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Immigration and Assimilation

Communist Human Capital in a Capitalist Labor Market: The Experience of East German and Ethnic German Immigrants to West Germany[1]

By Thomas A. Dunn, Michaela Kreyenfeld, and Mary E. Lovely

Summary

Data from the German Socio-Economic Panel are used to examine the labor market integration of East Germans and ethnic Germans who migrated to West Germany between 1984 and 1994. Using a standard human capital model and samples of prime age full-time male workers, we find no economic return to immigrants' work experience gained outside West Germany. However, we find immigrants see a somewhat lower return to university education and vocational training as West Germans. These findings suggest that workers whose human capital is primarily work experience have the largest earnings disparities relative to West German natives.

1. Introduction

Between 1984 and 1994, an estimated five million people migrated to West Germany, reaching 5 percent of the West German population by 1994. Of the 1.643 million persons of central and eastern European nationality who were living in the European Union at the start of 1992, 81 percent were living in Germany (European Commission 1995). Moreover, by the end of 1993, 1.4 million people had left East Germany for West Germany and almost half a million more were commuting to work in the West (European Commission 1995). As a consequence of these flows and German immigration policy, about half of the immigrants entering West German are of German origin, with an estimated 25 percent coming from within the former German Democratic Republic, and another 28 percent arriving from Poland, Romania, or states of the former Soviet Union (Schulz and Seiring 1994).

Immigrants of German origin or ethnicity share three characteristics of importance for their integration into the West German economy. First, they have or receive German citizenship when they arrive and therefore hold full political and economic rights, in contrast to the German guest workers. Second, they share the same access to the German labor market and to associated programs of adjustment assistance. Third, most of these immigrants have acquired their human capital in centrally planned economies. Because of these commonalities, the group is a unique population for studying the value of "communist human capital" in the regulated market economy of West Germany[2].

The value of communist human capital in a market economy is essential to determining the economic success of both East-West immigrants and those remaining in countries making the transition from centrally planned to market economies. The potential for dependency of East-West immigrants may be attributed to several factors. First, immigrants may arrive with low levels of human capital, raising concerns that their market earnings will be too low to sustain them above a minimum income threshold. Second, immigrants may arrive with comparable levels of human capital, but skills gained in the place of origin may be valued less highly at the receiving location. Third, immigrants may receive a lower return to human capital investment of any type, as evidenced by lower returns to skills acquired in the receiving country. This study uses new data from German household surveys to assess the validity of the first two of these aspects of immigrants' labor market experiences.

Although the distinction between East and West Germany was officially erased with political reunification in

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[2] We use the term "communist human capital" to refer to human capital acquired in the German Democratic Republic as well as Romania, Poland, and the former Soviet Union. The GDR, however, considered itself a socialist, as opposed to communist, regime.

1990, we find it convenient to continue to use these terms to denote place of origin and destination. We use the term "East German" to refer to a worker born in East Germany but now working in West Germany. We use the term "West German" to refer to a worker born in West Germany and not a "foreigner," as designated by Turkish, Yugoslavian, Italian, Spanish, or Greek nationality. Finally, we use the term "ethnic German" to refer to workers of German ethnicity who have migrated to West Germany from places such as Poland, Romania, and territories of the former Soviet Union[3].

We use data from the German Socio-Economic Panel (GSOEP) to compare labor market characteristics and outcomes of East and ethnic German immigrants to those of native West German workers. We find no economic return to immigrants' work experience earned outside West Germany. However, we find comparable economic returns to college and vocational degrees for West German natives and East and ethnic German immigrants. These findings suggest that workers whose human capital is primarily work experience have the largest earnings disparities relative to West German natives.

The paper is organized as follows. In the next section, we describe our research approach and discuss the hypotheses we test with the GSOEP data. The third section describes the GSOEP samples and variables we use. Section four presents the results of cross-sectional regression analysis and a discussion of our findings. The last section concludes with some implications of our results for transition scenarios in Eastern Europe.

2. Research Approach

The economic assimilation of East and ethnic Germans depends on the relative quality ascribed to education, training, and experience gained in the place of origin and the rate of return to quality-adjusted human capital paid to these workers in the West German labor market. By combining the GSOEP data on wages and worker characteristics with a standard human capital model of earnings, we estimate the return to human capital for German immigrants working in West Germany and compare these returns to those paid to native West German workers.

Most American studies use a standard human capital model to estimate the returns to schooling, the theoretical justification for which is provided by Mincer (1974). The appropriateness of this model for the German labor market is addressed by Krueger and Pischke (1995), who emphasize the importance of collective bargaining in the wage-setting process, but nonetheless find that about 40 percent of the variation in earnings can be explained by standard human capital measures. Moreover, as described by Bird, Schwarze, and Wagner (1994), although the total package of wages and benefits in West Germany is rarely worked out in negotiations between individuals, the wage-setting process does provide a systematic role for schooling, training, and experience. For example, the national training system constrains actors in wage negotiations to keep bargaining within an explicitly defined "correct" range for workers with a given level and type of training. Bird, Schwarze, and Wagner are able to explain more than half of the variation in the wages of West German men using a standard human capital approach.

We follow these researchers in applying the human capital model to the West German labor market. We classify workers into two groups, natives and immigrants, and denote group membership by the subscript j. We posit that wages are a function of a worker's schooling, S_i, vocational training, V_i, years of labor market experience, E_i, and other personal and job characteristics, X_i. For immigrants, wages may be also influenced by the number of years since migrating and by the arrival cohort, which identifies whether the immigrant entered West Germany in or after 1990, the first year of reunification. Denoting the logarithm of earnings as W_i, we assume this function takes the form:

$$W_i = \alpha_{0j} + \alpha_{1j} S_i + \alpha_{2j} V_i + \alpha_{3j} E_i + \alpha_{4j} E_i^2 + \alpha_{5j} X_i + \epsilon_i, \quad (1)$$

where ϵ_i reflects individual and job characteristics uncorrelated with the observed human capital measures. The parameters are subscripted by j, indicating that the estimating procedure will allow them to vary by group. In practice, we combine natives and immigrants and estimate a fully interacted model that allows all the variables in (1) to vary with immigrant status.

There are two reasons to permit the coefficients on schooling, training, and experience to vary by group. First, human capital acquired under a communist regime may be valued differently in a capitalist labor market than is capital acquired in a capitalist regime. Given the constraints on labor mobility and wage setting, it is reasonable to assume that education and training acquired under socialism were designed to achieve different objectives than education and training in the West. Moreover, experience earned in Eastern factories may be valued less highly than experience gained in the West, given East-West productivity differences. Thus, human capital accumulated in the country of origin may be of lower quality compared to human capital accumulated in West Germany.

Second, human capital of a given quality may be valued differently when offered by immigrants rather than by natives. Such differences may reflect unidentified

[3] These migrants are descendant of German families who emigrated to eastern European countries as far back as the twelfth century or who 'became" Polish when Germany's boundaries were redrawn at the close of World War II. During the Cold War, "freeing" ethnic Germans from communist oppression became a permanent political issue for the West German government in its relations with the East. For example, under "family reunion programs" West Germany negotiated permission for ethnic Germans to leave the USSR or its satellites in exchange for cash payments.

heterogeneity in the productivity of different groups or it may reflect labor market discrimination. By permitting the coefficients on schooling, training, and experience to vary by group, we allow for either quality or rate-of-return differentials by group. We cannot, however, disentangle the separate effects of these factors. Although some East and ethnic German immigrants did receive schooling and training in West Germany, potentially permitting observation of the return to similar quality schooling by the different groups, only a small number of these workers appear in our GSOEP samples

Using ordinary-least-squares estimates of (1), we explore the hypothesis that the return to education, training, and experience is lower for immigrants than for natives in the West German labor market. Given that both the quality of their human capital and the return they receive for it may be lower for East Germans and ethnic Germans than for West German workers, we hypothesize that the coefficients α_1, α_2, α_3, and α_4 will be lower for the immigrants than for the natives. Previous evidence on the differential returns to human capital of various populations in West Germany is mixed, as we discuss later.

3. Description of the Data

Our cross-sectional analysis combines samples of native West Germans, former East Germans, and ethnic German immigrants from eastern European countries drawn from three subsamples of the GSOEP. The GSOEP is a longitudinal household survey (see Wagner, Burkhauser, and Behringer 1993 for a description). This survey began in 1984 with a representative sample of nearly 6,000 West German households (Sample A) and 1,500 foreign households (Sample B). These households and their "split-offs" have been surveyed yearly since 1984. All persons in the household aged 16 and over are surveyed; in 1984 there were 12,245 individual respondents. In 1990, a sample of 2,179 East German households residing in East Germany was added to the survey (Sample C) and they, too, continue to be followed. This study also makes use of the first wave of the newest addition to the GSOEP, a sample of households residing in West Germany but containing at least one member who arrived in West Germany between 1984 and 1994 (Sample D)[4]. This immigrant sample contains 1,078 individuals, 25.9 percent of them originating in East Germany and 49.6 percent ethnic Germans from Poland, Romania, and the former Soviet Union.

Due to current data availability, we must draw information from different survey years, from 1994 for the sample of native West Germans and for the East Germans in Sample C, and from 1995 for the ethnic Germans and East Germans in Sample D. We keep observations for prime aged men (aged 16 to 65) who worked full-time during the survey year and at least 24 hours during the survey week and who were not in school, vocational training, the military, retired or self-employed[5]. After individuals with missing education information and nonvalid earnings reports are omitted, our sample consists of 1,439 West Germans, 172 East Germans and 122 ethnic Germans. Table 1 shows summary statistics for the variables used in our analysis for each of the three groups in the sample.

All of our analyses are restricted to full-time workers. It is natural to ask whether these are similar subsamples of each group. Full-time workers account for 88.8 percent of the West German men who otherwise meet the age and schooling requirements listed above. Among East Germans the employment rate is much higher at 93.6 percent, while ethnic Germans have the lowest employment rate at 75.8 percent. Part-time employment is reported by only a very small fraction of men in each group. The East German men also work more hours per week, 45.8 on average compared to around 42.5 for West and ethnic Germans. In short, there are interesting differences among West, East and ethnic Germans in labor force participation and hours of work. We believe these are important aspects of labor market assimilation, but we leave them for future research and focus our attention on the subsamples of full-time workers.

The earnings measure used in the regression analysis is the logarithm of gross monthly labor earnings[6,7]. Table 1 shows that West Germans have higher earnings (8.49) than either East Germans (8.32) or ethnic Germans (8.22). One might argue that the hourly wage is a more appropriate measure of the reward to skills, since it is less likely to be contaminated by work hours variation that may be related to immigrant status. Since our analysis is restricted to full-time workers and we apply an additional minimum weekly work hours screen and throw out extreme outliers in the earnings distributions, we do not believe this to be a serious problem. But, as a check, we reran most of our regressions with a constructed log hourly wage rate as the dependent variable and found no qualitative differences from the results we present below.

We rely on the biographical information provided by each individual upon first entering the panel to construct our work experience measure. In the calendar, the respondent

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[4] See Burkhauser, Kreyenfeld, and Wagner (1996) for a description of German immigration policies and a full description of the immigrant subsample.

[5] Foreigners (guest workers) are omitted from the West German sample. East Germans who commute into West Germany to work are counted as immigrants in our analysis. Commuters account for 28 percent of the East Germans in the sample.

[6] This includes a prorated share of reported "thirteenth month" pay. To account for the difference in survey years, we convert the 1995 wage report into 1994 DM using a price index. Additionally, we omitted individuals whose constructed hourly wage was less than 7 DM or greater than 150 DM.

[7] Bird, Wagner, and Schwarze (1994) and Pischke (1993) also use log gross monthly earnings in their analyses.

Table 1

Summary Statistics Mean (Standard Deviation)

Variable	West Germans (N = 1,439)	Ethnic Germans (N = 122)	East Germans (N = 172)
Log gross monthly earnings	8.49 (0.33)	8.22 (0.26)	8.32 (0.31)
Hours worked last week	42.6 (6.6)	42.4 (6.7)	45.8 (9.6)
Demographic Variables			
Age	39.9 (10.8)	38.9 (9.2)	35.7 (9.2)
Married	0.69	0.90	0.73
Number of children	0.7 (1.0)	1.4 (1.6)	0.8 (0.9)
North	0.48	0.59	0.52
Job Variables			
Blue collar	0.43	0.89	0.71
Large firm	0.60	0.37	0.38
Trained for current occupation	0.69	0.54	0.56
Education & Experience			
School degree	in Germany	in foreign country	in foreign country
low/no degree	0.08	0.04	0.04
middle	0.01	0.16	0.04
high	0.01	0.08	0.01
College degree	0.17	0.13	0.17
Vocational certificate	0.73	0.59	0.74
Years of work experience	13.7 (12.3)	16.8 (9.8)	12.0 (9.4)
in Germany	13.7 (12.3)	4.2 (2.2)	2.2 (2.8)
in foreign country	—	12.6 (9.5)	9.8 (8.8)
Years of tenure on current job	10.9 (8.6)	4.3 (1.9)	4.5 (3.2)
Immigration Variables			
Age at arrival	—	33.4 (9.2)	32.1 (8.9)
Years in Germany	—	5.5 (1.7)	4.2 (2.0)
Arrived after 1990	—	0.45	0.77
Proficient German speaker	1.00	0.34	1.00

Note: Sample limited to men aged 16 to 65 who worked full-time during the 1994/95 survey year, worked at least 24 hours during the survey week, and were not in school, vocational training, the military, self-employed, or retired. Foreigners are excluded from the West German sample. In the Ethnic German sample, 11 percent of men are from Romania, 46 percent are from the former USSR, and 43 percent are from Poland.

Source: Authors' calculations using GSOEP Samples A and C (1994 Wave) and Sample D (1995 Wave).

indicates his activities (working full-time, part-time, in school, unemployed, etc.) for each year since the age of 15. We accumulate the reports of full-time work to construct our experience measure. For immigrants, we count years prior to migration as experience in the foreign country and years subsequent to migration as experience in Germany. Table 1 shows that the ethnic Germans in our sample have more years of experience on average than the West Germans (16.8 versus 13.7), even though they are on average a year younger. East Germans have about 2.5 years less experience than the West Germans. Ethnic Germans have about three more years of experience in the foreign country and about two more years of experience in Germany than the East Germans.

We use highest certificate obtained as our education measure[8]. We construct indicators for the type of school degree received (low/no degree, middle, and high) and type of secondary degree, either college degree or vocational certificate. West Germans are assumed to have acquired all of their education in West Germany. For immigrants these variables measure education received in the foreign country before emigrating[9]. It turns out that the East and

[8] Pischke (1993), in contrast, works with years of education. He uses an algorithm that incorporates the structure of the German educational system to convert each West German respondent's highest educational certificate or degree into years of schooling and another set of algorithms to construct years of education for guest workers from Spain, Turkey, Italy, Yugoslavia and Greece.

[9] Kreyenfeld (1996) provides the following classification schemes for the education degrees. For West Germans, the "low" school degree includes individuals without a school degree and those with the German gerneral school leaving certificate (Hauptschulabschluß). The "middle" degree is the German secondary school degree (Realschulabschluß) and other school degrees that do not fit in any of the other categories. The "High"

ethnic Germans acquired very little education in West Germany: only 5.5 percent of the ethnic and 7.6 percent of East Germans had any education in West Germany, and of those, most got only one or two years. It should also be noted that German immigration policy provides for financial assistance for several months (in 1991 it was ten months and since 1992, six months) of remedial German language instruction for some immigrants of German origin. According to Koller, Nagel and Blaschke (1992), about 80 percent of ethnic Germans in the labor force in 1992 had attended such a course[10]. It is unclear whether or not our sample members report this as formal education in the survey. For these reasons, we ignore education received by immigrants in West Germany and focus on the return to education acquired in the country of origin.

Table 1 shows that in terms of educational degrees, the East German workers look very much like the West Germans: around 10 percent received no secondary degree, 17 percent hold college degrees and about three-quarters have vocational certificates. In contrast, more ethnic Germans have only a school degree, and fewer of them hold college degrees (13 percent) or vocational certificates (59 percent).

We also constructed a set of immigrant-specific variables, many of which have been identified by previous researchers as important predictors of successful integration into the native labor market. First, we indicate immigrant status with the variable *IMMI*[11]. We also record the individual's age at immigration, years in Germany since migration (*YSM*), and whether the individual arrived in Germany after 1990. This reunification dummy is the only cohort effect we include in our analysis for two reasons. First, membership in the immigrant subsample of the GSOEP was restricted to individuals who had arrived in Germany between 1984 and 1994. This is a relatively short time period and is just about bisected by reunification in 1990. Secondly, we expect that the experiences of migrants after reunification would be different from those who arrived before due to changes in labor supply conditions and to legal and institutional changes associated with the union.

One potentially interesting predictor of successful integration, native language proficiency (see Chiswick 1991), is only of limited use in this analysis. The East Germans (who account for 59 percent of our sample of immigrants) were assumed to have German proficiency and so were not asked in the survey about their language skills. Furthermore, the survey was only administered in German, so that ethnic Germans with poor German language skills who did not have the assistance of a translator are unlikely to be included in the sample (Rendtel and Daschke 1996). Be that as it may, among the ethnic Germans, only about 30 percent reported that they could speak German well. Finally, among the ethnic Germans, the degree of German proficiency is strongly correlated with country of origin; for example, over 90 percent of immigrants from Romania report that their German speaking proficiency is "good" or "very good," while only 46 percent of those from Poland and 57 percent from the former Soviet Union do so. In short, there is very little usable variation in this variable to exploit in our regression analysis, so we ignore the effects of language proficiency on wages.

Finally, all of our regressions also include a set of demographic variables, including indicators for married, region of residence (North/South), and working in a small, rather than large, firm.

4. Results

We estimate a variant of equation (1) using the logarithm of monthly earnings as the dependent variable, with indicators for university and vocational degrees, experience in Germany and in the country of origin and their squares, and several other control variables. Table 2 describes the specification in full and shows our estimates. We allow all the coefficients to vary with immigrant status and report interaction coefficients in the column labeled "*IMMI" for each specification. The effect of a particular variable on the log wage of West Germans is found in the first column of each specification. The effect of the variable on the immigrants' wage is the sum of the level coefficient in the first column and interaction coefficient in the "*IMMI" column. The results in the baseline specification (1) can be summarized as follows.

First, additional schooling pays off: West German men with university degrees earn 53 percent more than men who acquired no secondary education. Vocational training raises (log) wages by about 12 percent.

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continued [9]
school degree is a high school diploma or technical secondary school degree (Abitur, Fachhochschulabschluß).
Ethnic German men who attended compulsory schooling but received no degree and East Germans who finished schooling at the eighth grade are recorded as receiving a "low" school degree. "Middle" degrees are for those ethnics who completed the compulsory level of schooling and received a degree, and for East Germans with tenth grade completion. Finally, the "high" school degree holders are those with a continuing school degree. In all cases, the highest degree is recorded for those who report more than one degree.
The "college" variable indicates a college or university degree in the Federal Republic of Germany for West Germans and in the country of origin for immigrants. "Vocational training" encompasses any kind of technical training (vocational training, apprenticeship, public health school, training for public service, and others) for West Germans and any vocational degree for East Germans and Eastern Europeans.

[10] The ethnic Germans, like West Germans, are also eligible for vocational training programs arranged by local employment agencies. Before 1993, about 50 percent of ethnic immigrants attended some sort of agency-initiated program, but since 1992 only about 25 percent have done so (Koller 1995).

[11] It is possible so further identify the ethnic Germans by country of origin (Poland, Romania, USSR), but sample sizes become very small, so we do not do so.

Immigrants see similar returns to their education as West Germans at all levels. The difference between the wages of immigrants and natives with no secondary education is measured by the coefficient on the variable IMMI. This is 0.052 with a standard error of 0.062, indicating no real difference between the two groups. The immigrants' return to university education is measured as the IMMI coefficient plus the difference between the university degree coefficient and this coefficient interacted with IMMI. The immigrants' return to vocational training is measured similarly. The estimates here say that ethnic and East Germans see a return of 0.416 to university education, about 10 percentage points lower than the return West Germans earn. An F-test shows that the difference between the two groups is significant at the 7 percent level[12]. Immigrants enjoy nearly the same return to vocational training as West Germans, 0.105 versus 0.116[13].

The third finding is that immigrants' work experience in the country of origin has no effect on their earnings in West Germany. The magnitudes of the foreign country experience coefficients are small and statistically insignificant, whether considered separately or jointly.

[12] We also estimated a specification that allows for different education coefficients for East and ethnic Germans. Ethnic Germans' university degrees earn them a return of 26 percent while East Germans see a higher return, about 45 percent. The returns to vocational educaton are comparable for these two groups of immigrants.

[13] The p-value for the F-test of equality of coefficients is 0.88.

Table 2

Returns to Education and Experience
Dependent Variable: log gross monthly earnings

	Specification 1		Specification 2		Specification 3	
		*IMMI		*IMMI		*IMMI
Intercept	8.18 (306)	0.052 (0.83)	8.32 (302)	−0.010 (0.14)	8.17 (282)	0.021 (0.32)
Education University Degree	0.529 (19.6)	−0.165 (2.73)	0.402 (14.5)	−0.098 (1.54)	0.491 (17.3)	−0.142 (2.31)
Vocational Certificate	0.115 (5.17)	−0.063 (1.32)	0.070 (3.25)	−0.022 (0.49)	0.091 (3.87)	−0.036 (0.75)
Experience Years in Germany	0.013 (6.73)	−0.042 (2.80)	0.012 (6.56)	−0.037 (2.61)	0.013 (6.54)	0.039 (2.61)
Years in Germany Squared (divided by 100)	−0.027 (5.40)	0.535 (2.90)	−0.025 (5.21)	−0.508 (2.87)	−0.026 (5.10)	0.492 (2.67)
Years in Foreign Country		−0.003 (0.50)		−0.002 (0.44)		−0.003 (0.61)
Years in Foreign Country Squared (divided by 100)		−0.005 (0.27)		−0.006 (0.36)		−0.004 (0.22)
Small Firm	−0.098 (6.79)	−0.016 (0.45)	−0.076 (5.50)	−0.034 (1.00)	−0.103 (7.15)	−0.019 (0.53)
Blue Collar			−0.184 (12.7)	0.086 (1.96)		
Currently Working in Occupation Trained for					0.057 (3.71)	0.028 (0.82)
R^2	0.40		0.45		0.40	

Notes: Absolute value of t-statistics appear In parentheses beneath OLS coefficients. The wage includes a prorated share of thirteenth month pay and other bonuses. All regressions also include controls for marital status and region of residence. The omitted school category is no secondary degree. Sample is limited to men aged 16 to 65 who worked full-time during the 1994/95 survey year and at least 24 hours during the survey week who are not in school, vocational training, the military, self-employed, or retired. Foreigners are excluded from the West German sample. There are 1,733 observations in all regressions, 1,439 West Germans, and 294 immigrants. The column labeled IMMI in each specification shows the estimated coefficients for the variable interacted with the indicator for immigrant status.

Source: Authors' calculations using GSOEP Samples A and C (1994 Wave) and Sample D (1995 Wave).

Fourth, West Germans see the usual concave experience-earnings profile, with a peak at about 24 years of experience. At the mean experience level of 14 years, the return to experience is about one-half percent per year. Combining the experience coefficients and the IMMI interactions reveals a U-shaped experience profile for immigrants. According to these estimates, earnings fall for the first 2.6 working years in Germany and then take about 5 years to climb back to their initial level. This peculiar pattern is most likely due to the fact that in our cross-sectional analysis we observe men who arrived in different years and at different ages. It is the differences across immigrants that provides the variation in experience that is identified here. To disentangle the cohort effects on earnings from the rate of individual earnings growth due to the accumulation of work experience requires a series of observations on the same individuals over time. Our estimates of the returns to experience for the West Germans are probably less seriously affected by cohort differences and more accurately reflect the rate at which their wages change with job experience.

These findings are robust to several changes in the specification. In specification (2) of Table 2 we include an indicator for being a blue collar worker and its interaction with IMMI. As seen in Table 1, East and ethnic Germans are more likely than West Germans to work in blue collar jobs and that may account for their lower wages. In Table 2, the blue collar wage penalty is about 18 percent for West Germans and about 10 percent for immigrants. Including the BLUE variable and its IMMI interaction does not affect the experience coefficients very much. The returns to education are now lower everywhere, but the difference between the returns to education for West Germans and for immigrants are left largely intact at all levels of education. Specification (3) includes an indicator and IMMI interaction for whether the worker is currently in the occupation for which he received training. West Germans and immigrants both see a statistically significant, but economically modest wage boost of around 4.6 percent in this case.

We also ran several specifications that included the immigration-specific variables. Both "years since migrated to Germany" and our cohort indicator for having arrived in Germany after reunification turned out to have no effect whatsoever in the wage equation: their coefficients were minuscule and very imprecisely estimated. None of the other coefficients in the equation was changed by their inclusion, so the estimates are not shown here.

Our results for ethnic and East German immigrants stand in contrast to Pischke's (1993) analysis of guest workers in the West German labor market. He finds significant differences in the return to schooling and training of foreign guest workers and natives. He estimates that, while West German natives receive about 8 percent more in earnings for each additional year of schooling or training, foreigners receive no return to foreign schooling and only a 3 percent return to foreign training. Our results are in line with Krueger and Pischke's (1995) comparison of East and West Germans, which finds no such differences. Using a small sample of East German commuters to West Germany, they estimate a return to schooling for commuters that is only slightly less than that received by West Germans.

5. Conclusion

Ethnic and East Germans working in West Germany have high levels of educational attainment and they are rewarded nearly as well for their credentials as West Germans. However, the work experience obtained in their native countries has virtually no value in West Germany.

These results add to the growing body of research on economic transitions in the East. Complementary research by Bird, Schwarze, and Wagner (1994) suggests that East German workers with little formal education will suffer the most under the transition to a market economy, primarily due to the decline in value of their work experience. This conclusion is based on a counterfactual analysis in which they assign schooling and experience earned in East Germany the economic return received by natives in West Germany while assigning work experience earned in East Germany no value. Our findings provide further justification for assigning similar returns to education to East and ethnic Germans and assigning no value to Eastern work experience.

A more complete analysis of the assimilation of immigrants from East Germany and eastern Europe could proceed on at least three fronts. First, a closer examination of the determinants of labor force participation is necessary. Participation is arguably a more serious issue in assimilation than earning determination for full-time workers. The large differences in the labor force participation rates and work hours between East Germans and ethnic Germans warrant particular attention. Second, our investigation is incomplete in that we omitted foreigners and East Germans remaining in East Germany from our sample. Our goal was to highlight the differences between native West German and immigrants from formerly communist states. Some would argue that the proper comparison group would be a representative sample of all German workers, including foreign guest workers and Germans in the Eastern states. Our estimation technique could be easily modified to accomplish this. Immigrants, in comparison to these groups, may not be as disadvantaged as our results suggest. Third, the analysis of assimilation will be greatly improved by the use of panel data. Repeated observations of our samples of immigrants would allow us to measure their wage growth over time to get a better picture of their success in the West German labor market and to disentangle cohort effects on wages from duration effects.

[14] Pischke (1993) uses panel data to identify "years since migration" effects for guest workers and finds large wage increases in the first several years of work in Germany.

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