the 1980s

Vierteljahrshefte zur Wirtschaftsforschung

Provided in Cooperation with:
German Institute for Economic Research (DIW Berlin)

Suggested Citation: Burkhauser, Richard V.; Wasylenko, Michael J.; Weathers, Robert R. (1997) : The Importance of Education on the Labor Market Mobility of Prime Age Males in the United States and Germany in the 1980s, Vierteljahrshefte zur Wirtschaftsforschung, ISSN 0340-1707, Duncker & Humblot, Berlin, Vol. 66, Iss. 1, pp. 17-24

This Version is available at:
https://hdl.handle.net/10419/141156

Education and the Labor Market

The Importance of Education on the Labor Market Mobility of Prime Age Males in the United States and Germany in the 1980s

By Richard V. Burkhauser, Michael J. Wasylenko, and Robert R. Weathers*

Summary

Using data from the United States Panel Study of Income Dynamics and the German Socio-Economic Panel for 1985 through 1989 we find that educational differences lead to greater inequality in the labor earnings distribution of male workers aged 25 to 55 in the United States than in Germany. Using ordered probit equations and controlling for one's initial position in the earnings distribution, we find that mobility within and across educational levels between 1985 and 1989 was less equalizing in the United States than was the case in Germany.

1. Introduction

The long period of economic growth between 1983 and 1989 in the United States and Germany yielded quite different labor market outcomes in the two countries. While the labor earnings distribution widened considerably in the United States, it remained virtually unchanged in the western states of Germany (see Burkhauser and Poupore forthcoming; Gottschalk and Smeeding 1995). Hence, not only was labor earnings inequality lower in Germany than in the United States at the beginning of the 1980s but that difference widened by the end of the decade.

While the level of inequality during the 1980s is now well established in the United States and Germany, less is known about mobility over that period. Burkhauser, Holtz-Eakin, and Rhody (forthcoming) trace the movement of workers across labor earnings quintiles and find similar patterns over the 1980s despite the differences in labor market institutions suggested by Abraham and Houseman (1995). But Burkhauser et al. simply trace the patterns of mobility; they do not attempt to model its determinants.

In this paper, we more formally model mobility in the two countries by focusing on the movement of male workers across earnings deciles during the four-year period 1985 to 1989. The samples are restricted to males in their prime earning years — aged 25 to 55. This age group is selected because it captures movements over years of "normal" employment and avoids the "job shopping" behavior of new entrants and the transitions into retirement that begin to occur for men in their mid-fifties.

We use a human capital model to test the importance of education and other variables on mobility across earnings deciles[1]. Because we are looking at relative changes in the earnings distribution, our model does not address changes in the level of earnings in the two countries. For example, all the workers in our sample could remain in the same earnings deciles over time, while experiencing either real growth or decline in their earnings.

2. Labor Earnings Inequality in the United States and Germany in the 1980s

The level of labor earnings inequality was stable in the United States during the 1970s, primarily because a relatively large supply of new college graduates tended to depress real labor earnings growth in traditionally high-earning occupations, particularly for younger workers. But labor earnings inequality grew in the 1980s. Returns to education significantly increased and the gap in earnings widened between workers with and without a college education. Within education groups, inequality also grew so that increasing inequality over this period was more than simply a function of the reduced supply of, or the increased demand for, given levels of educated workers (see

*Funding for this research came from the National Institute on Aging, Program Project Nr.: #-PO1-AG09743-01, "The Well Being of the Elderly in a Comparative Context" and from the Deutsches Institut für Wirtschaftsforschung. The authors are all affiliated with the Center for Policy Research, The Maxwell School, Syracuse University, Syracuse, New York. We thank J.S. Butler and members of the Economics and Demography of Aging Workshop at Syracuse University for helpful comments on this paper.

[1] Our data for Germany are for the years just prior to reunification and, hence, include only those men living in the western states of Germany.

Table 1

Alternative Measures of United States and German Labor Earnings Inequality for Males Employed Full-Time, Full-Year, Aged 25 to 55, 1983 to 1989

	90th/10th Percentile		90th/50th Percentile		50th/10th Percentile	
Year	United States	Germany	United States	Germany	United States	Germany
1983	3.84	2.37	1.79	1.66	2.14	1.42
1984	4.36	2.44	1.88	1.68	2.32	1.45
1985	4.20	2.38	1.91	1.68	2.20	1.41
1986	4.55	2.52	1.90	1.72	2.39	1.47
1987	4.40	2.50	1.96	1.76	2.24	1.42
1988	4.64	2.41	2.00	1.71	2.32	1.40
1989	4.59	2.46	2.00	1.72	2.30	1.43

Source: Authors' calculations from the Panel Study of Income Dynamics and the German Socio-Economic Panel; labor earnings include all sources of labor income including commissions and bonuses.

Blackburn and Bloom 1987; Karoly 1988; Levy and Murname 1992; Murphy and Welch 1993). In sharp contrast to the United States, German workers in the lowest educational groups experienced gains similar to German workers in higher educational groups in the 1980s. Moreover, earnings differentials were relatively stable within education and age groups as well (Abraham and Houseman 1995).

In Table 1 we use alternative measures of labor earnings inequality for male workers aged 25 to 55 who were employed full-time over the years 1983 through 1989 to compare trends in labor earnings inequality in the United States and Germany. Our results for male German workers stand in stark contrast to our findings for male workers in the United States. Labor earnings were far more evenly distributed in Germany than in the United States in 1983. In addition, unlike in the United States, German male workers experienced only a mild upward trend in inequality, as measured by a comparison of labor earnings of a full-time male wage earner at the 90th percentile compared to a full-time male wage earner at the 50th or 10th percentile. Furthermore, there was virtually no change in earnings inequality between male full-time workers at the 50th and 10th percentiles between 1983 and 1989.

3. The Empirical Model

The use of joint ordered probit models in the empirical economics literature is rare[2]. Our joint ordered probit model of labor earnings mobility in Germany and the United States follows the human capital approach to wage decile mobility developed by Bingley, Henning-Bjorn, and Westergard-Nielsen (1995)[3]. We examine transitions among earning deciles over a four-year period, 1985 to 1989[4]. We estimate both an earnings decile mobility equation and a decile of origin equation.

We are primarily interested in determining the importance of education in explaining whether an individual moved to a higher earnings decile, stayed in the same earnings decile, or moved to a lower earnings decile by 1989 compared to his earnings decile position in 1985. Each country is modeled separately, and we report two sets of results.

The earnings mobility equation is estimated simultaneously with the decile of origin equation. We also report the correlation of the error terms $\varrho_{1,2}$ between the two ordered probit equations, indicating the extent to which the two equations are interdependent. The variable of principal interest in our earnings mobility equation is education, but we also include a set of employment characteristics and other socio-economic variables. (See Table 2 for a full description.) The basic hypothesis is that in the United

2 Calhoun (1989) uses bivariate or ordered probit models to study relationship between desired and excess fertility. Butler and Chatterjee (1995) use general methods of moments to estimate a bivatiate order probit models.

3 Bingley, Henning-Bjorn, and Westergard-Nielsen (1995) use a maximum likelihood method to estimate their ordered probit model. They do so to determine the effect of human capital and other characteristics on relative wage rate mobility for all workers in Denmark using administrative data. Their econometric framework accounts for selectivity bias associated with observing wages only thor those workers in the labor force at the beginning and the end of the transition period, and for possible endogeneity of an individual's initial position in the wage distribution. We depart from their model in several ways. We use panel data from the United States and Germany for male workers aged 25 to 55. We also analyze labor earnings mobility rather than wage rate mobility.

Note that the difficulty in estimating probit models with selection is the topic of Butler (1996), which shows that correlation can drift to limit values in such models as a result of apparently innocuous conditions on the exogenous variables and coefficients. This complicates estimation of models which are hard to identify in most cases. Thus, standard identification might not be enough.

4 We estimate the model using only one transition time peirod. We did not pool the time periods (for example, 1983 to 1987, 1984 to 1988 and 1985 to 1989) because most of the individuals would appear in more than one time period and introduce non-independence across observations. This non-independence is caused by including individuals at more than one point in time who are more similar than observations drawn from the population at random. Such clustering introduces serial correlation and correcting for this problem is not straightforward. But not correcting for this problem produces biased standard errors and t-statistics. Thus, we avoid the clustering problem by using one transition period.

Table 2

Variable Definitions for Mobility and Decile of Origin Equations[1)]

Variable Name	Definition
Dependent Variables	
Mobility	Variable equals −1 if the individual moved down at least one decile in 1989 relative to his position in 1985, 0 if the individual remained in the same earnings decile in 1989 compared to 1985, and 1 if the individual moved up at least one decile in 1989 relative to his position in 1985.
Decile of Origin	The variable equals 0 for the lowest labor earnings decile, 1 for the second lowest labor earnings decile, 2 for third lowest earnings decile, ... and 9 for the highest labor earnings decile.
Independent Variables	
Human Capital	
Less than High School	Variable equals 1 for the United States if the highest educational level achieved is less than 12 years; 0 otherwise. Variable equals 1 for Germany if Realschule or Hauptschule is the highest educational level achieved; 0 otherwise.
High School	Variable equals 1 for the United States if the highest educational level achieved is 12 years; 0 otherwise. Variable equals 1 for Germany if Abitur, Fachhochschulreife, Lehre or Berufschule is the highest educational level achieved; 0 otherwise.
Greater than High School	For the United States, the variable equals 1 if the highest educational level achieved is greater than 12 years; 0 otherwise. For Germany, variable equals 1 if Fachschule, Fachhochschule, College, Technische Universität or Civil Service Training is the highest grade achieved; 0 otherwise.
Experience	Total equivalent years of experience in the labor force as of 1985 divided by 10.
Intervening Unemployment	For the United States, the variable is the number of weeks reported unemployed and looking for work or temporarily laid off in 1986, 1987, and 1988 divided by 156 weeks. For Germany, the variable is the number of months registered unemployed in 1986, 1987, and 1988 divided by 36 months.
Past Unemployment	For the United States, the variable is the number of weeks unemployed and looking for work or temporarily laid off in 1983 and 1984 divided by 104 weeks. For Germany, the variable is the number of months registered unemployed in 1983 and 1984 divided by 24 months.
Occupational	
Professional	The variable equals 1 if the person is in a managerial or professional occupation; 0 otherwise.
Office Worker	The variable equals 1 if the person is an office worker (such as office manager, clerk, mail personnel, etc.); 0 otherwise.
Business Job	The variable equals 1 if the person is in sales, insurance, etc.; 0 otherwise.
Skilled Worker	The variable equals 1 if the person is a skilled worker (craftsman, painter, electrician, etc.,); 0 otherwise.
Low-Skilled Worker	The variable equals 1 if the person is an unskilled worker (clerk in retail store, janitor, etc.); 0 otherwise.
Occupation Missing	The variable equals 1 if a specific occupation is not identified or is missing; 0 otherwise.
Occupation Change	The variable equals 1 if the person's reported occupation in 1989 was different from his reported occupation in 1985; 0 otherwise.
Occupation Change Missing	The variable equals 1 if an occupation was reported in one year and was missing in the other year.
Industry	
Industry	Series of ten dummy variables, one for each industry. The industry groups are: agriculture, mining, energy, construction, manufacturing, transportation, retail, banking, services, and other or missing.
Industry Change	The variable equals 1 if reported industry in 1989 was different from reported industry in 1985; 0 otherwise.
Industry Change Missing	The variable equals 1 if reported industry in one year and missing in the other year; 0 otherwise.
Demographic	
Age	Age of the worker in 1985 divided by 10. (Age squared is divided by 1,000.)
Birth of Child	The variable equals 1 if there was a birth in the person's immediate family between 1986 and 1989.
Number of Children	Number of children under age 16 in 1985.
Married	The variable equals 1 if the person is married in 1985; 0 otherwise.
Black	The variable equals 1 if the person is black; 0 otherwise. (Used only for the United States sample.)
Guest Worker	The variable equals 1 if the person is a German guest worker; 0 otherwise. (Used only for the German sample.)
Self-Employed	The variable equals 1 if the person is self-employed; 0 otherwise.
Decile 1 to 10	Labor earnings deciles in 1985. Ten dummy variables, one for each decile.
Constant	The constant represents a single, non-black, high school graduate office worker in the transportation industry in the fifth labor earnings decile in either the United States or Germany.

[1)] The ordered probit threshold parameters divide the bivariate normal distribution into sections based on the ordered responses. For purposes of identification, the threshold parameter for the lowest category is set equal to zero. Therefore the decile of origin equation only has eight threshold parameters. For the same reason, the mobility equation has only one estimated parameter. For a discussion of ordered probits, see Greene (1993, p. 672) or Greene (1992, pp. 525-538).

Source: Authors' definitions based on data from the Panel Study of Income Dynamics in the United States and the German Socio-Economic Panel in Germany.

States, where labor market outcomes are freer from income distributional concerns, greater levels of education will not only yield a higher initial position in the labor earnings distribution but will increase the probability of moving to a higher decile over time. But we also expect that, for instance, a spell of unemployment during the 1985 to 1989 period will reduce the chances of upward mobility and may increase the chances of downward mobility. Likewise, a change in the industry of employment is probably involuntary and can depreciate a worker's human capital skills that are specific to the former industry, with resulting losses in labor earnings. We also expect that the decile of origin also affects earnings mobility. To the degree that there is regression to the mean, we expect workers starting in lower earnings deciles in 1985 will have a higher probability of upward earnings mobility than workers with the same characteristics already in higher earnings deciles in 1985.

Our second equation is also an ordered probit. It is meant to formally control for decile of origin. This equation estimates a worker's place in the earnings distribution in 1985 using a standard human capital model. In addition to education, we include a set of employment characteristics and other socio-demographic variables used in the mobility equation. (See Table 2 for a full description.) Our decile of the origin equation is identified by including the industry in which the individual is employed. Subsequent changes in occupation and industry between 1985 and 1989 are not included in the decile of origin equation. The unemployment variable in the decile of origin equation is spells of unemployment experienced in 1983 and 1984. The estimation was performed in GAUSS with a likelihood function modified from that provided to us by Paul Bingley.

4. Data

We use the Panel Study of Income Dynamics (PSID) for the United States and the Syracuse University Public Use File of the German Socio-Economic Panel (GSOEP) for Germany. The PSID is a longitudinal survey of a representative sample of individuals (men, women and children) and the members of the households in which each resides. It contains current information on approximately 20,000 respondents and contains an oversample of approximately 2,000 low-income households. The GSOEP is a longitudinal survey that began in 1984 and currently contains a representative sample of 6,000 households and nearly 14,500 individuals. It has an oversample of guest workers. However, both the GSOEP and the PSID contain weights that can be used to create a nationally representative sample[5].

We restrict our sample to men between the ages of 25 and 55 to analyze the importance of education on the relative mobility of the prime working age population, and avoid the problem of selective entry of younger workers and the selective exit of older workers out of the labor force.

Educational categories are, on the surface at least, quite different in Germany than in the United States. Indeed, Abraham and Houseman (1995) conclude that the skills of German workers are a closer match to their occupation and that accounts for the lower variance in wages within education groups in Germany relative to the United States. This may be due in part to the German system of vocational training. We use comparable education classifications for the two countries. It groups educational achievement into three categories: less than high school, high school and more than high school. While this educational classification may not capture the finer gradations of educational training in Germany, it does reclassify German educational categories into categories consistent with those in the United States[6].

The intervening unemployment variable is defined as the amount of time spent unemployed over the years 1986, 1987 and 1988 and is normalized to be between zero and one, with a value of one indicating unemployment over the entire three-year period.

We have made the occupation and industry classifications in the United States and Germany as similar as possible. In some cases this required combining two categories of workers, such as administrators with managers or professionals in Germany, because the United States occupational data is not similarly disaggregated[7]. Data on personal characteristics, such as marital status, age, and experience, are for 1985. However, whether one has had a new child in the past three years refers to the years between 1985 and 1989[8].

5. Empirical Results and Simulations

The results for the joint ordered probit estimation of the decile origin and mobility equations are reported in Table 3[9]. The decile of origin equation is an earnings equation where earnings are grouped into ordered deciles. Estimated jointly with the mobility equation, the decile of origin

[5] For further information on the PSID see Hill (1992). For further information on the GSOEP, see Wagner, Burkhauser and Behringer (1993).

[6] This variable developed by Ken Couch is available on the Syracuse University Exact Match File for these years. See Burkhauser, Butrica, and Daly (1995).

[7] For a fuller discussion of how we create this and other variables, see Burkhauser, Wasylenko, and Weathers (1996).

[8] Due to space limitations, means and standard deviations of the right-hand-side variables are not presented her but are available from the authors upon request.

[9] Because selection bias due to sample attrition is always a concern when using panel data, we note that about 8 percent of the United States sample do not have observations on earnings in both years and are thus not included in the sample. The comparable figure for Germany is 12 percent. While this level of sample attrition is high enough to raise concerns, our attempt to account for sample selection yielded coefficients on the correlation between error terms that suggest the estimates are not stable when we attempt to correct for selection bias.

Table 3

Earnings Mobility and Decile of Origin Estimations for United States and German Males Aged 25 to 55, 1985-1989

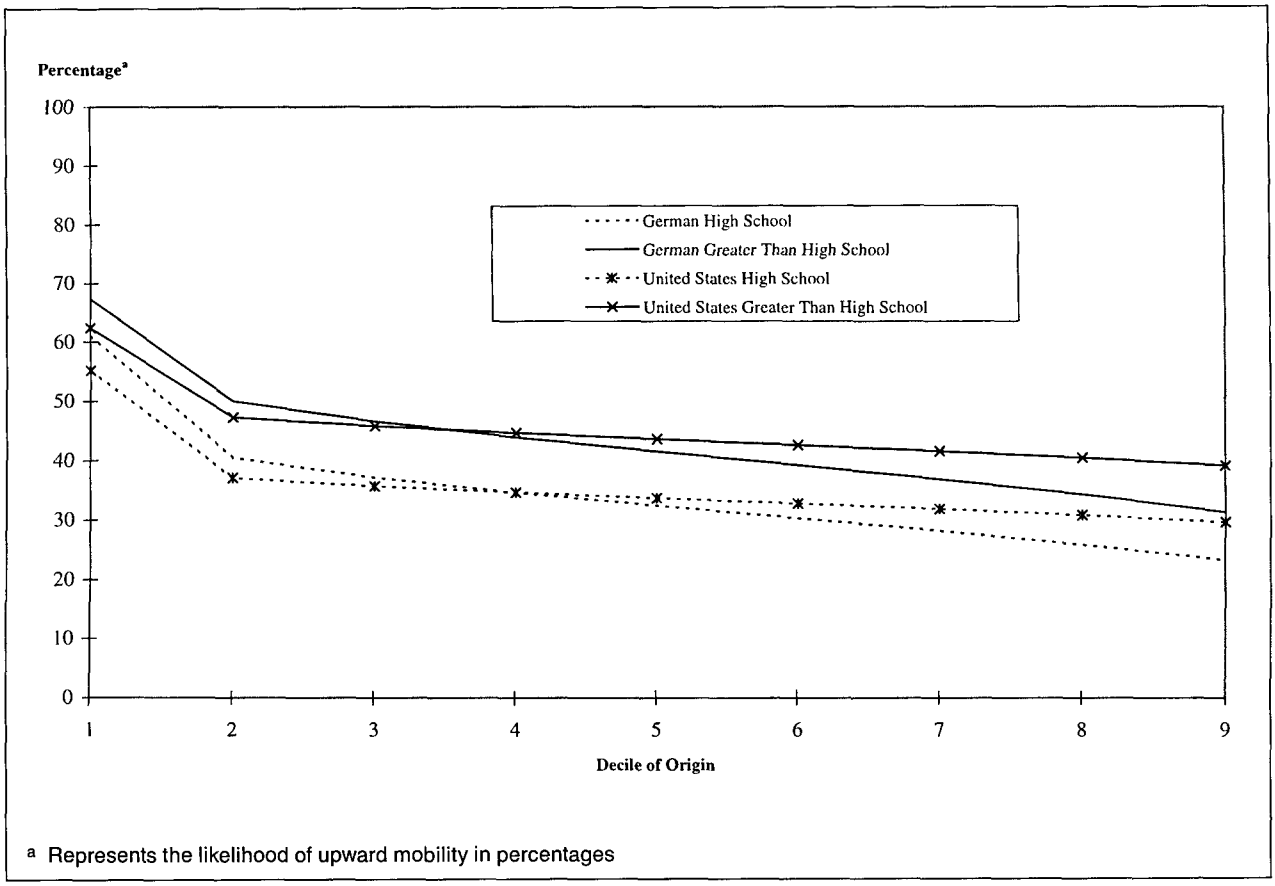
	United States		Germany	
Variables	Estimates	t-ratios	Estimates	t-ratios
Decile of Origin				
Constant	1.2124	7.225*	0.8765	5.144*
Less than High School	−0.4332	−5.421*	−0.0876	−1.087
Greater than High School	0.3561	5.679*	0.6794	8.075*
Experience	0.8836	7.714*	0.7232	6.255*
Experience Squared	−0.1619	−5.470*	−0.1479	−5.307*
Past Unemployment	−1.9618	−7.368*	−1.7876	−9.347*
Professional	0.0827	0.987	0.6486	6.578*
Business Job	−0.0855	−0.690	0.3215	2.504*
Skilled Worker	−0.4707	−6.058*	−0.3491	−3.608*
Low-Skilled Worker	−0.6710	−7.204*	−0.5138	−4.993*
Self-Employed	−0.3613	−5.086*	0.2344	3.196*
Occupation Missing	−1.0448	−3.756*	−0.3636	−3.414*
Agriculture	−1.0351	−6.044*	−0.9543	−4.073*
Energy	−0.2117	−1.071	0.4176	1.647
Mining	0.2040	0.714	0.7228	2.168*
Manufacturing	−0.0746	−0.613	0.2965	3.011*
Construction	−0.5669	−4.211*	0.1012	0.831*
Retail	−0.5353	−4.159*	−0.1400	−0.946
Banking	−0.3154	−1.727	0.9778	2.435*
Service	−0.4867	−3.963*	0.0457	0.429
Industry Missing	−0.6636	−2.336*	−0.1477	−1.311
Number of Children	0.0083	0.330	0.0408	1.581
Married	0.2872	4.277*	0.1411	1.909
Black	−0.4363	−6.493*	—	—
Guest Worker	—	—	−0.1919	−2.485*
Decile of Origin Thresholds: μ_1	0.6534	16.800*	0.5757	14.349*
Decile of Origin Thresholds: μ_2	1.0674	24.053*	1.0508	22.276*
Decile of Origin Thresholds: μ_3	1.4087	29.749*	1.3953	27.854*
Decile of Origin Thresholds: μ_4	1.7597	34.691*	1.7463	33.016*
Decile of Origin Thresholds: μ_5	2.0770	39.124*	2.0901	37.929*
Decile of Origin Thresholds: μ_6	2.4469	42.800*	2.4780	42.402*
Decile of Origin Thresholds: μ_7	2.8363	46.246*	2.9117	46.853*
Decile of Origin Thresholds: μ_8	3.3549	48.534*	3.4673	50.502*
Mobility				
Constant	0.5662	2.957*	0.5310	2.568*
Less than High School	−0.2328	−2.162*	0.0763	0.839
Greater than High School	0.2329	2.872*	0.1244	0.978
Experience	−0.1856	−1.076	−0.2274	−1.325
Experience Squared	0.0200	0.495	0.0083	0.211
Intervening Unemployment	−2.5994	−4.791*	−1.3347	−4.592*
Professional	0.1528	1.600	0.0682	0.463
Business Job	−0.1365	−0.779	0.2120	1.270
Skilled Worker	−0.0994	−0.987	−0.0060	−0.050
Low-Skilled Worker	−0.3442	−2.704*	−0.1023	−0.731
Self-Employed	−0.3899	−3.567*	−0.2226	−1.782
Occupation Missing	0.0686	0.254	0.3329	1.871
Occupation Change	0.0072	0.107	0.0447	0.444
Occupation Change Missing	−0.3904	−1.220	−0.2855	−2.255*
Industry Change	−0.1870	−2.536*	0.0085	−0.107
Industry Change Missing	−0.3493	−1.367	−0.1920	−1.985*
Birth of Child	0.1885	1.957*	−0.0220	−0.284
Married	0.0907	1.099	0.0339	0.388
Black	−0.2387	−2.882*	—	—
Guest Worker	—	—	−0.2014	−2.117*
Decile 1	0.6528	2.264*	0.5276	1.833
Decile 2	0.7782	4.537*	0.6374	3.453*
Decile 3	0.4668	3.374*	0.2999	2.213*
Decile 4	0.3701	3.090*	0.3326	2.956*
Decile 6	0.0579	0.462	−0.1895	−1.586
Decile 7	0.0064	0.048	−0.0698	−0.506
Decile 8	−0.0745	−0.449	−0.0807	−0.462
Decile 9	−0.3189	−1.530	−0.0530	−0.247
Decile 10	0.8346	2.508*	1.2849	3.697*
Mobility Threshold Parameter: μ	0.8308	22.940*	0.7608	20.810*
Correlation between Error Terms				
$P_{1,2}$	−0.0778	−0.693	−0.1731	−1.544
Mean Log Likelihood	−2.96788		−3.01982	
N	1,825		1,860	

*Indicates statistical significance at the .95 confidence level for a two-tailed test.

Source: Authors' calculations from the PSID in the United States and the GSOEP in Germany.

Figure 1

The Effect of Education on Upward Mobility for a Representative Male in Germany and in the United States



[a] Represents the likelihood of upward mobility in percentages

equation yields theoretically appropriate and, hence, unsurprising results. Most importantly, greater education, labor market experience, and marriage all resulted in a higher relative level of labor earnings in both Germany and the United States. Recent spells of unemployment and low skills led to lower relative labor earnings.

There are some differences in the results between the countries. Most importantly, while those with less than a high school education are significantly worse off in the American labor market, there is no significant difference in earnings between less than high school and high school educated Germans. In addition, being a professional in Germany appears to lead to higher earnings relative to the reference occupation (office workers), while being a professional in the United States, other things equal, does not necessarily lead to higher earnings relative to office workers. Manufacturing workers in Germany tend to earn more than their counterparts in the reference (transportation) industry, while that is not the case in the United States. Guest workers have lower earnings in Germany than other Germans workers, while in the United States blacks have lower earnings than non-blacks[10].

Earnings mobility among the deciles differs considerably between the two countries. In Germany, men appear to be well matched with their jobs and there are few significant differences in our independent variables, including education, with respect to a move to a higher or lower earnings decile. However, those with an unemployment spell in the period between 1985 and 1989 and guest workers are more likely to move to lower earning deciles by 1989.

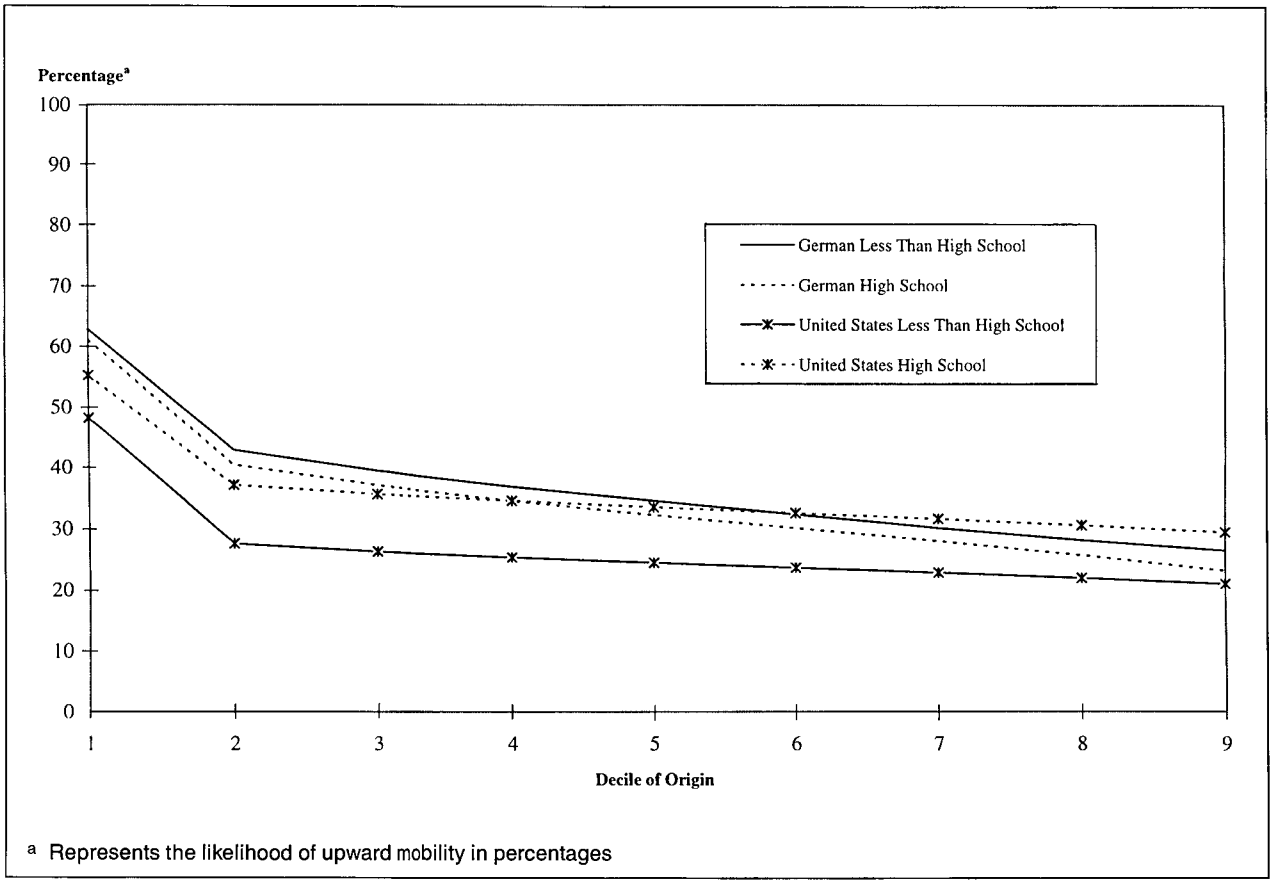
In the United States, education is a significant predictor of mobility, with more highly educated people more likely to experience an upward movement in relative earnings. In addition, workers who are unemployed in the intervening period between 1985 and 1989 are more likely to fall to lower earnings deciles, as are workers with lower skills. Blacks are less likely to advance to a higher earning decile. After controlling for human capital and demographic variables, we find that in both countries there is regression toward the mean with respect to decile of origin. That is, those in lower deciles are more likely to move upward over the period than those in higher deciles[11].

Simulations of Earnings Decile Mobility by Educational Attainment

The importance of education in earnings decile mobility can best be seen by a simulation based on both the decile of origin and mobility equations. Figure 1 shows the difference in the likelihood of moving to higher earnings

Figure 2

The Effect of Education on Upward Mobility for a Representative Male in Germany and in the United States



[a] Represents the likelihood of upward mobility in percentages

deciles in each country for a male with greater than high school education relative to that same male with a high school education. Higher education significantly raises the probability of moving to higher earnings deciles for males in both countries throughout the earnings distribution.

Perhaps a more interesting result shown in Figure 1 is the effect of within education group mobility in each country. Holding education groups constant, those in lower initial deciles in Germany were more likely to make an upward move through the earnings distribution over this time period and those in higher initial deciles were less likely to make an upward move compared to their American counterparts. (The German educational group lines intersect the American educational group lines from above.) This suggests that mobility within education levels compresses the earnings distribution more in Germany than in the United States.

In Figure 2 the likelihood of upward mobility for a typical male who has not obtained a high school education is compared to that same male who has obtained a high school education. We find that there is a much greater difference in these outcomes between the two countries than was the case in Figure 1. In the United States, men with a less than high school education have a significantly lower probability of advancing to higher earnings deciles compared to high school graduates. In Germany, the difference between these two groups is insignificant. This suggests that labor market institutions lead to quite different results for these two educational groups in the two countries. With respect to within education group mobility, Germans with less than a

[10] Data on occupation and industry are not available for all observations in the data sets. Thus, we include dummy variables to account for the cases in which industry and occupation are missing. We have searched the data for explanations and links to the missing occupation and industry data. The missing data are not concentrated in any particular earning decile or education group, for example. Given these findings, we attach no particular meaning to statistically significant findings on the coefficients for the dummy variables accounting for missing data. However, we thought it would be better to retain in some way observations without specific industry or occupation coding rather than to eliminate them from the sample and potentially worsen the sample selection bias.

[11] The exception to the pattern of regression toward the mean occurs in the 10th decile. Because individuals in the first earnings decile cannot move down and those in the tenth earnings decile cannot move up, we scaled the contributions that individuals in these deciles made to the likelihood function so that the probabilities would sum to one. This scaling procedure may in part be responsible for the coefficient on the tenth decile deviating from the expected regression toward the mean. For a further discussion of the scaling procedure used here, see Bingley, Henning-Bjorn, and Westergard-Nielsen (1995).

high school education are more likely to experience upward movement at *all* deciles of origin than are their counterparts in the United States but the difference is greater at lower deciles.

6. Conclusions

Our research confirms that there is greater labor earnings equality in Germany than in the United States. But, unlike previous studies, we have attempted both to describe and explain mobility in the two countries within a human capital framework.

We find that educational differences in the United States have a greater impact on both the decile of origin and a movement from it between 1985 and 1989. Our education simulations allow us to isolate those movements across initial deciles. They show that mobility both across and within educational levels in the United States appears to lead to greater inequality than is the case in Germany. Hence, not only did better educated workers in the United States gain in real terms during the growth period from 1985 to 1989 but they also gained relative to less educated workers across all deciles of origin. Growth in Germany was much more equally distributed within and across education groups and across labor earnings deciles.

References

Abraham, Katherine G. and Susan N. *Houseman*. 1995. "Earnings Inequality in Germany". In Richard Freeman and Lawrence Katz (eds.), Differences and Changes in Wage Structures. Chicago: University of Chicago Press, pp. 371-403.

Bingley, Paul, Niels Henning *Bjorn* and Niels *Westergard-Nielsen*. 1995. "Wage Mobility in Denmark: 1980-1990", Working Paper No. 95-10, Center for Labour Market and Social Research, University of Aarhus and Aarhus School of Business.

Blackburn, McKinley L. and David E. *Bloom*. 1987. "Earnings and Income Inequality in the United States", Population Development Review, 13(4) (December): 575-609.

Burkhauser, Richard V., Barbara A. *Butrica*, and Mary C. *Daly* (1995) "The Syracuse University PSID-GSOEP Equivalent Data File: A Product of Cross-National Research". Cross-National Studies in Aging Program Project Paper No. 25, All-University Gerontology Center, The Maxwell School. Syracuse, NY: Syracuse University, July.

Burkhauser, Richard V. and John G. *Poupore*. Forthcoming. "A Cross-National Comparison of Permanent Inequality in the United States and Germany", Review of Economics and Statistics.

Burkhauser, Richard V. Douglas *Holtz-Eakin*, and Stephen E. *Rhody*. Forthcoming. "Mobility and Inequality in the 1980s: A Cross-National Comparison of the United States and Germany''. In Stephen Jenkins, Arie Kapteyn, and Bernard van Praag (eds.), The Distribution of Welfare and Household Production: International Perspectives. Cambridge, MA: Cambridge University Press.

Burkhauser, Richard V., Michael J. *Wasylenko*, and Robert *Weathers*. 1996. "Wage Mobility in Germany and the United States: 1983-1989''. Report to OECD.

Butler, J.S. 1996. "Estimating the Correlation in Censored Probit Models", Review of Economics and Statistics, 78: 356-358.

Butler, J.S. and Patrali *Chatterjee*. Forthcoming. "Tests of Univariate and Bivariate Ordered Probits", Review of Economics and Statistics.

Calhoun, Charles A. 1989. "Estimating the Distribution of Desired Family Size and Excess Fertility", Journal of Human Resources, 24(4): 709-724.

Gottschalk, Peter and Timothy M. *Smeeding*. 1995. "Cross-National Comparisons of Levels and Trends in Inequality", LIS Working Paper No. 126. Luxembourg: Luxembourg Income Study.

Greene, William H. 1993. Econometric Analysis. New York: MacMillan Publishing Company.

Greene, William H. 1992. Limdep 6.0 Users Manual and Reference Guide. St. Louis, MO: William H. Greene Publishing.

Hill, Martha S. 1992. The Panel Study of Income Dynamics: A User's Guide. Beverly Hills, CA: Sage Publications.

Karoly, Lynn A. 1988. "A Study of the Distribution of Individual Earnings in the United States from 1967 to 1986''. Ph.D. dissertation, Yale Department of Economics, New Haven, CT, December.

Levy, Frank and Richard J. *Murname*. 1992. "U.S. Earnings Levels and Earnings Inequality: A Review of Recent Trends and Proposed Explanations", Journal of Economic Literature, 30(3): 1333-1381.

Murphy, Kevin M. and Finis *Welch*. 1993. "Industrial Change and the Rising Importance of Skill''. In Sheldon Danziger and Peter Gottschalk (eds.), Uneven Tides: Rising Inequality in America. New York: Russell Sage Foundation, Chapter 3, pp. 101-132.

Wagner, Gert G., Richard V. *Burkhauser*, and Friederike *Behringer*. 1993. "The English Language Public Use File of the German Socio-Economic Panel", Journal of Human Resources, 28(2) (Spring): 413-415.