

The Characteristics of Offshorable Jobs
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Quantifying the Threat of Offshoring

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In this brief memo we describe the data and findings in the accompanying spreadsheet, and discuss the methods used to generate these findings. A more detailed analysis will be forthcoming in the next few weeks.

Offshoring is a term used to describe the practice of sending work that used to be done here to be done by workers abroad. A U.S. software company, for example, might hire programmers in India to write computer code, a task that was formerly done by American-based programmers. Factory work, of course, can also be offshored: garments once produced domestically, for example, are now more likely to be made abroad.

In seminal work, economist Alan Blinder examined the tasks performed by employees in hundreds of occupations, and identified those jobs that are potentially offshorable.¹ While many “blue-collar” or production jobs have long been recognized as offshorable, Blinder’s contribution was to account for the role of communication technologies that allow many more workplace tasks to be offshored. For example, telemarketing and accounting tasks typically do not require on site presence and the tasks involved can be accomplished by phone and especially over the internet.

Blinder stresses two caveats. First, he is trying to “*estimate the number of jobs that are potentially offshorable,*” [his italics and underline], and second, that “only a fraction of these offshorable jobs will actually be offshored.” Nevertheless, those employed in offshorable jobs can expect to see their wages adversely affected solely because their work can be offshored even if it is not actually offshored. The availability of offshore labor, even if it is never tapped, increases the supply of workers available to the employer, and this creates downward pressure on wage growth.²

The tables in the attached spreadsheet present the shares and numbers of workers in jobs classified as “offshorable,” based on Blinder’s analysis, along with their associated wage levels.³

Findings

Using data from table one and table two, we find, for example, that between 18 and 22 percent of today’s jobs—25 to 30 million—could potentially be offshored.⁴

¹ Alan Blinder, “How Many US Jobs Might Be Offshorable?” CEPS Working Paper #142, March 2007.

² See

http://commentisfree.guardian.co.uk/jared_bernstein_and_josh_bivens/2007/11/pain_of_globalisation.html.

³ As discussed in the methods appendix, we mapped Blinder’s methodology onto two data sources: the Occupation and Employment Statistics Survey and the Current Population Survey, the latter of which has the advantage of having many more demographic characteristics than the data set used by Blinder.

⁴ The CPS analysis generates the lower share and the OES analysis generates the higher share. Since the OES uses the same occupational categories as Blinder (meaning the CPS requires an occupational

Data from Table 1 reveal that the educational group most vulnerable to offshoring are those with at least a four-year college degree. While 29.5% of all jobs are staffed by those with at least a four-year college degree, 34% of *offshorable* jobs fall into this category. Over eight million highly educated workers are at risk from offshore competition.

Jobs vulnerable to offshoring also pay better, even when comparing jobs with comparable education requirements (Table 3 and Figure 1). For instance, among college-educated workers, offshorable jobs pay about \$8,000, or 14%, more per year than non-offshorable jobs. Among jobs for workers with at most a high school education, offshorable jobs pay about 9% more than other available jobs. This is a measure of what is at risk for workers in occupations exposed to this type of global competition.

The OES data (see data appendix) in Table 2 provide details on the skill demands of various jobs, and these data also reveal the higher skill levels of offshorable jobs. Offshorable jobs, for example, are much more likely to require moderate rather than short-term on the job training, and are more likely to require an associate or bachelor's degree than non-offshorable jobs.

Most other characteristics are found to be similar among both offshorable and non-offshorable jobs (see Tables 1 and 4). For example, there are few regional or city/suburb differences between all jobs and those with offshore potential.

Data Appendix: Matching the Blinder definitions to the CPS

In order to analyze the characteristics of workers in the occupational typology that Blinder constructs, we needed to match occupational indicators from the Current Population Survey to those Blinder used from the O*NET survey.

The CPS relies on the 2002 Census occupational classification system, a four-digit coding system created by the US Census Bureau to organize the wide and diverse range of jobs in the U.S. economy. Blinder's source (O*NET), however, uses the six-digit 2000 Standard Occupation Classification (SOC) system, an alternate coding system designed to standardize occupational codes for federal statistical agencies. For example, the title "Computer programmer" is given the code "1010" in the Census occupational classification system but "15-1021" in the SOC system.

To address this obstacle, a coding "crosswalk" was published by the U.S. Census Bureau that allows a comparison of differently-coded occupations between these two occupational classification systems. However, though the published crosswalk is extensive, it is not exhaustive of all existing occupations; this is especially true for very detailed or specific occupations.⁵

crosswalk to match the Blinder/OES categories), we take the higher share as more reliable. This estimate (22%) is also the same as Blinder's lower bound estimate.

⁵ The occupational coding crosswalk used in this paper can be found here: <http://www.census.gov/hhes/www/ioindex/ioindex02/download02.html>

We refer to occupations that have a listed crosswalk between the Census and SOC coding systems as "hard matches". "Loan counselors" are listed as code "0910" under the Census system and "13-2071" under the SOC system. As a result, this occupation is considered a hard match.

Occupations that do not have a listed crosswalk are referred to as "soft matches" and employ a subjective matching technique based on job title to match occupations from one coding system to the other. The title, "Supervisors, farming, fishing, and forestry workers" are coded as "45-1000" in the SOC system, but do not have an exact Census equivalent. We matched this occupational title with the closest Census equivalent, "First-line supervisors/managers of farming, fishing, and forestry workers", which was coded as "6000". As a result, the SOC code "45-1000" is matched with "6000", and is considered a soft match.

In sum, this crosswalk provides hard matches for all but a handful of occupations (fewer than 10, represent less than 5% of weighted employment counts).

Blinder had assigned several occupations into more than one offshorability category. Such an example is "Customer service representative" (SOC "43-4051" and Census "5240." Some customer service representatives can ably perform their jobs over the phone or internet, and require little on-site presence. Other customer service representatives must necessarily be on-site and travel for face-to-face meetings with clients. Rather than assign this occupation, whose tasks and responsibilities varied widely, into one singular offshorability category, Blinder split this particular occupation in equal parts among the four different categories, a procedure we mimicked for our analysis.

Along with the CPS match, we also matched the Blinder data to the Occupational Employment Statistics data. Since these data use the SOC codes, the matching process was simple as it involved, in our terminology, only hard matches. The disadvantage of the OES is that, unlike the CPS (but like Blinder's O*NET data) it is not a microdata set, and only has information of employment, earnings, education composition, and job requirements by occupation.

Comparing the OES and CPS provides a test of the reliability of the CPS match, and these comparisons are generally favorable (see table below). Dividing the occupations into four groups, as in Blinder's table 1 (highly offshorable, offshorable, non-offshorable, and highly non-offshorable), the OES data have slightly larger shares in categories 1-3 and thus a smaller share in category 4 compared to the CPS data. The education shares are also fairly comparable.

	Category 1	Category 2	Category 3	Category 4		
	Highly Offshorable	Offshorable	Non-Offshorable	Highly Non-Offshorable	All	
OES	6.5%	15.1%	6.5%	71.8%	100.0%	
CPS	5.1%	13.1%	4.3%	77.5%	100.0%	
High-School or Less						
OES	28.5%	42.4%	41.4%	45.2%	43.5%	
CPS	26.4%	40.9%	44.5%	43.1%	42.0%	
College or Higher						
OES	33.8%	30.6%	23.0%	27.1%	27.8%	
CPS	36.2%	33.1%	22.4%	28.8%	29.5%	

The wage comparisons also confirm that our CPS match is reliable. We regressed the log of the earnings variable from the OES data on an offshoring indicator variable ('on' for jobs in categories 1 and 2) and an education control, and did a similar regression for the CPS. The coefficients on the offshoring variable were 0.149 from the OES and 0.140 from the CPS, both highly significant. In sum, while these comparisons suggest non-perfect matches, given the differences in these data sets and the different occupational coding schemes, the results suggest relative close matches.

Figure 1. The Annual Wage Advantage in Offshorable Jobs

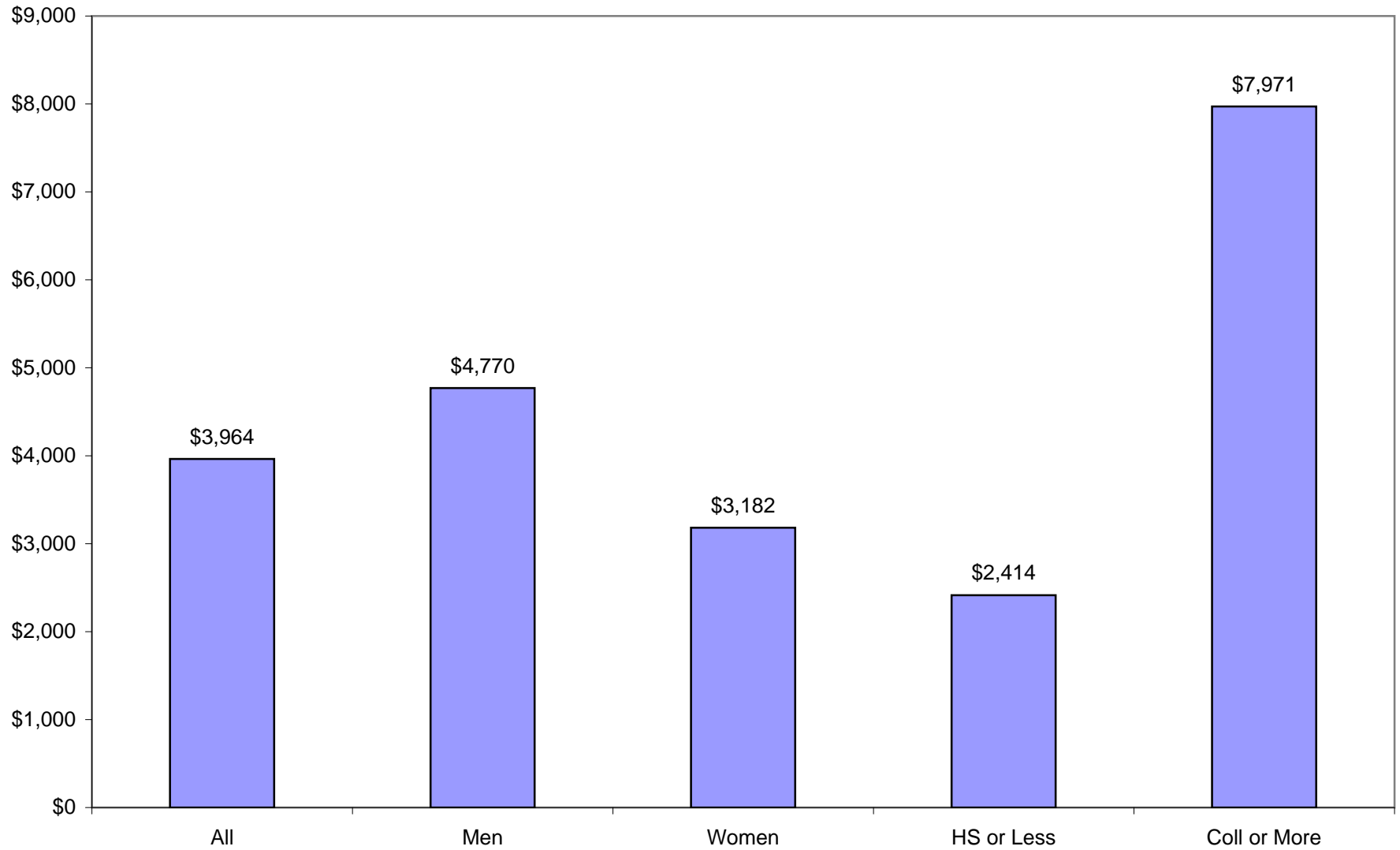


Table 1. Mapping Blinder onto the CPS			
	Category 1 + 2 Offshorable	Category 3 + 4 Non-offshorable	All
Total Shares	18.2%	81.8%	100.0%
Average wage	21.02	17.83	18.45
Average age	41.5	40.6	40.8
% Male	55.9%	54.5%	54.8%
% Female	44.1%	45.5%	45.2%
Education, percents			
LTHS	8.1%	13.0%	12.1%
HS	28.7%	30.1%	29.8%
HS or Less	36.8%	43.1%	42.0%
SOCO	29.2%	28.4%	28.5%
COLL	23.9%	18.5%	19.5%
BA+	10.1%	10.0%	10.0%
College or Higher	34.0%	28.5%	29.5%
Total	100.0%	100.0%	100.0%
Education, levels			
LTHS	2,003,527	14,420,265	16,423,792
HS	7,047,943	33,310,812	40,358,755
SOCO	7,183,359	31,404,499	38,587,858
COLL	5,883,540	20,482,765	26,366,305
BA+	2,481,119	11,026,186	13,507,305
Total	24,599,488	110,644,528	135,244,015

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Table 1. Mapping Blinder onto the CPS, contd.			
	Offshorable	Non-offshorable	All
Region, percents			
Northeast	18.1%	18.4%	18.3%
Midwest	25.9%	22.4%	23.1%
South	34.2%	36.1%	35.8%
West	21.8%	23.1%	22.8%
Total	100.0%	100.0%	100.0%
Region, levels			
Northeast	4,454,788	20,327,399	24,782,187
Midwest	6,365,753	24,820,044	31,185,798
South	8,420,109	39,976,872	48,396,980
West	5,358,838	25,520,213	30,879,051
Total	24,599,488	110,644,528	135,244,015
Metro status, percents			
City	26.2%	26.3%	26.3%
Suburb	45.1%	43.2%	43.5%
Rural	14.3%	15.5%	15.3%
Not Identified	14.3%	15.0%	14.9%
Total	100.0%	100.0%	100.0%
Metro status, levels			
City	6,448,704	29,136,497	35,585,200
Suburb	11,103,192	47,764,310	58,867,503
Rural	3,521,453	17,172,743	20,694,197
Not Identified	3,526,138	16,570,977	20,097,115
Total	24,599,488	110,644,528	135,244,015

Source: See data appendix.

Table 2. Collapsing categories 1+2 and 3+4 for the OES

	Categories 1+2 Offshorable	Categories 3+4 Non-offshorable	All
Total			
Levels	31,633,667	114,501,334	146,135,001
Shares	21.6%	78.4%	100.0%
Education			
High school or less	38.2%	44.9%	43.5%
Some college	30.3%	28.4%	28.8%
College or higher	31.5%	26.7%	27.8%
Total	100.0%	100.0%	100.0%

Source: See data appendix.

Table 2a. Mapping Blinder onto the Occupational Employment Statistics (OES) Survey

2004					
	Category 1	Category 2	Category 3	Category 4	
	Highly Offshorable	Offshorable	Non-Offshorable	Highly Non-Offshorable	All
Total					
Levels	9,517,000	22,116,667	9,525,167	104,976,167	146,135,001
Shares	6.5%	15.1%	6.5%	71.8%	100.0%
Average ann salary	\$36,246	\$42,775	\$33,116	\$33,020	\$34,713
Education, percents					
High school or less	28.5%	42.4%	41.4%	45.2%	43.5%
Some college	37.8%	27.0%	35.6%	27.7%	28.8%
College or higher	33.8%	30.6%	23.0%	27.1%	27.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Education and Training					
Short-term on-the-job training	19.8%	18.8%	49.7%	39.0%	35.4%
Moderate-term on-the-job training	40.8%	32.6%	17.3%	15.4%	19.8%
Long-term on-the-job training	0.8%	6.4%	3.1%	8.8%	7.5%
Work experience in a related occupation	0.0%	6.0%	7.3%	8.6%	7.6%
Postsecondary vocational award	4.1%	0.5%	2.6%	6.8%	5.4%
Associate degree	8.7%	5.5%	4.8%	3.3%	4.1%
Bachelor's degree	24.0%	14.9%	6.1%	10.4%	11.7%
Bachelor's or higher degree, plus work experience	0.2%	13.1%	9.1%	2.6%	4.4%
Master's degree	1.1%	0.0%	0.0%	1.9%	1.5%
Doctoral degree	0.6%	0.4%	0.0%	1.7%	1.3%
First professional degree	0.0%	1.7%	0.0%	1.4%	1.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Source: See data appendix.

Table 3. Wage Premium in Offshorable Jobs

	% Premium	Annual Amount
All	10.8%	\$3,964
Men	11.2%	\$4,770
Women	10.4%	\$3,182
HS or Less	9.1%	\$2,414
Coll or More	13.9%	\$7,971

Source: See data appendix.

Table 4. Mapping Blinder onto the CPS

	Category 1 Highly Offshorable	Category 2 Offshorable	Category 3 Non-Offshorable	Category 4 Highly Non-Offshorable	All
Total Shares	5.1%	13.1%	4.3%	77.5%	100.0%
Average wage	20.10	21.37	17.22	17.87	18.45
Average age	41.2	41.7	38.9	40.7	40.8
% Male	35.1%	64.0%	55.9%	54.4%	54.8%
% Female	64.9%	36.0%	44.1%	45.6%	45.2%
Education, percents					
LTHS	3.0%	10.2%	10.3%	13.2%	12.1%
HS	23.4%	30.7%	34.2%	29.9%	29.8%
HS or Less	26.4%	40.9%	44.5%	43.1%	42.0%
SOCO	37.4%	26.0%	33.1%	28.1%	28.5%
COLL	27.0%	22.7%	17.5%	18.6%	19.5%
BA+	9.2%	10.4%	5.0%	10.2%	10.0%
College or Higher	36.2%	33.1%	22.4%	28.8%	29.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Education, levels					
LTHS	203,457	1,800,070	602,158	13,818,108	16,423,792
HS	1,612,952	5,434,991	1,995,192	31,315,620	40,358,755
SOCO	2,579,542	4,603,817	1,932,843	29,471,656	38,587,858
COLL	1,857,388	4,026,151	1,020,322	19,462,444	26,366,305
BA+	636,671	1,844,448	289,529	10,736,657	13,507,305
Total	6,890,010	17,709,478	5,840,043	104,804,485	135,244,015

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Table 4. Mapping Blinder onto the CPS, contd.

	Category 1 Highly Offshorable	Category 2 Offshorable	Category 3 Non-Offshorable	Category 4 Highly Non-Offshorable	All
Region, percents					
Northeast	18.1%	18.1%	17.3%	18.4%	18.3%
Midwest	23.7%	26.7%	22.7%	22.4%	23.1%
South	35.3%	33.8%	35.7%	36.2%	35.8%
West	22.8%	21.4%	24.3%	23.0%	22.8%
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Region, levels					
Northeast	1,250,462	3,204,326	1,011,432	19,315,967	24,782,187
Midwest	1,631,435	4,734,318	1,324,732	23,495,312	31,185,798
South	2,435,446	5,984,662	2,084,795	37,892,077	48,396,980
West	1,572,667	3,786,171	1,419,083	24,101,130	30,879,051
Total	6,890,010	17,709,478	5,840,043	104,804,485	135,244,015
Metro status, percents					
City	27.8%	25.6%	28.1%	26.2%	26.3%
Suburb	47.6%	44.2%	43.8%	43.1%	43.5%
Rural	11.1%	15.6%	13.2%	15.7%	15.3%
Not Identified	13.6%	14.6%	15.0%	15.0%	14.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Metro status, levels					
City	1,912,789	4,535,915	1,638,539	27,497,958	35,585,200
Suburb	3,280,554	7,822,638	2,559,568	45,204,743	58,867,503
Rural	761,475	2,759,978	768,460	16,404,284	20,694,197
Not Identified	935,192	2,590,947	873,476	15,697,501	20,097,115
Total	6,890,010	17,709,478	5,840,043	104,804,485	135,244,015

Source: See data appendix.

Appendix Table 1. Comparison on OES and CPS education results

	Category 1 Highly Offshorable	Category 2 Offshorable	Category 3 Non-Offshorable	Category 4 Highly Non-Offshorable	All
Shares					
OES	6.5%	15.1%	6.5%	71.8%	100.0%
CPS	5.1%	13.1%	4.3%	77.5%	100.0%
High-School or Less					
OES	28.5%	42.4%	41.4%	45.2%	43.5%
CPS	26.4%	40.9%	44.5%	43.1%	42.0%
College or Higher					
OES	33.8%	30.6%	23.0%	27.1%	27.8%
CPS	36.2%	33.1%	22.4%	28.8%	29.5%

Source: See data appendix.