GLOBAL OUTSOURCING OF HUMAN CAPITAL AND THE INCIDENCE OF UNEMPLOYMENT IN THE UNITED STATES

OGLOBLIN, Constantin [*]

Abstract

   The study is the first to examine empirically the impact of the new wave of global job outsourcing on skill-specific patterns of involuntary unemployment in the U.S. using the latest individual-level data. The estimates from a probit model show that, so far, global human-capital outsourcing has not shifted the risk of unemployment from lower-skilled to higher-skilled American workers. Overall, the probability of involuntary unemployment is negatively related with the worker's level of education. For the outsourceable occupations, however, high-skilled workers are currently at a greater risk of unemployment than those with lower skills.

JEL classification: C1, I2, J2, J6
Key words*:* outsourcing, globalization, labor, unemployment, education

1. Introduction

   Until recently, an established and generally admitted view in economic literature had been that global economic integration tends to shift low-skilled, mainly blue-collar jobs from developed to developing countries while creating more high-skilled, well-paid jobs in the developed world. The new wave of globalization seems to challenge this view.

   In the United States, the announcement of the new round of international trade came with a cover story published in February 2003 by *Business Week*, which described the new phenomenon as a

global shift of "upscale jobs" from the U.S. to developing countries and characterized it as one of the biggest trends reshaping the global economy (Engardio et al (2003)). Since then, anecdotal evidence of companies in developed economies shipping high-skilled jobs offshore has piled up, raising fears of job losses among high-skilled workers in the West and sparking hot political debates.

Outsourcing of human capital became "a big sleeper issue" at the annual meeting of the World Economic Forum in January 2004, where business, government, and academic leaders, usually supporters of globalization, worried that its new round might not produce as many well-paid jobs in Europe and the U.S. as once was expected, which could erode political support for free trade (Davis (2004), Friedman (2004)). According to *The Economist* (2004), offshore job outsourcing is the main reason why anti-trade sentiment, especially in the U.S., is currently having one of its strongest revivals in years.

Although the literature on the labor market effects of international trade is ample, global outsourcing of human capital has been studied very little. It is a very recent phenomenon brought about by the latest advances in information technology and communication around the globe, along with the significant growth of human capital in developing countries and trade liberalization in the former communist economies. So far, much of the research has been conducted or ordered by politically or financially interested groups and based on private data sources. The reliability of these studies is hard to verify and their objectivity is doubtful.

The present study is one of the first independent attempts to examine the influence of the recent wave of global human-capital outsourcing on the incidence of unemployment in the U.S. Are the better educated workers currently more likely to be involuntarily unemployed than are the lower educated workers? Is the incidence of unemployment across different levels of education related to outsourcing? Are the fears that the new wave of globalization is shifting the risk of unemployment from low-skilled to high-skilled workers justified?

I attempt to answer these questions with the help of statistical inference based on the individual-level data from the U.S. Bureau of the Census' Current Population Survey (CPS) combined with the best available information on occupational categories threatened by offshore outsourcing. I construct a probit equation that estimates the expected rate of involuntary unemployment conditional on the worker's level of education and on whether her occupation is at risk of outsourcing. This study is largely empirical. A formal theoretical examination of the issue is on the author's agenda for further research.

2. Data

Most empirical studies of the international job outsourcing are based on industry-level data. Geishecker and Görg (2003) argue that this approach has certain problems. First, industry-level data do not capture individual heterogeneity, which may play an important role in explaining labor-market outcomes. Second, regressing industry relative unemployment rate on industry-level measures of outsourcing activity is likely to cause the endogeneity problem. For these reasons, I use individual, rather than industry, level data.

The main data sets come from the Current Population Survey (CPS), a monthly survey of about 50,000 households conducted by the U.S. Bureau of the Census for the Bureau of Labor Statistics. The survey provides publicly available individual-level data that are most current of all government labor market statistics.[†] The CPS datasets are substantially larger in scope and more reliable than any other source of the U.S. labor-market data. The April basic datasets for 2000 and 2004 are used. The April 2004 dataset was the latest available at the time I started this project and in this sense is randomly selected to reflect the latest labor-market trends. The 2000 set reflects the time when the new form of human-capital outsourcing

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[†] The CPS data and methodology are available from the CPS Web site at http://www.bls.census.gov/cps/cpsmain.htm.   The computer programs (STATA "DO" files) used to process the data and generate econometric results are available from the author on request.

was virtually nonexistent and thus provides a baseline for comparisons with 2004. The sample is restricted to individuals in civilian labor force, aged 20-64, who are either wage employed or involuntary unemployed. In all descriptive statistics and estimation procedures the data are weighted using the CPS final weights.

The new type of international job outsourcing is hard to account for. Direct and systematic data on the number and composition of jobs migrating from the U.S. offshore are not available. Measuring outsourcing as the share of imported intermediate inputs in the industry's output, as suggested by Feenstra and Hanson (1996, 1999), does not work well for the new type of outsourcing since it does not account for the direct cross-border transfers of service jobs and human-capital services, especially within multinational firms. Further, within the same industry, there are outsourceable jobs and those that are hard or impossible to outsource. Also, I believe, in the face of the rising new wave of outsourcing, the labor-market outcome for a particular workers depends more on the occupation than on the industry he is associated with.

In this paper, I construct the measure of international job outsourcing activity using information from Forrester Research Inc. (McCarthy et al (2002)), one of the most authoritative and widely cited proprietary reports. The report predicts that a cumulative 830,000 white-collar jobs will be outsourced from the U.S. offshore by 2005, and by 2015 the number is expected to rise to 3.4 million (Hilsenrath (2004)). It also contains a breakdown of U.S. jobs expected to migrate overseas into nine major groups of the Standard Occupational Classification (SOC) (Kirkegaard (2003)). Without questioning Forrester's assumptions, I use these groups to represent occupations influenced by offshore outsourcing. The nine SOC groups threatened by offshore outsourcing are listed in Table 1 along with the groups that are not at risk of outsourcing.

3. Labor market trends

Tables 2, shows the rate of involuntary unemployment in the U.S. in 2000 and 2004 by level of education. The involuntary unemployment rate is calculated as the percentage of laid off or

otherwise involuntarily unemployed workers in the labor force that is either employed or involuntarily unemployed.

Table 1. Major SOC Categories by Risk of Offshore Outsourcing [a]

Code	Category	Code	Category
Threatened by outsourcing		*Not threatened by outsourcing*	
11	Management	21	Community and social service
13	Business and financial operations	25	Education, training, and library
15	Computer and mathematical	29	Healthcare practitioner and technical
17	Architecture and engineering	31	Healthcare support
19	Life, physical, and social science	33	Protective service
23	Legal	35	Food preparation and serving related
27	Arts, design, entertainment, sports, and media	37	Building and grounds cleaning and maintenance
41	Sales and related	39	Personal care and service occupations
43	Office and administrative support	45	Farming, fishing, and forestry
		47	Construction and extraction
		49	Installation, maintenance, and repair
		51	Production
		53	Transportation and material moving
		55	Armed forces

[a] Standard Occupational Classification (SOC) system is currently used by Federal statistical agencies; it combines all occupations into 23 major groups. The nine SOC groups threatened by offshore outsourcing are listed in Kirkegaard (2003). The complete SOC hierarchical structure and occupational definitions are available from the U.S. Department of Labor at http://www.bls.gov/soc/.

The average rate of involuntary unemployment in 2004 is markedly higher than that in 2000, and in both years involuntary unemployment shows a clear trend to fall monotonically as the level of education rises. Thus, for the economy as a whole, the new wave of international outsourcing does not seem to shift the risk of unemployment from lower-skilled to higher-skilled workers.

Table 2. Involuntary Unemployment Rate in the U.S. by Level of Education, 2000 and 2004, % [a]

Level of education [b]	2000	2004
High school not completed	3.72	5.74
High school diploma	2.13	4.21
Some college	1.58	3.03
Associate degree	1.27	2.39
Undergraduate college degree	0.75	2.15
Graduate or professional degree	0.62	1.44
All levels	1.70	3.27
[a.] Calculated from the April CPS. Civilian labor force, aged 20-64, either wage employed or involuntarily unemployed. All cell counts are weighted using the CPS final weights. [b] Highest degree obtained.		

However, as Table 3 shows, the trends in employment and unemployment differ depending on whether or not the occupation is in a category threatened by global outsourcing. The total number of jobs in 2004 increased by 3.2 million compared to 2000, but since the number of outsourceable jobs decreased by almost 1.2 million, the additional employment came entirely from the occupations that are not likely to get outsourced. The percentage increase in the number of involuntary unemployed workers whose job falls into the occupational categories threatened by outsourcing is 35.5 points higher than that for the rest of the labor force. However, the rate of involuntary unemployment for the outsourceable occupations is substantially lower in both 2000 and 2004.

Table 3   Employment and Involuntary Unemployment in the U.S., 2000 and 2004 (thousands) [a]

	2000	2004	Change	% change
Occupations threatened by outsourcing				
Employment	54,542	53,365	-1,177	-2.16
Involuntary unemployment	685	1,531	846	123.53
Rate of involuntary unemployment, %	1.24	2.79	1.55	124.87
Occupations not threatened by outsourcing				
Employment	56,416	60,804	4,388	7.78
Involuntary unemployment	1,237	2,326	1,089	88.03
Rate of involuntary unemployment, %	2.15	3.68	1.54	71.72
All occupations				
Employment	110,958	114,169	3,212	2.89
Involuntary unemployment	1,922	3,858	1,935	100.68
Rate of involuntary unemployment, %	1.70	3.27	1.57	91.93
[a.] Calculated from the April CPS. Civilian labor force, aged 20-64, either wage employed or involuntarily unemployed. For unemployed individuals, the occupational category is defined by the job lost. All cell counts are weighted using the CPS final weights.				

It is also worthy of note that the outsourceable occupations attract better educated workers compared to the occupations that are not at risk of outsourcing (Table 4). In 2004, 37.5% of the labor force pertained to the outsourceable occupational categories had at least a bachelor's degree and only 29.2% did not have education above the high-school level.   For the categories that are not likely to be outsourced, these numbers were 22.4% and 50.8% respectively. Thus, the fears of potential loses of high-skilled jobs to international outsourcing appear to be justified.

4. The empirical strategy

I first estimate a probit model that tests whether the rise of global human-capital outsourcing is shifting the risk of unemployment from the low-skilled to the high-skilled labor force and whether the rate of involuntary unemployment is significantly higher for the outsourceable compared to non-outsourceable occupations.

Table 4 Distribution of the U.S. Labor Force by Level of Education, 2000 and 2004, % [a]

| | Category by risk of outsourcing | | | |
| | At risk | | Not at risk | |
	2000	2004	2000	2004
High school not completed	3.4	3.6	17.3	16.0
High school diploma	26.4	25.7	37.8	34.8
Some college	23.6	23.2	17.4	17.3
Associate degree	9.1	9.3	8.4	9.4
Undergraduate college degree	26.6	27.6	12.4	13.8
Graduate/professional degree	10.9	10.6	6.6	8.6
Total	100.0	100.0	100.0	100.0
[a.] Calculated from the April CPS. Civilian labor force, aged 20-64. All cell counts are weighted using the CPS final weights.				

The model may be written as follows:

$$P(U_i = 1) = \mathbf{F}(\mathbf{a}'E_i + \mathbf{b}R_i + \mathbf{g}'C_i) \quad (1)$$

where $U_i = 1$ if individual i is involuntarily unemployed and zero otherwise, $F(\cdot)$ is the cumulative probability function for the standard normal variable; $\mathbf{a}$, β, and $\mathbf{g}$ are probit parameters, E_i is a set of dummy variables representing individual i's level of education with a high-school diploma as the baseline, $R_i = 1$ if individual i's occupation is outsourceable and zero otherwise, and C_i is the vector of variables that control for individual heterogeneity (age, gender, race/ethnicity, and marital status) and structural factors (industry, region, and metropolitan status). All variables included in (1) are defined and described in Table 5.

Table 5 Variable Definitions and Descriptions [a]

Variable	Definition	Mean (St. error) [b]	
		2000	2004
Dependent variable:			
unlost	1 if involuntarily unemployed	1.70 (0.06)	3.27 (0.09)
Education dummy variables (highest level attained):			
Baseline	High school diploma	32.21 (0.23)	30.50 (0.23)
nohischl	High school is not completed	10.34 (0.15)	10.01 (0.15)
smcolge	Attended college but no degree	20.39 (0.20)	20.03 (0.20)
associate	Associate degree	8.79 (0.14)	9.40 (0.14)
bachelor	Bachelor's degree	19.45 (0.20)	20.41 (0.20)
grad/prof	Graduate or professional degree	8.82 (0.14)	9.65 (0.14)
ocouts	1 if the occupation is outsourceable	48.93 (0.25)	46.51 (0.25)
age	Age	39.02 (0.06)	39.76 (0.06)
age_sq	$age^2/100$	16.47 (0.04)	17.15 (0.05)
gender	1 if female	47.85 (0.25)	47.69 (0.25)
marsta	1 if married	59.30 (0.25)	58.59 (0.24)
Race/ethnicity dummy variables:			
Baseline	White	72.00 (0.23)	68.78 (0.24)
hisp	Hispanic origin	10.75 (0.16)	12.76 (0.18)
black	Black	12.46 (0.17)	11.86 (0.17)

Table 5 Continued

Variable	Definition	Mean(St. error) [b]	
		2000	2004
asian	Asian	3.93 (0.10)	4.36 (0.11)
other	Other/mixed	0.86 (0.04)	2.24 (0.07)
Industry dummy variables:			
Baseline	Manufacturing, mining	17.51 (0.19)	14.04 (0.17)
agric	Agriculture, forestry, fishing, hunting	1.62 (0.06)	0.89 (0.05)
constr	Construction	5.96 (0.12)	6.86 (0.13)
trade	Wholesale and retail trade	18.46 (0.19)	14.14 (0.17)
tranutl	Transportation and utilities	6.12 (0.12)	5.30 (0.11)
infnbus	Professional, and financial services.	19.38 (0.20)	19.03 (0.19)
eduhlth	Education and health	18.87 (0.19)	22.64 (0.20)
othsrv	Other services	6.94 (0.13)	12.00 (0.16)
pubadm	Public administration	5.15 (0.11)	5.10 (0.11)
Metropolitan status dummy variables:			
Baseline	Metropolitan, MSA is at least 1 million	56.17 (0.25)	56.09 (0.24)
metr<1m	Metropolitan, MSA is less than 1 million	23.65 (0.21)	24.29 (0.21)
nonmetr	Nonmetropolitan	17.14 (0.18)	16.74 (0.18)
nident	Not identified	3.03 (0.08)	2.87 (0.07)

Table 5 Continued

Variable	Definition	Mean (St. error) [b]	
		2000	2004
Region dummy variables:			
Baseline	Midwest	23.86	23.37
		(0.21)	(0.20)
Northeast	Northeast	19.02	18.85
		(0.18)	(0.18)
South	South	34.92	35.10
		(0.24)	(0.24)
West	West	22.20	22.68
		(0.21)	(0.21)
[a.] Civilian labor force, aged 20-64. Weighted using the CPS final eights. [b] For dummy variables means and standard errors are in percent.			

Next, I obtain the estimates of skill-specific effects of outsourcing on the rate of involuntary unemployment from the following equation:

$$P(U_i = 1) = \mathbf{F}\,(\mathbf{a}\text{'E}_i + \mathbf{b}R_i + \mathbf{d}\text{'}R_i\,E_i + \mathbf{g}\text{'}C_i) \quad (2)$$

The differential ($\mathbf{d}$ - $\mathbf{a}$) shows the directions of these effects. If for the level of education j the difference (δ_i- α_j) is significantly positive, then the incidence of involuntary unemployment pertained to the outsourceable occupations is significantly greater for this level of education than for the baseline level.

Equations (1) and (2) are estimated separately for 2000 and 2004 by maximum likelihood, with observations weighted using the CPS final weights and robust estimates of standard errors. For continuous variables, the marginal effects are calculated for an infinitesimal change at the means of all explanatory variables in the equation. For dummy variables the marginal effects are computed for the change of the relevant variable from 0 to 1 at the means of the rest of the explanatory variables. The 2004 results are interpreted as a "snapshot" of the impact of the rising new wave of global outsourcing on involuntary unemployment in the U.S. The 2000 results serve as a benchmark.

5. Results

The results are presented in Tables 6 and 7. The patterns of average effects of education on the probability of unemployment (Table 6) are virtually the same in 2000 and 2004 and consistent with the trend revealed by the descriptive statistics in Table 2: the risk of involuntary unemployment falls as the level of education rises.

Table 6. Probit Equation Estimates: Average Effects of Education, 2000 and 2004 [a]

Variable	2000		2004	
	Coeffi-cient [b]	Marginal effect [c]	Coeffi-cient [b]	Marginal effect [c]
nohischl	0.176*** (0.049)	0.670	0.121*** (0.042)	0.794
smcolge	-0.089** (0.045)	-0.272	-0.102*** (0.037)	-0.576
associate	-0.127** (0.063)	-0.366	-0.167*** (0.050)	-0.879
bachelor	-0.271*** (0.056)	-0.735	-0.169*** (0.040)	-0.920
grad/prof	-0.234*** (0.085)	-0.614	-0.235*** (0.061)	-1.175
age	0.008 (0.010)	0.027	0.010 (0.008)	0.062
age_sq	-0.008 (0.013)	-0.026	-0.009 (0.010)	-0.056
ocouts	-0.079** (0.038)	-0.255	-0.043 (0.032)	-0.257
gender	-0.018 (0.036)	-0.059	-0.072** (0.029)	-0.430
marsta	-0.258*** (0.035)	-0.890	-0.282*** (0.028)	-1.785
hisp	0.009 (0.054)	0.029	-0.080* (0.045)	-0.451
black	0.278*** (0.046)	1.141	0.289*** (0.039)	2.151

Table 6. Continued

Variable	2000		2004	
	Coeffi-cient [b]	Marginal effect [c]	Coeffi-cient [b]	Marginal effect [c]
asian	-0.151 (0.103)	-0.420	-0.034 (0.073)	-0.197
other	0.290*** (0.112)	1.293	0.087 (0.075)	0.565
agric	0.331*** (0.093)	1.536	0.081 (0.117)	0.524
constr	0.240*** (0.057)	0.986	0.256*** (0.047)	1.900
trade	-0.090* (0.051)	-0.272	-0.122*** (0.046)	-0.671
tranutl	-0.217*** (0.078)	-0.570	-0.312*** (0.066)	-1.429
infnbus	-0.007 (0.052)	-0.024	-0.092** (0.044)	-0.523
eduhlth	-0.473*** (0.070)	-1.137	-0.508*** (0.052)	-2.382
othsrv	-0.137* (0.071)	-0.390	-0.166*** (0.048)	-0.882
pubadm	-0.414*** (0.103)	-0.899	-0.592*** (0.086)	-2.158
metr<1m	0.046 (0.041)	0.151	0.058* (0.032)	0.356
nonmetr	0.138*** (0.045)	0.494	-0.017 (0.036)	-0.103
nident	0.150* (0.090)	0.568	0.095 (0.075)	0.624
Northeast	0.036 (0.047)	0.118	0.023 (0.037)	0.137
South	-0.109** (0.045)	-0.341	-0.167*** (0.035)	-0.958
West	0.100** (0.046)	0.346	0.048 (0.037)	0.296

Table 6. Continued

Variable	2000		2004	
	Coeffi-cient [b]	Marginal effect [c]	Coeffi-cient [b]	Marginal effect [c]
constant	-2.084*** (0.200)	1.250 [d]	-1.693*** (0.160)	2.576 [d]
N	49,905		55,839	
Wald X^2 (28)	393.28***		603.10***	
Pseudo R^2	0.066		0.062	
[a] The dependent variable is *unlost*; observations are weighted using the CPS final weights. [b] Standard errors are in parentheses. [c] In percent; calculated for an infinitesimal change in a continuous variable and for the change from 0 to 1 in a dummy variable at the means of (the rest of) the explanatory variables. [d] The probability estimate at the means of the explanatory variables. * Statistically significant at the 0.1 level; ** at the 0.05 level; *** at the 0.01 level.				

For instance, in 2004, a worker with a bachelor's degree is 0.9% less likely to be involuntarily unemployed than one with a high-school diploma, and the latter is 0.8% less likely to be unemployed than an individual who has not finished high school. Both differentials are statistically significant. That is, so far, the new wave of global outsourcing has not shifted the risk of unemployment from low-skilled to high-skilled workers in general.

Further, the results in Table 6 show that outsourcing has no significant influence on overall involuntary unemployment. The coefficient of *ocouts* is negative in 2000 and not statistically different from zero in 2004. This suggests that the higher unemployment rate in 2004 compared to 2000 is not related to the new wave of global outsourcing but is due largely to the business cycle and, possibly, structural changes in the economy. The latter, however, are hardly evident, judging by the coefficients of the industry variables reported in the table.

The probit estimates from equation (2) presented in Table 7 indicate, however, that in 2004 the negative relation between the level of education and the probability of involuntary unemployment

holds only for the occupational categories that are not threatened by global outsourcing. For these occupations the relation (shown by the "main effects" of the education variables in Table 7) appears even more pronounced than on the average for all jobs. But, as the (**d** - **a**) differentials reported in Table 7 suggest, for the outsourceable occupations, more highly educated workers are at a greater risk of unemployment than those with lower education.

Table 7.Probit Equation Estimates: Occupation-Specific Effects of Education, 2000 and 2004[a]

Variable	2000		2004	
	Coeffi-cient [b]	Marginal effect [c]	Coeffi-cient [b]	Marginal effect [c]
nohischl	0.176*** (0.054)	0.668	0.100** (0.047)	0.642
smcolge	-0.093 (0.061)	-0.284	-0.045 (0.048)	-0.261
associate	-0.120 (0.086)	-0.348	-0.134** (0.064)	-0.714
bachelor	-0.214** (0.088)	-0.602	-0.308*** (0.069)	-1.543
grad/prof	-0.115 (0.139)	-0.336	-0.426*** (0.104)	-1.826
age	0.008 (0.010)	0.027	0.010 (0.008)	0.060
age_sq	-0.008 (0.013)	-0.026	-0.009 (0.010)	-0.053
ocouts	-0.062 (0.055)	-0.201	-0.065 (0.049)	-0.386
ocouts × nohischl	0.025 (0.128)	0.082	0.106 (0.101)	0.692
ocouts × smcolge	0.003 (0.090)	0.011	-0.111 (0.074)	-0.605
ocouts × associate	-0.016 (0.125)	-0.051	-0.074 (0.100)	-0.411
ocouts × bachelor	-0.088 (0.115)	-0.265	0.201** (0.088)	1.377

Table 7. Continued

Variable	2000		2004	
	Coeffi-cient [b]	Marginal effect [c]	Coeffi-cient [b]	Marginal effect [c]
ocouts × *grad/prof*	-0.184 (0.174)	-0.496	0.286** (0.129)	2.182
gender	-0.022 (0.036)	-0.072	-0.063** (0.030)	-0.374
marsta	-0.258*** (0.035)	-0.890	-0.283*** (0.028)	-1.771
hisp	0.009 (0.054)	0.030	-0.075* (0.045)	-0.422
black	0.278*** (0.046)	1.145	0.286*** (0.039)	2.102
asian	-0.149 (0.103)	-0.415	-0.035 (0.073)	-0.202
other	0.289*** (0.112)	1.287	0.090 (0.075)	0.581
agric	0.330*** (0.093)	1.529	0.087 (0.117)	0.560
constr	0.239*** (0.057)	0.980	0.259*** (0.047)	1.906
trade	-0.095* (0.051)	-0.288	-0.112** (0.047)	-0.616
tranutl	-0.221*** (0.078)	-0.578	-0.307*** (0.066)	-1.396
infnbus	-0.009 (0.052)	-0.030	-0.091** (0.044)	-0.510
eduhlth	-0.493*** (0.072)	-1.170	-0.479*** (0.054)	-2.249
othsrv	-0.138* (0.071)	-0.391	-0.165*** (0.048)	-0.868
pubadm	-0.416*** (0.103)	-0.901	-0.587*** (0.086)	-2.120
metr<1m	0.046 (0.041)	0.153	0.058* (0.032)	0.352

Table 7. Continued

Variable	2000		2004	
	Coeffi-cient [b]	Marginal effect [c]	Coeffi-cient [b]	Marginal effect [c]
nonmetr	0.138*** (0.045)	0.494	-0.018 (0.036)	-0.104
nident	0.149* (0.090)	0.564	0.098 (0.075)	0.637
Northeast	0.035 (0.047)	0.117	0.021 (0.037)	0.129
South	-0.110** (0.045)	-0.343	-0.166*** (0.035)	-0.942
West	0.100** (0.046)	0.344	0.050 (0.037)	0.303
constant	-2.086*** (0.201)	1.249 [d]	-1.694*** (0.161)	2.543 [d]
Parameter differentials ($\mathbf{d}$- $\mathbf{a}$):				
E_i=*nohisch*	-0.151 (0.158)	-0.586	0.006 (0.129)	0.050
E_i=*smcolge*	0.097 (0.139)	0.295	-0.066 (0.111)	-0.344
E_i=*associate*	0.104 (0.194)	0.297	0.060 (0.150)	0.302
E_i=*bachelor*	0.126 (0.192)	0.336	0.509*** (0.148)	2.919
E_i=*grad/prof*	-0.069 (0.297)	-0.161	0.712*** (0.221)	4.008
N	49,905		55,839	
Wald X^2 (33)	400.55***		635.51***	
Pseudo R^2	0.067		0.063	

[a] The dependent variable is *unlost*; observations are weighted using the CPS final weights.
[b] Standard errors are in parentheses.
[c] In percent; calculated for an infinitesimal change in a continuous variable and for the change fom 0 to 1 in a dummy variable at the means of (the rest of) the explanatory variables.
[d] The probability estimate at the means of the explanatory variables.
* Statistically significant at the 0.1 level; ** at the 0.05 level; *** at the 0.01 level.

Compared to a worker who has only a high-school diploma, the probability of involuntary unemployment is 2.9% higher for a holder of a bachelor's degree and 4.0% higher for one with a graduate or professional degree!   In 2000, as was expected, none of the interaction term coefficients and (**d** - **a**) differentials is statistically significant, i.e. the outsourceable occupation factor does not alter the overall negative relation between education and unemployment.

Finally, the coefficients of the control variables in equations (1) and (2) are largely as expected and may provide some useful insights into the current patterns of involuntary unemployment in the U.S. Since these results are not the focus of the present study, I do not discuss them here. Their interpretation is fairly straightforward, and I simply refer an interested reader to Tables 6 and 7.

6. Conclusions

The recent wave of outsourcing of human capital from the U.S. to the developing and transition economies has become a big economic and political issue. The main concern is that workers in the U.S. are going to lose not just low-skilled jobs, but also high-skilled, well paid jobs to the rest of the world.

This paper has presented a comparative static empirical study of the influence of the recent wave of global human-capital outsourcing on the incidence of unemployment in the U.S. based on the latest individual-level data from the Current Population Survey augmented with information on outsourceable jobs from a private source.

The analysis has shown that so far, global outsourcing has not shifted the risk of unemployment from lower-skilled to higher-skilled workers in general. In both 2000, when the new form of human-capital outsourcing was virtually nonexistent and 2004, when it is on the rise, the probability of involuntary unemployment is negatively associated with the worker's level of education.   Currently, belonging in an outsourceable occupational category does not increase the risk of unemployment for an average U.S. worker,

which suggests that the higher unemployment rate in 2004, compared to 2000, is due largely to the business cycle.

   At the same time, the negative relation between the level of education and the probability of involuntary unemployment does not hold specifically for the outsourceable occupations. On the contrary, more highly educated workers in these occupations are currently significantly more likely to be involuntarily unemployed than workers with lower education.   It remains to be seen, however, whether or not this relation continues to hold and becomes prevalent for the entire economy as the new wave of global outsourcing gets more strength.

References

Davis, Bob.   "Migration of Skilled Jobs Abroad Unsettles Global Economy Fans." *The Wall Street Journal Online*, January 26, 2004.

Economist, The. "The new jobs migration." February 19, 2004.

Engardio, Pete et al. "The New Global Job Shift." *Business Week*, February 3, 2003.

Feenstra, Robert C. and Gordon H. Hanson.   "Globalization, outsourcing, and wage inequality." *The American Economic Review*, May 1996; 86, 2, p. 240-45.

Feenstra, Robert C. and Gordon H. Hanson. "The Impact of Outsourcing and High-Technology Capital on Wages: Estimates for the United States, 1979-1990." *The Quarterly Journal of Economics*, 114(3), August 1999, p. 907-40

Friedman, Alan. "Embrace Outsourcing, Don't Fear It."   *The Wall Street Journal Online*, January 26, 2004.

Geishecker, Ingo and Holger Görg.   "Winners and Losers: Fragmentation, Trade and Wages Revisited." GEP Research Paper 03/41.

Hilsenrath, Jon E. "Forrester Revises Loss Estimates to Overseas Jobs." *The Wall Street Journal*, May 17, 2004, p. A8.

Kirkegaard, Jacob F. "Outsourcing—Stains on the White Collar?" Institute for International Economics. February 2004.

McCarthy, John C. et al. "3.3 Million US Services Jobs to Go Offshore." Forrester Research, Inc., November 2002.

McCarthy, John C. et al. "Near-Term Growth of Offshoring Accelerating Resizing US Services Jobs Going Offshore." Forrester Research, Inc., May 2004.

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