Published in final edited form as:

Soc Sci Res. 2013 May ; 42(3): 852–871. doi:10.1016/j.ssresearch.2013.01.001.

Market Penalties for Foreign Degrees Among College Educated Immigrants

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Abstract

Are college degrees earned abroad worth less in the American economy than degrees earned in the United States? Do the labor market penalties associated with holding a foreign degree vary as a function of the country or region in which it was earned? Do these processes differ for men and women? We use data on 18,365 college-educated immigrants from the National Survey of College Graduates (NSCG) to address these questions. Female immigrants with foreign degrees are less likely to be employed than immigrant women who earned their degrees in the US. When employed, both female and male immigrants with foreign degrees are less likely to work in a job related to their highest college degree. Among employed female immigrants, the wage returns to foreign degrees are about 17% less than for U.S. degrees; among male immigrants, this figure is about 11%. For both female and male immigrants, the labor market penalties associated with holding a foreign degree vary as a function of the region from which the foreign degree was obtained.

Keywords

education; immigrant; work; wages; labor market; gender

In the United States, we often meet immigrants who work in jobs that do not seem to match their level of formal schooling. We are driven to the airport by the cab driver who earned his engineering degree in Pakistan. We get to know the Honduran custodial worker at the office, and find that she earned a bachelor's degree in accounting before moving to the United States. The Thai nanny that we meet in the park turns out to hold a degree in child psychology from her native country. Such anecdotes maybe exceptional, or they may represent broader patterns. In contrast, in other parts of the economy—in Silicon Valley, for example—foreign-educated immigrant workers are holding jobs and earning incomes that seem more in line with their education and training.

Do immigrants experience poorer labor market outcomes when they hold degrees from their native countries? Do employers place less value on foreign degrees? These questions are related to concerns about the social and economic prospects of immigrants in American society. At the individual level, are some well-educated immigrants systematically

disadvantaged with respect to their ability to capitalize on their skills and knowledge? At a broader level, does the U.S. economy fail to make use of all of the skills and talents of its workers?

In this article, we ask three empirical questions that speak to these issues. First, among immigrants,¹ are degrees earned abroad worth less in the American economy than degrees earned domestically? Here we compare the labor market outcomes of college-educated immigrants who earned their degrees abroad to the same outcomes among otherwise similar college-educated immigrants who earned their degrees in the United States. Second, among immigrants, does the relative worth of a foreign degree depend on the place where it was earned? Are degrees from universities in such disparate places as Mexico, Southeast Asia, or Africa all regarded equally relative to U.S. degrees? Third, do answers to the first two questions differ for men and women? Given sharp gender differences in the experience and context of immigration and in labor market opportunities, we wonder whether the relative value of foreign degrees for college-educated workers differs for men and women.

Theoretical Background

Why might an immigrant who earned a college degree abroad experience different labor market outcomes than an immigrant with an American degree? To think about this question, we find it useful to draw on human capital theory and credential theory to consider the processes through which educational attainment translates into labor market outcomes. As we discuss below, these two very different perspectives lead to similar empirical expectations.

Human capital theory (Becker, 1962, Frazis, 2002) suggests that additional schooling is rewarded in the labor market because employers value the skills, training, and knowledge that come from additional education. In a competitive market, employers prefer to employ and must pay higher wages to employees who are more skilled; educational credentials are simply an indicator (however imperfect) of the skills that employees bring to the labor market.

From this perspective, the relative labor market values of U.S. and foreign degrees are a function of employers' assessments of whether foreign educational institutions impart the same quantity and quality of skills and knowledge as American educational institutions. For example: American hospitals may believe, rightly or wrongly, that American nursing schools provide more and better training than nursing schools in other countries. As a result, we might expect two immigrants with nursing degrees—one earned in the U.S., one earned abroad—to fare differently in the labor market, all else being equal. Additionally, employers may assess the value of U.S. and foreign degrees on a continuum, such that the quantity and quality of skills and knowledge imparted by foreign educational institutions may vary from

¹We compare the labor market outcomes of immigrants who obtained their college degrees in the U.S. to those who obtained their college degrees abroad. This narrow focus on *immigrants* who have earned *college degrees* is useful for isolating the relative value of U.S. and foreign post-secondary degrees among a group of people who are equivalent with respect to immigration status and educational attainment. Including native-born individuals in our analysis would unnecessarily complicate the them, since almost no native-born Americans earn their degrees abroad. We would also risk conflating “country of degree” effects with “native-born versus foreign-born” effects.

country to country. To continue with the same example: American hospitals may believe, again rightly or wrongly, that American nursing programs provide the world's best training, that Canadian nursing programs are a close second, that Western European nursing programs are also good, and that nursing programs elsewhere in the world are much less effective. In this case, all else constant we would expect American-educated immigrant nurses to fare best in the labor market, Canadian-educated immigrant nurses to fare somewhat worse, and so forth.

Some researchers have suggested that human capital may not transfer perfectly across countries (e.g. Akresh, 2007, Friedberg, 2000, Zheng and Xie, 2004). From this perspective, skills acquired in college in one country may translate into greater productivity in the labor market in that country—but not in the labor market in other countries. For example, an accountant trained in a French university may acquire skills that facilitate greater productivity in the context of the French economy and in the bureaucratic environment of that country; those same skills may not be as useful in the American economy and bureaucratic environment. Again, however, the empirical expectation is the same: American employers will prefer to hire and will more richly reward American college degrees.

Credential theory (Collins, 1971), in contrast, suggests that additional schooling is rewarded in the labor market because employers use educational credentials as markers for workers' status cultures. From this perspective, the skills and knowledge associated with additional schooling are much less relevant; most people become productive workers through experience and on the job training. What employers seek to maximize is the extent to which their employees respect particular value orientations and norms. Will potential new employees challenge status hierarchies? Will they threaten taken-for-granted assumptions about workplace rules and behavior? Will they come to work on time, work hard, and behave appropriately?

From this perspective, the relative labor market values of U.S. and foreign degrees are a function of employers' assessments of what those degrees say about potential employees' status cultures. Employers have a great deal of experience with U.S. educational institutions. They assume that someone who earned a bachelor's degree from a prestigious U.S. four-year college has a different set of background experiences and value orientations than a second person who earned a two-year degree from a community college or a third person who earned no degree at all. However, employers are much less familiar with foreign educational institutions. Employers might be comfortable making comparative assessments of the status cultures of graduates from Yale and from the University of New Haven; they may be less comfortable making such assessments of the status cultures of graduates from the University of São Paulo or the Auckland University of Technology. If employers are ultimately seeking to hire employees who are "like them" with respect to status cultures, then—all else constant—they will likely place a premium on U.S. degrees. What is more, they may also place a relative premium on degrees earned in countries that are culturally, linguistically, racially/ethnically or economically more like the United States.

Although different in many important respects, human capital theory and credential theory would thus lead to similar empirical expectations regarding our research questions.² Similar

empirical expectations might arise from a completely different set of perspectives that focus more on racist sentiments among employers. Regardless of what employers believe that an educational credential says about a person's skills or status culture, some employers may simply assign less value to degrees earned outside of the United States. Furthermore, they may assign even less value to degrees earned in countries in which most people do not speak English and/or are not racially/ethnically similar; this would be consistent with research that finds that racial disparities in earnings are similar for native born and immigrant workers (Stewart and Dixon, 2010). The result of such conscious or unconscious biases would be a hierarchy in which—all else being equal—U.S. degrees are worth the most, degrees from countries in which people are white and speak English are second most valuable, and degrees from countries in which people have darker skin and do not speak English are least valuable. Even comparing immigrants who were born in the same country and who are otherwise similarly qualified for a job, employers may do more to reward degrees earned in the U.S or in countries more similar to the U.S. in important respects.

Why might the relative labor market value of U.S. and foreign degrees differ for men and women? There are substantial literatures on the role of gender in stratifying labor market and occupational outcomes (Charles, et al., 2001, Jasso and Webster, 1999, Marini, 1989), on the role of gender in shaping the nature and experience of immigration (Pedraza, 1991, Shauman and Noonan, 2007), and on gender differences in rewards to labor market outcomes (England, 1982, Loury, 1997, Marini, 1989, McCall, 2000). From human capital, credential, or other theoretical perspectives, it is clear that gender can be an over-riding consideration in allocating rewards in the labor market. Employers make gendered assumptions about likely labor market productivity, about adherence to status cultures, and about the value of previous workplace experiences and accomplishments (Hull and Nelson, 2000, Marini, 1989). All of these factors may lead to gender differences in the extent to which the U.S. labor market rewards domestic and foreign degrees. Gender may interact with other background experiences and attributes—in this case, we focus on country of education—to stratify labor market outcomes and to produce gender differences in the processes through which wages and other outcomes are allocated. Thus, the answers to our first two questions may thus vary as a function of gender.

Our objective is not to adjudicate between different theoretical perspectives on the processes linking educational credentials to labor market outcomes. Our research questions will not provide a critical test of any of these perspectives; as explained above, for example, human capital and credentialing theories imply similar empirical expectations. Nevertheless, those perspectives are quite useful as a motivating framework for our empirical analyses. We have a great deal of reason to expect that U.S. degrees and foreign degrees will be rewarded differently in the labor market, even among workers who are otherwise equivalent. We also have good reason to suspect that the relative value of a foreign degree will vary as a function

²Of course, these two theories differ with respect to the hypothesized mechanisms that lead to poorer labor market returns to foreign degrees. From the perspective of human capital theory, employers may be acting *rationaly* by paying foreign degree holder less; they may have learned over time that foreign post-secondary institutions impart fewer skills and/or less knowledge to degree holders. From the perspective of credentialing theory, they may be acting *irrationally* by devaluing what are essentially comparable degrees. We focus here on documenting the labor market penalties associated with holding foreign degrees; we leave it to others to model the underlying mechanisms.

of the place from which it was earned. Finally, we have reason to anticipate that all of these processes operate differently for men and women.

Prior Empirical Evidence

On average, first-generation immigrants earn less than do native-born Americans; second-generation immigrants tend to out-earn their first-generation peers (Borjas, 2006, Portes and Rumbaut, 2006). A sizable portion of this difference has been attributed to lower levels of educational attainment among many first-generation immigrants (Alba and Nee, 2003). However, even among people with the same level of schooling, foreign-born people tend to earn less than do their native-born counterparts (Akresh, 2007, Borjas, 1995, Bratsberg and Ragin, 2002, Friedberg, 2000, Schoeni, 1997, Zheng and Xie, 2004). This disparity is most pronounced among less educated individuals and least pronounced among those with college degrees (Schoeni, 1997, Schoeni, 1998, Tienda, et al., 1984). Part of this disparity may have to do with the relative value of foreign degrees compared to degrees earned in the United States: Whereas native-born Americans virtually always earn their college degrees in the United States, only about 62% of foreign-born individuals did so as of 2003 (National Survey of College Graduates 2006).

To what extent are foreign degrees penalized (or rewarded) in the U.S. labor market? Previous empirical research related to this question has taken one of two approaches. First, researchers have compared the wage returns to U.S. and foreign college degrees among U.S. immigrants who originated in specific regions of the world. Typical analyses focus on the labor market returns for immigrants of U.S. degrees as compared to degrees from Mexico or from *individual countries* in a specific region, such as Latin America (Aguilera and Massey, 2003, Tienda, 1983) or Asia (Zheng and Xie, 2004). In these analyses, we learn that in the United States (all else being equal) Mexican degrees are worth less than American degrees, but that the relative value of Asian degrees varies from country to country. Some foreign degrees (e.g., those from Japan) are worth more than U.S. degrees, whereas others (e.g., those from Vietnam) are worth less (Zheng and Xie, 2004). One problem with this strand of research is that it fails to offer a broader perspective: It is instructive to know, for example, that not all Asian degrees are penalized or rewarded equally relative to U.S. degrees, but we are left wondering how the relative value of degrees from Asian countries (or from Mexico) compare to the relative value of degrees from other parts of the globe. Are differences primarily based on the country where a degree was earned or are degrees from countries in the same region more similar than different?

In a second approach to understanding the relative labor market value of foreign degrees, researchers have examined wage returns to U.S. degrees as compared to degrees from *broad geographic regions* (e.g., Asia, Europe, or South America) (Friedberg, 2000, Schoeni, 1997, Schoeni, 1998, Tong, 2010, but for a rare exception see Waldinger and Gilbertson, 1994). For example, Bratsberg and Ragan (2002) find that wage returns to foreign degrees vary across immigrants who earned their degrees in “South America,” “West, North Europe,” and seven other large geographic agglomerations. What this line of empirical evidence may miss is precisely the sort of within-region variation that Zheng and Xie (2004) and others found in the Asian context. Whereas Bratsberg and Ragan (2002) and others refer to across-“country”

variation in returns to foreign degrees, they really mean across-“region” variation; it may be that this approach misses important within-region variation. In our analyses, we explicitly test hypotheses about the appropriate level of geographic aggregation for the purposes of evaluating the relative value of foreign versus US postsecondary degrees for labor market outcomes.

The bulk of existing empirical evidence on the relative value of U.S. and foreign degrees focuses exclusively on men’s wages (e.g. Bratsberg and Ragin, 2002, Chiswick, 1982, Friedberg, 2000, Tienda, 1983, Zheng and Xie, 2004). Given differences in men’s and women’s labor market roles and locations, it is not obvious to us that the processes that lead employers to differentially value degrees according to the country in which they were awarded will be the same for men and women. Although some researchers have considered women’s wages or gender differences in returns to schooling across immigrant country of origin groups (e.g., Schoeni, 1998, Waldinger and Gilbertson, 1994), only more recently have researchers begun to model gender differences in wage premiums associated with earning U.S. as opposed to foreign degrees (Kaushal, 2011, Tong, 2010). Although they are instructive, these more recent efforts focus only on immigrants working, or educated, in science or engineering fields.

Furthermore, the literature’s near-exclusive focus on *wages* means that it may be missing important inequalities in other labor market outcomes. Most scholars model wage differences, conditional on being employed. We suspect that the U.S. labor market may value immigrants’ U.S. and foreign degrees differently in part through the selection of workers (1) into and out of the labor force altogether and (2) into and out of the industries or job sectors in which immigrants earned their degrees. In our analyses we model these other labor market outcomes in addition to wages conditional on employment. Our analyses of access to employment related to immigrants’ field of degree speaks to the transferability of skills into the U.S. labor market.

Beyond these conceptual issues, all research on the relative value of foreign and U.S. degrees faces a common set of methodological challenges. Simply comparing the labor market outcomes of immigrants who obtained degrees in the U.S. to parallel outcomes among those who obtained their degrees abroad (perhaps after controlling for age, sex, and experience) makes three critical assumptions, none of which is obviously warranted. First, such a naïve comparison assumes that a more or less random subset of immigrants obtains their degrees in the United States. However, individuals who come to the United States as youth or adolescents (the “1.5 generation”) may be systematically different from individuals who immigrate as adults (Borjas, 1993, Portes and Rumbaut, 2006). Any apparent labor market disparities between those with U.S. and foreign degrees may simply reflect these pre-existing differences (and not the effects of having a foreign degree, per se). In our analyses, we control for parental education—a proxy for family socioeconomic origins—in an effort to deal with this issue.

Second, naïve wage models of this sort would assume that the decision to enter the U.S. labor market (and thus to be able to report wages) is orthogonal to whether degrees are earned in the U.S. or abroad. In a sense, this is a missing data problem: Having a foreign

degree may affect the odds that a person holds a job, and that wages are observed at all, regardless of any effect on actual earnings. Given high levels of labor force participation among immigrant men (Mosisa, 2002), this is especially problematic for women (Read and Cohen, 2007). By simply comparing the wages of foreign-educated women to those of U.S.-educated women, we risk comparing as elective subset of one group to a less selective subset of the other. Existing research on the relative value of U.S. and foreign degrees has generally paid inadequate attention to these potentially important methodological considerations. In our analyses, we explicitly model labor force participation as a function of whether degrees were earned in the United States, and account for this selection process in our wage models.

Third, naïve wage models that simply compare the earnings of foreign-and U.S. -educated immigrants may be biased by factors that influence whether immigrants decide to remain in the U.S. labor market (instead of returning to their country of birth). If immigrants who earn their highest degrees in the United States were more or less likely than immigrants who earned their highest degree abroad to remain in the United States, then the naïve wage model would be biased. In our analyses, we adjust for factors that may (1) affect whether college-educated immigrants remain in the U.S. and (2) differ systematically for U.S. - and foreign-educated immigrants. These include citizenship status, visa type, marital status and number of children, years since immigration, and type and area of degree.

In the end, we have some empirical evidence to suggest that (1) U.S. degrees and foreign degrees are not always worth the same in the U.S. labor market and (2) the penalty associated with holding a foreign degree depends on the place in which it was earned. Our analyses will focus more sharply on variation in labor market returns to foreign degrees earned across a spectrum of countries and by both men and women; we will move this area of research forward by including adjustments for the various forms of selectivity described above.

RESEARCH DESIGN

To address these research questions we follow a two-stage modeling strategy using data on 18,361 immigrants who were interviewed as part of the 2003 National Survey of College Graduates (NSCG); as described below, the NSCG is a longitudinal survey of 100,402 American college graduates, about 20,000 of whom were born abroad. In the first stage, we model selection into paid employment following procedures developed by Heckman and others (Heckman, 1976, Heckman, 1979, Winship and Mare, 1992). In the second stage, we model (1) wages and (2) how closely immigrants' jobs are related to their degree fields, both conditional on selection into paid employment. Our models include controls for family socioeconomic background, human capital, years since entry into the U.S., visa type, and other attributes of immigrants. Although such a covariate adjustment approach is not perfect, our models allow us to compare labor market outcomes among immigrants with roughly equal propensities (1) to migrate to the U.S.; (2) to remain in the U.S.; and (3) to hold paid jobs.

We estimate separate models for women and men in order to understand gender differences in the labor market returns to U.S and foreign degrees. As reviewed above, prior research focuses almost exclusively on men. Our models of selection into employment, which are estimated separately for men and women, are design to account for important differences in women and men's likelihood of being employed. Furthermore, estimating separate models for men and women allows us to speak directly to prior research which focused mainly on men.

DATA

The 2003 NSCG was conducted by the Bureau of the Census for the National Science Foundation as part of the Scientists and Engineers Statistical Data System. After the 2000 U.S. Census, 170,797 non-institutionalized individuals who indicated that they had earned a college degree³ were selected through a stratified random sampling procedure (where strata were defined by race/ethnicity, sex, age, immigration and citizenship status, degree type, and occupation sector). Individuals were interviewed by mail, with non-respondents subsequently contacted in person or by phone. Of the 170,797 individuals selected to participate, 6,781 were determined to be ineligible and 100,402 (or 62%) completed interviews. While respondents ultimately tended to be older, white and immigrants, the NSCG provides sampling weights to account for potential non-response biases.

For reasons described above, we initially limited our analysis sample to individuals born abroad (n=20,229).⁴ We subsequently excluded 1,626 individuals who were attending school full time or who had ever retired as of 2003, and who thus may have reported wages that do not reflect their total potential earnings. We also exclude a small number of individuals (n=38) who lived in the U.S. at the time of the 2000 U.S. Census but who moved to a U.S. territory by the time of the NSCG. There is relatively little item-level missing data in the NSCG,⁵ so we use listwise deletion to exclude the 204 cases with any missing data. These procedures yield a final analytic sample of 18,361 immigrants.

Although the NSCG is not perfect for our purposes—for example, it does not contain information about English language skills—it has a number of strengths that make it the best choice for addressing our research questions. Data from the U.S. Census or the Current Population Surveys do not include information about the country in which college graduates earned their degrees. The New Immigrant Survey is considerably smaller and includes only permanent U.S. residents (green card holders), and excludes highly skilled immigrants who are in the U.S. on an array of work visas (e.g. TN and H1B visas). The NSCG provides a large, representative sample of college-educated immigrants, and includes detailed information about country of education, country of origin, labor force participation, wages, and other variables necessary for our analysis.

³In our analyses, we exclude individuals interviewed as part of the 2003 NSCG who were originally sampled as part of the 1990 U.S. Census and who were then followed longitudinally thereafter.

⁴Individuals born abroad to an American parent are also excluded from our sample.

⁵The NSCG employed hot deck imputation methods to impute values for surveys items with particularly high rates of non-response (e.g., income items).

MEASURES

Table 1 describes our dependent and key independent variables, separately by sex. The table is organized to describe the samples included in models used to account for selection into paid employment (the leftmost columns for men and women) and to describe the samples included in models predicting wages and how closely immigrants' jobs are related to their degrees (the rightmost two columns); the latter samples exclude individuals who were not working at the time of the NSCG. The table further distinguishes wage earners who obtained their degrees in the U.S. (middle column) from those who earned their degrees abroad (right column).

Labor force status—the dependent variable in models used to compute selection corrections for subsequent models, but interesting in its own right—expresses whether a respondent worked for pay at the time of their NSCG survey. Non-employed immigrants may be out of the labor force voluntarily (e.g., to take care of family members) or may be in the labor force but involuntarily out of work. Table 1 indicates that 79% of women and 93% of men were currently employed. The dependent variable in our wage equations is the log of the hourly wage rate, which is calculated by taking the natural log of immigrants' annual earnings (plus 1 dollar) after dividing that amount by the total number of hours that they worked. Our final dependent variable is based on an NSCG survey item that expresses whether employed respondents report that their job is not related to the field in which they earned their most recent degree. About 80% of employed men and women work in the industries or areas in which they earned their degrees. Of course, the latter two dependent variables are defined only for people who were employed at the time of the NSCG survey.

Our key independent variable describes the place where immigrants earned their most recent post-secondary degree⁶. The NSCG obtained information about the specific country of education for all respondents. It is a virtue of the data that we have this fine-grained level of detail (as opposed to only knowing the major geographic region in which immigrants earned their degrees). This high level of detail allows us to develop and compare multiple measures of “place where immigrants earned their highest degree;” these are described below. For descriptive purposes, in Table 1 we describe a dichotomous variable indicating whether immigrants earned their college degree in the U.S. or abroad. Approximately 55% of the men and women in the sample received their most recent postsecondary degree in the United States. Of the immigrants educated abroad, fully half were educated in eight countries: Canada, China, Germany, India, Korea, Mexico, the Philippines, and Taiwan.

Table 2 describes other variables utilized in our analyses, grouped into four major sections: family variables, human capital characteristics, and degree and job characteristics. Family variables only appear in the selection models predicting labor force status; they include spouse's employment status, number of children, and first via status. Human capital measures incorporate important predictors of wage and labor force status, as identified by

⁶We have opted to use the country where an immigrant earned his or her *most recent* post-secondary degree to be consistent with analyses that indicate that additional human capital investment by immigrants after arriving in the United States may improve immigrants' earnings (Akresh 2007). However, results from models using alternative operationalizations of this measure—including indicators of whether respondents earned *any* post-secondary degree abroad—are substantively very similar. These results appear in Appendix A3 for the purposes of peer review.

prior research. They include age, region of residence citizenship status, years since immigration, years since degree completion, most recent educational credential, and parental education. Finally, degree and job characteristics allow us to control for other factors that may mediate relationships between country of degree and labor market outcomes; these include the field or subject of immigrants' most recent degree and the type of job they held when interviewed in 2003.

MODELS OF SELECTION INTO PAID EMPLOYMENT

We begin our analyses by estimating models that predict paid employment. These results are interesting in their own right, but we also use the results of these models to control for selection into employment in subsequent analyses. Table 3 presents the results of probit models predicting male and female immigrants' employment statuses as average marginal effects.

In order to identify the models properly, we have carefully chosen models which reflect the prior research on selection into work (e.g. Rosenfeld, 1996). Scholars critiquing Heckman Selection models have warned that properly identifying the models is crucial for the accuracy of the estimates, and that it is necessary to consider potential issues of co-linearity. (Puhani, 2000, Stolzenberg and Relles, 1997, Winship and Mare, 1992) In order to best prevent this co-linearity, our employment selection equation includes explanatory variables that are not included in the subsequent wage and relationship of degree to work equations; likewise, the latter equations must include covariates not included in the selection equations. We therefore model employment status as a function of spousal employment status (with "single" as the reference category); number of children living at home (with "no children" as the reference category); the type of visa which an immigrant held upon entering the United States⁷; whether immigrants earned their most recent post-secondary degrees abroad; age and age squared; geographic region of residence (with "Northeast" as the reference category); and educational attainment (with "bachelor's degree" as the reference group).

We use the results from the models described in Table 3 to generate estimated probabilities of employment—in the form of Inverse Mills Ratios (Heckman, 1976)—for use as a correction for selection into employment in our models predicting wages and whether immigrants work in jobs related to their degree fields. Beyond this, it is important to note that immigrant women with foreign degrees are substantially and significantly less likely to be in the paid labor force than immigrant women who earned their most recent post-secondary degree in the United States. The same is not true for immigrant men.

HOW MUCH GEOGRAPHIC DETAIL IS NECESSARY?

Because we know the specific country in which immigrants earned their degrees, we could choose to operationalize our key independent variable in a number of ways. At one extreme, we could treat all non-US degrees as equivalent by operationalizing "location of highest degree" as a dichotomous variable: US versus non-US. At the other extreme, we could treat degrees from each individual country as uniquely valuable in the US labor market by

⁷Some visas (such as spousal or travel visas) restrict or prevent immigrants from working legally.

operationalizing “location of highest degree” as a categorical variable with as many categories as there are countries represented in our data. A middle course would involve grouping countries into regions or based on attributes like predominant language or culture, not unlike previous researchers (e.g., Bratsberg and Ragan 2002). Because we do not know, *a priori*, which level of aggregation of countries yields model results that most closely fit our data, we have estimated all of our models 10 times, each time using different techniques for aggregating grouping the countries in which immigrants earned their highest degrees.

In Table 4 we present fit statistics for models that predict our two dependent variables as a function of the place in which immigrants earned their degrees, separately for women and men. The models differ with respect to whether we adjust for selection into employment, whether we adjust for background factors, and—most importantly—how we operationalize the indicator of where immigrants earned their highest degrees. Models A through C simply express whether immigrants earned their degrees in the US or elsewhere. Among them, Model C—which includes a correction for selection into employment and the full set of background covariates described in Table 2—fits best according to BIC’.

Models D through L utilize measures that aggregate the countries from which immigrants earned their highest degrees into more or less detailed categories. Model D aggregates detailed countries into eight broad geographic regions. Models E and J utilize the most detailed disaggregations of countries possible (subject to the constraint that at least 50 immigrants appear in each category); these include categories like Germany, Mexico, and The Caribbean. Models F through I use classifications of countries based on whether they belong to the OECD (Model H) and their levels of economic development (the others). Model K includes a dichotomous indicator of whether immigrants earned their highest degree in the US or abroad *and* their racial phenotype (e.g., White, Black, Asian). Finally, Model L classifies countries broadly: the US, Canada, countries in the UK, and all others.

Which classification scheme maximizes our ability to predict these two labor force outcomes? Do broad regional classifications—which have been used in prior research (Bratsberg and Ragin, 2002, Schoeni, 1997, Schoeni, 1998)—miss important and consequential detail as compared to more detailed classifications? Do we even need these regional classifications, or do very general classifications—US vs non-US, for example—predict our outcomes just as effectively? The results in Table 4 suggest that measures with *less* geographic detail generally predict these outcomes most effectively. In some cases, we do best by classifying the country in which immigrants earned their degrees simply as the US, Canada, the UK, or elsewhere. In others, measures with eight regional categories perform best. What this suggests is that American employers do not make fine-grained distinctions. They may differentiate between US and foreign degrees, and they may differentiate between degrees earned in broad categories of countries, but they do not go further.

MODELS PREDICTING WAGES

In Table 5 we report the results of three well-fitting models predicting log hourly wages; these are Models C, D, and L from Table 4. In each case, we model log hourly wages as a

function of: where immigrants earned their degrees; Inverse Mills Ratios representing the propensity to be employed; and a set of controls for other indicators of human capital and selection into immigration (i.e., those listed in Table 2). In these tables, we have not reported the full set of coefficients corresponding to the set of control variables; these can be found in the considerably expanded versions of these tables that appear in Appendix A. To ease interpretation, we have exponentiated the coefficients in these tables.

Model C in Table 5 includes only an indicator of whether or not individuals earned their highest degree in the United States. For both women and men, the exponentiated coefficients below 1.0 indicate lower wages for immigrant women and men who earned their degrees abroad as opposed to in the United States. In a model including Inverse Mills Ratios to account for selection into the labor market—and net of the family, human capital, demographic, and parental education variables shown in Table 2—women with foreign degrees earn wages which are about 17% less than women with U.S. degrees. Men with foreign degrees have wages about 11% less than otherwise similar men with U.S. degrees. In response to our first research question, it seems that immigrants with degrees earned abroad earn lower wages than do immigrants with American degrees.

Our second research question concerns variation across foreign-educated immigrant groups with respect to the relative value of their degrees. With respect to our wage estimates, and for both women and men, Table 4 suggests that the best fitting model is Model D in which we disaggregate foreign-educated immigrants into seven groups (listed under Model D in Table 5). However, Model L—which simply disaggregates foreign-educated immigrants into those who earned their highest degrees in Canada, the UK or Ireland, or the rest of the world—also fits well. Consequently, Table 5 includes estimates from both Models D and L. The results of each model indicate that immigrants who earned their highest degrees in Canada or the UK (including Ireland) earn wages that are as high or higher than otherwise similar immigrants who earned their degrees in the US. Foreign-educated immigrants who earned their degrees in South or Central America or the Caribbean earn substantially less than their US-educated peers.

Although we have interpreted our wage rate results to mean that foreign degrees are worth less in the U.S. labor market, another possibility is that immigrants with foreign degrees—particularly those with degrees from places other than Canada or the UK—differ from immigrants with U.S. degrees with respect to the academic field of study that yielded those degrees or with respect to their occupational or industrial sector. If U.S.-degree holding immigrants disproportionately obtained their degrees in more lucrative fields (e.g., engineering, medicine) and/or are more likely to be concentrated in more lucrative segments of the U.S. economy, then what we are calling “wage penalties” may really just be reflecting qualitative differences in immigrants’ training and fields of employment. To explore these ideas, Model “D+” in Table 5 begins with Model D and adds measures of immigrants job and degree characteristics; these covariates are shown in Table 2. Does the wage penalty associated with earning a degree abroad accrue because foreign-educated immigrants earn degrees in less lucrative fields or because they are concentrated in particular job sectors? In general, the coefficient estimates for Model D+ are quite similar to those in Model D. This

suggests that the lower wages of immigrants educated outside of the US, Canada, or the UK are not due to these attributes of their degrees or of their jobs.

MODELS PREDICTING THE RELATIONSHIP OF DEGREE FIELDS

TOCURRENT JOBS

In Table 6, we report regression coefficients from linear probability models⁸ predicting whether employed immigrants say their current jobs are unrelated to their degree fields. Are foreign-educated immigrants less likely than US-born immigrants to be working in jobs that are related to the field in which they earned their highest degrees? As we did for wages, we report separate estimates for women and men and for models that operationalize the key independent variable—the place where immigrants earned their highest degrees—in three different ways (corresponding to Models C, D, and L in Table 4). All models include Inverse Mill Ratios to account for selection into employment, and all include the family, human capital, demographic, and parental education covariates described in Table 2; coefficients for the latter sets of covariates are not shown.

Model C for both women and men—which groups all foreign-educated immigrants into a single category—shows that US-educated immigrants are modestly less likely to be working in a job that is unrelated to their degree field. However, as shown by the results from Models D and L, and as was the case with wages, immigrants who earned their highest degrees in Canada or the UK (including Ireland) were no more or less likely to work in jobs related to their degree fields. Immigrants who earned their highest degrees in South or Central America or the Caribbean appear to be especially likely to hold jobs that are unrelated to the field in which they earned their degrees.

Are these differences driven by some foreign-educated immigrants' tendency to earn degrees in less lucrative fields or to work in less lucrative industries? Model D+ in Table 6 includes controls for the attributes of immigrants' degrees and current jobs; the coefficients for these terms are not shown. In general, the patterns observed in Model D do not change after adding these covariates.

DISCUSSION

Our research on the relative value of foreign college degrees is designed to speak to broader concerns about the social and economic prospects of immigrants in American society. At the individual level, are some well-educated immigrants systematically disadvantaged with respect to their ability to capitalize on their skills and knowledge? At a broader level, does the U.S. economy potentially fail to make use of all of the skills and talents of its (in this case, immigrant) workers?

⁸Initially, we implemented a Probit Selection Model (Heckprob in Stata), and found that we got similar results as with a probit model that included the inverse mills ratio from a separate selection equation. Since probit coefficients are difficult to discuss, we estimated the average marginal effects (AME) for the model. Finally, we estimated a linear probability model (LPM) which we then compared with the AME estimates. We have chosen to use the LPM for the second stage because the regression coefficients from the LPM are similar to the AME from the Heckman Probit. The probit and AME estimates are included in Tables A4 and A5 for the purposes of peer review.

To address these issues, we pose three empirical questions. First, are college degrees earned abroad worth less in the American economy than degrees earned in the United States? To answer this question we compare the labor market outcomes of college-educated immigrants who earned their degrees abroad to outcomes among otherwise similar immigrants who earned their college degrees in the United States. In most cases, foreign degrees are worth less than U.S. degrees.

Our preferred models indicate that, with a few exceptions, immigrants with foreign degrees are less likely to be working in fields related to their degrees as compared to their American-educated peers; women with foreign degrees are less likely to be working at all. Among employed immigrants, the wage penalty associated with holding a foreign degree is about 17% for women and about 11% for men, although the precise amounts vary by region of education. Second, do the labor market penalties associated with holding a foreign degree depend on the specific country or region in which it was earned? Are degrees from all over the world regarded equally relative to U.S. degrees? For both women and men, our best-fitting models indicate that the penalty associated with holding a foreign degree varies as a function of the region in which those degrees were obtained. Variations in the labor market penalty exist by country of education but are minor compared to the regional differences in the labor market penalty for foreign educated immigrants. Foreign degrees are worth less to immigrants than U.S. degrees in the U.S. labor market, except for degrees earned in Canada, the UK and Ireland. Women who earned degrees in these countries have similar earnings to their immigrant peers who are American educated; men who earn degrees in these countries earn more than their immigrant peers educated in the US. Men and women from Mexico, the Caribbean, Central and South America earn less and are less likely to be doing work related than otherwise similar immigrants who were educated in the United States. After controlling for job and degree characteristics, Asian educated men tend to do slightly better than American educated immigrants. Except for immigrant men educated in Canada, the UK or Ireland, we find that men and women educated abroad are disadvantaged in the U.S. labor market. The primary difference in the labor market penalties to holding a foreign degree are regional. Our findings suggest that the previously documented within region variation in the labor market penalty for holding a foreign degree (Aguilera and Massey, 2003, Tienda, 1983, Zheng and Xie, 2004), is secondary to the penalty regional pr

Third, do answers to the first two questions differ for men and women? Given the gendered context of immigration and labor market opportunities and constraints, do our answers to the first two questions vary by gender? The labor market disadvantage associated with foreign college degrees differs for men and women. Controlling for human capital, parent education, and job and degree characteristics, female immigrants educated abroad experience a significant earnings penalty *compared to female immigrants educated in the U.S.*, although the extent of the penalty varies by region of education. For male immigrants, once we control for the same factors, we find that a degree penalty exists, but not to the same extent, and that some groups of immigrants are advantaged by their foreign degree status.

As we would expect from prior research on gendered labor market experiences, selection into work varies for men and women. Even in our highly educated sample, the number of children in the home and marital status still negatively predict employment for women, and

positively predict employment for men. Thus controlling separately for men and women's selection into the labor market, we find that the magnitudes of labor market disadvantage are subtly different. For example, the wage models explain more of the variation in earnings for men than women (based on R-squared values) where the opposite is true for the relationship of degree to work. Also, Indian women experience significantly higher rates of job degree mismatch than Indian men. These examples highlight the importance of modeling men and women's labor market outcomes separately.

Our research is limited in a number of respects. First, the NSCG data include no measures of respondents' English language skills or fluency. If immigrants with foreign degrees have weaker English language skills as compared to immigrants with U.S. degrees, then our failure to adjust for this covariate may bias our results in favor of finding a foreign degree penalty. However, the fact that we have adjusted for both years in the U.S. and years since degree would seem to partially equate foreign-and U.S. -educated immigrants with respect to their *opportunities* to have acquired English language skills. Second, despite the fact that we improve on prior research by 1) including immigrants from all over the world and 2) considering *country* of education in many cases, sample size restrictions required us to aggregate immigrants into *regions* of education in many other cases so our country of education measures only capture the largest sending countries. Third, the measure we used to account for selection into immigration—parents' educational attainment—is not ideal. Although we improve on prior work by addressing this form of selectivity, we recognize that future work would benefit from more rigorous controls for selection into immigration.

As described above, a variety of theoretical perspectives all would lead us to anticipate that foreign degrees should be worth less than U.S. degrees in the U.S. labor market. However, human capital and credentialing theories may differ with respect to the mechanisms that lead to lower wage returns to foreign degrees. From the perspective of human capital theory, employers may be acting *rationally* by preferring U.S. degree holders; they may have learned over time that foreign post-secondary institutions impart fewer skills and/or less knowledge to degree holders. From the perspective of credentialing theory, employers may be acting *irrationally* by devaluing what are essentially comparable degrees. Our analyses say nothing about which of these two hypothesized mechanisms gives rise to lower labor market returns to foreign degrees.

The increasing variance in the earnings of college graduates has occurred concurrently with the expansion of college education, such that characteristics of post-secondary institutions contribute to the differences in earnings, referred to as horizontal stratification (Gerber and Cheung, 2008). That is, the labor market rewards college degrees differently based on the region where the degree was earned. Our findings indicate that this stratification may extend beyond domestic degrees to international degrees, where degrees from countries like Canada, the U.K., or Ireland may provide better access to work related to an immigrant's college degree or better earnings. Future research should consider horizontal stratification among college educated immigrants as a reason for differential labor market outcomes.

Prior research shows that wage differences between immigrant and native-born workers are smallest among those with college degrees (Schoeni 1997; Schoeni 1998; Bratsberg and

Ragin 2002). Nonetheless, our research indicates that one source of less favorable labor force outcomes among college-educated immigrants is their tendency to hold degrees earned outside of the United States. This may indicate that the U.S. economy is not taking full advantage of the skills and knowledge of the immigrant population or it may indicate that foreign post-secondary institutions impart fewer useful (in the U.S. economy, at least) skills than their American counterparts. Future research into the mechanisms giving rise to the foreign degree penalty would presumably require information about employers' decision-making as well as the actual quality of post-secondary schooling in various countries. We hope that future research will continue to explore the possibility that the actual and perceived values of foreign degrees may vary as a function of where they were earned; we also expect that future research will continue to study the experiences of both female and male immigrants.

Acknowledgments

We would like to thank to Julia Drew, Penny Edgell, Cathy Fitch, Eric Grodsky, Carolyn Liebler, Lying Luo, Phyllis Moen and the anonymous reviewers for comments on the paper. However, all errors or omissions are the responsibility of the authors. Support for this research has been provided by U.S.D.E. Institute of Education Sciences (IES) training grant: Title: Interdisciplinary Education Sciences Training Program IES Award #R305C050059 University of Minnesota PRF# 473473.

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Table 1

Descriptive Statistics for Dependent and Key Independent Variables

Dependent Variables	Women				Men			
	Full Sample	Currently Working		t/z	Full Sample	Currently Working		t/z
		U.S. Degree	Foreign Degree			U.S. Degree	Foreign Degree	
Currently Working								
<i>Not Working</i>	20.9%	0.0%	0.0%		6.7%	0.0%	0.0%	
Working	79.1%	100.0%	100.0%		93.3%	100.0%	100.0%	
Log Hourly Wage Rate								
Median		3.30	3.00			3.40	3.30	
Mean (SD)		3.25 (0.70)	2.95 (0.82)	***		3.42 (0.70)	3.25 (0.83)	***
Relationship of Job to Degree								
Closely Related	78.4%	85.8%	69.2%	***	80.5%	85.0%	74.6%	***
<i>Not Closely Related</i>	21.6%	14.2%	30.8%	***	19.5%	15.0%	25.4%	***
Key Independent Variables								
Most Recent Degree Earned in US or Abroad								
US Degree	54.2%	100.0%	0.0%	***	56.2%	100.0%	0.0%	***
Foreign Degree	45.8%	0.0%	100.0%		43.8%	0.0%	100.0%	
N	7,181	3,375	2,567		11,180	5,873	4,551	

Notes: Reference/Omitted Categories in Italics. Sample restricted to immigrants aged 23–76 who are not (and have never been) retired and lived in the U.S. in 2003. Standard deviations are in parentheses.

*** p<0.001,

** p<0.01,

* p<0.05 and refer to t/z-tests comparing foreign and US degree earners.

Table 2

Descriptive Statistics for Other Covariates

	Women				Men			
	Full Sample	Currently Working			Full Sample	Currently Working		
		U.S. Degree	Foreign Degree	t/z		U.S. Degree	Foreign Degree	t/z
Family Variables								
Spouse Works								
<i>Not Married</i>	10.1%				17.3%			
Spouse Works Full Time	21.1%				39.7%			
Spouse Works Part Time	65.1%				11.3%			
Spouse Does Not Work	3.7%				31.7%			
Children								
<i>No Children</i>	58.5%				59.0%			
1 to 3 Children	40.6%				39.7%			
More than 3 Children	0.9%				1.3%			
First Visa Type								
<i>Permanent Resident</i>	46.5%				38.8%			
Temporary, for Work	8.9%				14.7%			
Temporary, for Study/Travel	18.2%				30.1%			
Temporary, Dependent	17.4%				7.1%			
Other Temporary Visa	9.0%				9.2%			
Human Capital								
Most Recent Degree								
<i>Bachelor's</i>	62.6%	50.3%	74.4%	***	52.6%	43.6%	62.5%	***
Master's	26.8%	36.5%	15.4%	***	30.4%	38.3%	20.9%	***
Doctorate	4.4%	6.2%	3.5%	***	9.8%	11.9%	7.9%	***
Professional	6.2%	7.0%	6.8%	***	7.2%	6.3%	8.8%	***
Region of U.S.								
<i>Northeast</i>	27.5%	29.4%	24.0%	***	26.5%	25.2%	27.7%	***
North Central	13.7%	12.5%	14.8%	***	15.5%	15.6%	15.7%	
South Atlantic	18.3%	18.9%	18.3%		17.5%	17.7%	18.1%	

	Women				Men			
	Currently Working				Currently Working			
	Full Sample	U.S. Degree	Foreign Degree	t/z	Full Sample	U.S. Degree	Foreign Degree	t/z
South Central	8.3%	8.4%	9.1%	***	9.5%	9.7%	9.0%	***
Mountain and Pacific Citizenship Stat.	32.2%	30.8%	33.8%	***	31.0%	32.0%	29.5%	***
U.S. citizen		78.3%	57.6%	***		73.1%	46.5%	***
Permanent resident		17.1%	34.9%	***		19.0%	39.4%	***
Temporary resident		4.6%	7.5%	***		8.0%	14.1%	***
Demographic Measures								
Age	42.74 (10.10)	41.55 (10.12)	45.1 (9.49)	***	44.11 (10.38)	42.69 (10.06)	45.72 (10.32)	***
Years In U.S.		24.67 (11.83)	15.09 (8.99)	***		24.25 (12.09)	14.25 (9.37)	***
Years Since Degree		11.67 (8.64)	20.85 (9.91)	***		13.32 9.45	20.27 (10.19)	***
Parental Education								
Less Than High School		19.2%	16.3%	***		22.4%	18.6%	***
High School Diploma or Equivalent		19.1%	21.7%	***		21.3%	24.9%	***
Some Scollge		16.4%	13.6%	***		13.2%	13.0%	***
Bachelor's Degree		24.4%	27.0%	***		23.4%	23.7%	***
More than Bachelor's Degree		21.0%	21.5%	***		19.7%	19.8%	***
Degree Characteristics of Most Recent Degree								
Computer Science & Mathematics		9.0%	5.1%	***		10.7%	7.8%	***
Biological/Environmental Sciences		5.1%	6.3%	***		5.2%	5.5%	***
Physical Sciences		1.8%	4.5%	***		3.4%	5.9%	***
Social Sciences		11.1%	10.9%	***		6.9%	6.8%	***
Engineering		4.3%	4.7%	**		22.2%	24.9%	***
Other Science/Engineering Fields		13.1%	17.3%	***		8.2%	8.1%	***
Non Science/Engineering Fields		51.0%	43.5%	***		38.8%	31.4%	***
Medicine		4.5%	7.7%	***		4.6%	9.7%	***
Job Characteristics								
Research & Development		11.4%	9.9%	***		20.3%	18.3%	***
Teaching		16.4%	7.9%	***		6.2%	3.0%	***
Management & Administration		37.2%	40.2%	**		41.5%	36.7%	***

	Women				Men			
	Currently Working				Currently Working			
	Full Sample	U.S. Degree	Foreign Degree	t/z	Full Sample	U.S. Degree	Foreign Degree	t/z
Computer Applications		8.8%	8.0%	***		13.4%	13.1%	
Other		26.2%	34.0%	***		18.7%	28.9%	***
N	7,181	3,375	2,567		11,180	5,873	4,551	

Notes: Reference/Omitted Categories in Italics. Sample restricted to immigrants aged 23–76 who are not (and have never been) retired and lived in the U.S. in 2003. Standard deviations are in parentheses.

*** p<0.001,

** p<0.01,

* p<0.05 and refer to t/z-tests comparing foreign and US degree earners.

Table 3

Average Marginal Effects for Probit Selection Equations Predicting Paid Employment

	Women	Men
	b (s.e.)	b (s.e.)
Most Recent Degree Earned in the US	[Reference Category]	[Reference Category]
Most Recent Degree Earned Abroad	−0.070 (0.017) ***	−0.009 (0.008)
Spouse Works [Not Married]	[Reference Category]	[Reference Category]
Spouse Works Full Time	−0.077 (0.018) ***	0.045 (0.011) ***
Spouse Works Part Time	−0.007 (0.036)	0.060 (0.010) ***
Spouse Does Not Work	−0.010 (0.024)	0.054 (0.010) ***
Children [None]	[Reference Category]	[Reference Category]
1 to 3 Children	−0.139 (0.016) ***	0.008 (0.007)
More than 3 Children	−0.244 (0.098) *	0.014 (0.039)
First Visa Type [Permanent Resident]	[Reference Category]	[Reference Category]
Temporary, for Work	0.045 (0.022) *	0.031 (0.008) ***
Temporary, for Study/Travel	−0.037 (0.020)	0.005 (0.008)
Temporary, Dependent	−0.071 (0.020) ***	0.003 (0.014)
Other Temporary Visa	−0.028 (0.024)	−0.016 (0.015)
Demographic Measures		
Age	0.032 (0.005) ***	0.002 (0.002)
Age Squared	0.0000.000 ***	0.0000.000
Region of U.S. [Northeast]	[Reference Category]	[Reference Category]
North Central	0.022 (0.024)	0.009 (0.011)
South Atlantic	0.039 (0.020)	0.030 (0.008) ***
South Central	0.060 (0.023) **	−0.006 (0.013)
Mountain and Pacific	0.021 (0.018)	0.010 (0.008)
Most Recent Degree [Bachelors]	[Reference Category]	[Reference Category]
Masters	0.022 (0.017)	0.021 (0.007) **
Doctorate	0.108 (0.019) ***	0.037 (0.006) ***
Professional	0.099 (0.020) ***	0.034 (0.008) ***
Years Since Last Degree	−0.002 (0.001)	0.001 (0.001)
N	7,181	11,180

Notes: Robust standard errors in parentheses. Sample restricted to immigrants aged 23–76 who are not (and have never been) retired and lived in the U.S. in 2003.

p<0.001,

**
p<0.01,

*
p<0.05.

Table 4
Fit Statistics for Models as a Function of Method for Operationalizing Key Independent Variable

Model	Operationalization of Key Independent Variable: Most Recent Degree Was Earned in the US (Reference Category) or...	Selection into Paid Employment	Human Capital & Other Covariates	df	Wages				Relationship of Job to Degree			
					WOMEN (N=5,942)		MEN (N=10,424)		WOMEN (N=5,942)		MEN (N=10,424)	
					R ²	BIC'	R ²	BIC'	R ²	BIC'	R ²	BIC'
A	...Abroad (One Category)	No	No	1	0.037	-94	0.012	-51	0.040	-102	0.017	-74
B	...Abroad (One Category)	Yes	No	2	0.040	-98	0.048	-215	0.043	-106	0.055	-248
C	...Abroad (One Category)	Yes	Yes	19	0.083	-152	0.107	-436	0.089	-169	0.093	-366
D	...in One of Eight Global Regions	Yes	Yes	25	0.095	-163	0.126	-509	0.103	-186	0.099	-371
E	...in One of Eighteen "Countries"	Yes	Yes	35	0.098	-134	0.130	-490	0.125	-213	0.103	-351
F	...in One of Three Categories of the Human Development Index	Yes	Yes	21	0.084	-147	0.115	-469	0.094	-175	0.094	-363
G	...in One of Five Categories of the Human Development Education Index	Yes	Yes	23	0.087	-148	0.115	-461	0.100	-185	0.095	-359
H	...Abroad in an OECD Country or a Non-OECD Country (Two Categories)	Yes	Yes	20	0.084	-151	0.113	-462	0.090	-168	0.093	-362
I	...in One of Four Categories of the World Bank Income Scale	Yes	Yes	22	0.087	-152	0.123	-506	0.094	-172	0.095	-363
J	...in One of Fourteen "Countries"	Yes	Yes	32	0.098	-145	0.128	-491	0.122	-215	0.102	-358
K	...Abroad (One Category), with Controls for Main Race of Country	Yes	Yes	23	0.088	-151	0.115	-461	0.089	-154	0.096	-364
L	...in Canada, the UK, or Elsewhere (Three Categories)	Yes	Yes	21	0.089	-161	0.118	-484	0.092	-170	0.095	-368

Note: Sample restricted to employed immigrants aged 23–76 who are not (and have never been) retired and lived in the U.S. in 2003.

OLS Models Predicting Wages, by Sex

Table 5

	WOMEN (N=5,942)				MEN (N=10,424)			
	Model C	Model D	Model L	Model D+	Model C	Model D	Model L	Model D+
<i>Most Recent Degree Earned...</i>								
...in the US		[Reference Category in All Models]				[Reference Category in All Models]		
...Abroad	0.828*** [0.765–0.895]	—	—	—	0.890*** [0.837–0.946]	—	—	—
<i>Most Recent Degree Earned in...</i>								
... Canada	—	1.038 [0.890–1.211]	—	0.923 [0.834–1.021]	—	1.179** [1.055–1.318]	—	1.018 [0.954–1.086]
...South or Cent. Am. or the Caribbean	—	0.642*** [0.557–0.740]	—	0.752*** [0.661–0.855]	—	0.669*** [0.603–0.741]	—	0.761*** [0.685–0.844]
... the Un. Kingdom or Ireland	—	1.188* [1.003–1.407]	—	0.782** [0.664–0.922]	—	1.180** [1.046–1.331]	—	0.907 [0.822–1.002]
... the Rest of Europe	—	0.837** [0.743–0.941]	—	0.764*** [0.681–0.858]	—	0.899* [0.821–0.984]	—	0.867** [0.791–0.950]
... the Middle East or Africa	—	0.871 [0.705–1.077]	—	1.004 [0.899–1.122]	—	0.855* [0.747–0.978]	—	0.917* [0.852–0.987]
... India	—	0.806*** [0.712–0.913]	—	0.772*** [0.701–0.850]	—	0.94 [0.858–1.031]	—	0.838*** [0.790–0.888]
... Asia or the Pacific Islands	—	0.846** [0.764–0.937]	—	0.994 [0.814–1.214]	—	0.821*** [0.745–0.905]	—	1.294** [1.107–1.512]
<i>Most Recent Degree Earned in...</i>								
... Canada	—	—	1.032 [0.885–1.203]	—	—	—	1.177** [1.053–1.317]	—
... the Un. Kingdom or Ireland	—	—	1.18 [0.997–1.396]	—	—	—	1.177** [1.043–1.328]	—
... the Rest of the World	—	—	0.794*** [0.732–0.862]	—	—	—	0.835*** [0.785–0.889]	—
Inverse Mills Ratio	0.918 [0.741–1.138]	0.938 [0.757–1.161]	0.942 [0.761–1.167]	0.95 [0.770–1.172]	0.071*** [0.041–0.122]	0.089*** [0.052–0.153]	0.077*** [0.045–0.132]	0.118*** [0.068–0.203]
Constant	15.696*** [9.151–26.923]	14.944*** [8.732–25.577]	15.172*** [8.870–25.954]	17.730*** [10.336–30.415]	34.637*** [22.247–53.928]	30.751*** [19.862–47.607]	34.900*** [22.541–54.036]	26.278*** [16.959–40.716]

Notes: Estimates are exponentiated coefficients predicting log wage rates. Brackets contain 95% confidence intervals. Sample restricted to employed immigrants aged 23–76 who are not (and have never been) retired and lived in the U.S. in 2003. Model D+ includes controls for degree and job characteristics. All models include the human capital, demographic, and other covariates shown in Table 2. Full versions of these models can be found in Table A1 in the Appendix.

*** p<0.001;
** p<0.01;
* p<0.05

Table 6

Linear Probability Models Predicting Whether Job is Unrelated to Degree, by Sex

	WOMEN (N=5,942)				MEN (N=10,424)			
	Model C	Model D	Model L	Model D+	Model C	Model D	Model L	Model D+
<i>Most Recent Degree Earned...</i>								
...in the US					[Reference Category in All Models]			
...Abroad	0.082 *** [0.035–0.130]	—	—	—	0.085 *** [0.052–0.118]	—	—	—
<i>Most Recent Degree Earned in...</i>								
... Canada	—	−0.06 [−0.143–0.023]	—	−0.051 [−0.131–0.030]	—	0.008 [−0.056–0.072]	—	−0.004 [−0.068–0.059]
...South or Cent. Am. or the Caribbean	—	0.224 *** [0.133–0.315]	—	0.218 *** [0.128–0.307]	—	0.180 *** [0.106–0.254]	—	0.165 *** [0.093–0.237]
... the Un. Kingdom or Ireland	—	0.054 [−0.054–0.161]	—	0.026 [−0.081–0.133]	—	0.054 [−0.018–0.126]	—	0.036 [−0.039–0.112]
... the Rest of Europe	—	0.078 * [0.007–0.149]	—	0.085 * [0.018–0.152]	—	0.086 ** [0.026–0.145]	—	0.072 * [0.016–0.129]
... the Middle East or Africa	—	0.075 [−0.058–0.208]	—	0.086 [−0.039–0.210]	—	0.08 [−0.001–0.161]	—	0.064 [−0.015–0.144]
... India	—	0.135 ** [0.048–0.222]	—	0.122 ** [0.037–0.208]	—	0.036 [−0.014–0.086]	—	0.033 [−0.017–0.084]
... Asia or the Pacific Islands	—	0.027 [−0.030–0.085]	—	0.044 [−0.013–0.101]	—	0.104 *** [0.054–0.155]	—	0.075 ** [0.026–0.124]
<i>Most Recent Degree Earned in...</i>								
... Canada	—	—	−0.055 [−0.138–0.029]	—	—	—	0.008 [−0.056–0.072]	—
... the Un. Kingdom or Ireland	—	—	0.058 [−0.051–0.167]	—	—	—	0.054 [−0.018–0.126]	—
... the Rest of the World	—	—	0.096 *** [0.046–0.145]	—	—	—	0.096 *** [0.061–0.131]	—
Inverse Mills Ratio	0.035 [−0.088–0.157]	0.025 [−0.097–0.148]	0.028 [−0.094–0.150]	0.026 [−0.095–0.148]	1.108 *** [0.822–1.393]	1.018 *** [0.732–1.304]	1.089 *** [0.801–1.376]	0.865 *** [0.581–1.149]
Constant	0.115 [−0.171–0.402]	0.134 [−0.155–0.422]	0.123 [−0.163–0.410]	0.127 [−0.162–0.416]	−0.13 [−0.376–0.117]	−0.071 [−0.315–0.173]	−0.132 [−0.378–0.115]	0.011 [−0.226–0.248]

Notes: Brackets contain 95% confidence intervals. Sample restricted to employed immigrants aged 23–76 who are not (and have never been) retired and lived in the U.S. in 2003. Model D+ includes controls for degree and job characteristics. All models include the human capital, demographic, and other covariates shown in Table 2. Full versions of these models can be found in Table A2 in the Appendix.

*** p<0.001;
** p<0.01;
* p<0.05

OLS Models Predicting Wages, by Sex

Table A1

	WOMEN (N=5,942)				MEN (N=10,424)			
	Model C	Model D	Model L	Model D+	Model C	Model D	Model L	Model D+
Most Recent Degree Earned...								
...in the US		[Reference Category in All Models]				[Reference Category in All Models]		
...Abroad	0.828*** [0.765–0.895]	—	—	—	0.890*** [0.837–0.946]	—	—	—
Most Recent Degree Earned in...								
...Canada	—	1.038 [0.890–1.211]	—	0.923 [0.834–1.021]	—	1.179** [1.055–1.318]	—	1.018 [0.954–1.086]
...South or Cent. Am. or the Caribbean	—	0.642*** [0.557–0.740]	—	0.752*** [0.661–0.855]	—	0.669*** [0.603–0.741]	—	0.761*** [0.685–0.844]
... the Un. Kingdom or Ireland	—	1.188* [1.003–1.407]	—	0.782** [0.664–0.922]	—	1.180** [1.046–1.331]	—	0.907 [0.822–1.002]
... the Rest of Europe	—	0.837** [0.743–0.941]	—	0.764*** [0.681–0.858]	—	0.899* [0.821–0.984]	—	0.867** [0.791–0.950]
... the Middle East or Africa	—	0.871 [0.705–1.077]	—	1.004 [0.899–1.122]	—	0.855* [0.747–0.978]	—	0.917* [0.852–0.987]
... India	—	0.806*** [0.712–0.913]	—	0.772*** [0.701–0.850]	—	0.94 [0.858–1.031]	—	0.838*** [0.790–0.888]
... Asia or the Pacific Islands	—	0.846** [0.764–0.937]	—	0.994 [0.814–1.214]	—	0.821*** [0.745–0.905]	—	1.294** [1.107–1.512]
Most Recent Degree Earned in...								
... Canada	—	—	1.032 [0.885–1.203]	—	—	—	1.177** [1.053–1.317]	—
... the Un. Kingdom or Ireland	—	—	1.18 [0.997–1.396]	—	—	—	1.177** [1.043–1.328]	—
... the Rest of the World	—	—	0.794*** [0.732–0.862]	—	—	—	0.835*** [0.785–0.889]	—
Human Capital Characteristics								
Age	1.02 [0.998–1.043]	1.022 [1.000–1.045]	1.022 [0.999–1.045]	1.021 [0.999–1.044]	0.999 [0.981–1.017]	1.003 [0.986–1.021]	0.999 [0.982–1.017]	1.011 [0.993–1.029]
Age Squared	1.000* [0.999–1.000]	1.000* [0.999–1.000]	1.000* [0.999–1.000]	1.000* [0.999–1.000]	1.000 [1.000–1.000]	1.000 [1.000–1.000]	1.000 [1.000–1.000]	1 [1.000–1.000]
Age At Immigration	1.005** [1.002–1.008]	1.005** [1.001–1.008]	1.004* [1.001–1.007]	1.006*** [1.003–1.010]	1.007*** [1.004–1.010]	1.006*** [1.003–1.009]	1.006*** [1.003–1.009]	1.008*** [1.005–1.011]
Citizenship Status [Naturalized Citizen]								
Green Card	0.878*** [0.821–0.939]	0.870*** [0.813–0.931]	0.862*** [0.805–0.922]	0.887*** [0.829–0.949]	0.989 [0.935–1.047]	0.979 [0.926–1.034]	0.969 [0.917–1.025]	0.987 [0.936–1.041]
Temp Visa	0.847** [0.759–0.946]	0.828*** [0.745–0.920]	0.826*** [0.743–0.918]	0.834*** [0.751–0.927]	0.945 [0.870–1.028]	0.935 [0.861–1.015]	0.924 [0.850–1.003]	0.937 [0.864–1.016]
Most Recent Degree [BA]								

WOMEN (N=5,942)							MEN (N=10,424)		
	Model C	Model D	Model L	Model D+	Model C	Model D	Model L	Model D+	
MA	1.151 ^{***} [1.087–1.219]	1.148 ^{***} [1.084–1.217]	1.150 ^{***} [1.086–1.217]	1.155 ^{***} [1.088–1.225]	1.072 [*] [1.015–1.132]	1.061 [*] [1.004–1.120]	1.072 [*] [1.015–1.132]	1.055 [0.999–1.113]	
PhD	1.276 ^{***} [1.173–1.388]	1.263 ^{***} [1.162–1.373]	1.271 ^{***} [1.170–1.382]	1.319 ^{***} [1.197–1.453]	1.147 ^{***} [1.071–1.228]	1.125 ^{***} [1.050–1.205]	1.135 ^{***} [1.060–1.215]	1.141 ^{***} [1.059–1.229]	
Professional	1.543 ^{***} [1.391–1.712]	1.560 ^{***} [1.409–1.726]	1.554 ^{***} [1.402–1.723]	1.394 ^{***} [1.196–1.626]	1.398 ^{***} [1.278–1.529]	1.435 ^{***} [1.316–1.565]	1.410 ^{***} [1.290–1.541]	1.186 [*] [1.015–1.386]	
Years Since Grad	1.003 [0.998–1.007]	1.002 [0.998–1.007]	1.003 [0.999–1.008]	1.002 [0.997–1.006]	1.008 ^{**} [1.003–1.014]	1.009 ^{***} [1.003–1.014]	1.009 ^{***} [1.004–1.014]	1.007 [*] [1.002–1.012]	
<i>Region</i> [Northeast]									
North Central	0.891 [*] [0.815–0.974]	0.895 [*] [0.818–0.979]	0.899 [*] [0.823–0.983]	0.882 ^{**} [0.806–0.965]	0.899 ^{***} [0.846–0.955]	0.895 ^{***} [0.842–0.950]	0.897 ^{***} [0.844–0.953]	0.893 ^{***} [0.842–0.947]	
South Atlantic	0.906 ^{**} [0.841–0.976]	0.926 [*] [0.859–0.998]	0.910 [*] [0.845–0.980]	0.926 [*] [0.860–0.998]	0.800 ^{***} [0.746–0.858]	0.827 ^{***} [0.772–0.887]	0.805 ^{***} [0.751–0.862]	0.840 ^{***} [0.785–0.899]	
South Central	0.857 ^{***} [0.778–0.943]	0.871 ^{**} [0.792–0.958]	0.865 ^{**} [0.786–0.952]	0.857 ^{**} [0.781–0.942]	0.906 [*] [0.839–0.980]	0.93 [0.862–1.004]	0.910 [*] [0.843–0.983]	0.912 [*] [0.845–0.984]	
Moutain/Pacific	0.986 [0.924–1.051]	0.986 [0.925–1.052]	0.99 [0.929–1.056]	0.986 [0.924–1.051]	0.975 [0.923–1.031]	0.988 [0.936–1.043]	0.976 [0.924–1.031]	0.981 [0.930–1.033]	
<i>Parent Education</i> [Less than HS]									
HS	0.976 [0.901–1.057]	0.995 [0.920–1.077]	0.983 [0.908–1.065]	1 [0.926–1.081]	0.938 [0.877–1.004]	0.959 [0.897–1.024]	0.946 [0.885–1.012]	0.965 [0.905–1.029]	
Some College	1.063 [0.972–1.161]	1.057 [0.969–1.154]	1.056 [0.967–1.153]	1.042 [0.956–1.137]	1.096 [*] [1.006–1.194]	1.088 [1.000–1.185]	1.091 [*] [1.002–1.188]	1.088 [*] [1.001–1.183]	
BA	1.108 ^{**} [1.026–1.197]	1.113 ^{**} [1.030–1.202]	1.116 ^{**} [1.033–1.205]	1.103 [*] [1.020–1.192]	1.098 ^{**} [1.033–1.168]	1.103 ^{**} [1.038–1.172]	1.107 ^{**} [1.042–1.177]	1.086 ^{**} [1.023–1.152]	
More than BA	1.083 [*] [1.002–1.171]	1.084 [*] [1.004–1.170]	1.085 [*] [1.005–1.172]	1.077 [0.997–1.164]	1.090 ^{**} [1.021–1.164]	1.094 ^{**} [1.026–1.167]	1.100 ^{**} [1.032–1.173]	1.087 ^{**} [1.021–1.157]	
<i>Work Activity</i> [Management and Administration]									
Research and Development				0.978 [0.888–1.078]				1.051 [0.991–1.116]	
Teaching				0.926 [0.855–1.003]				0.888 ^{**} [0.816–0.966]	
Computer Applications				1.145 ^{**} [1.036–1.265]				1.145 ^{***} [1.081–1.214]	
Other				0.996 [0.928–1.070]				0.904 ^{**} [0.842–0.970]	
<i>Degree Characteristics</i> [Engineering]									
Computer Science				1.042 [0.899–1.208]				1.184 ^{**} [1.057–1.326]	
Bio and Life Sciences				0.660 ^{***} [0.571–0.763]				0.680 ^{***} [0.614–0.755]	
Physical Sciences				1.219 [*] [1.022–1.455]				1.218 ^{***} [1.085–1.367]	
Social Sciences				0.840 ^{**} [0.746–0.946]				0.918 [0.839–1.004]	
Other Science and Engineering				0.881 [0.725–1.071]				0.863 [*] [0.760–0.980]	
Other, not STEM				0.810 ^{***} [0.716–0.917]				0.918 [0.841–1.003]	

	WOMEN (N=5,942)				MEN (N=10,424)			
	Model C	Model D	Model L	Model D+	Model C	Model D	Model L	Model D+
Medical				0.832 *** [0.752–0.920]				0.854 ** [0.775–0.942]
Inverse Mills Ratio	0.918 [0.741–1.138]	0.938 [0.757–1.161]	0.942 [0.761–1.167]	0.95 [0.770–1.172]	0.071 *** [0.041–0.122]	0.089 *** [0.052–0.153]	0.077 *** [0.045–0.132]	0.118 *** [0.068–0.203]
Constant	15.696 *** [9.151–26.923]	14.944 *** [8.732–25.577]	15.172 *** [8.870–25.954]	17.730 *** [10.336–30.415]	34.637 *** [22.247–53.928]	30.751 *** [19.862–47.607]	34.900 *** [22.541–54.036]	26.278 *** [16.959–40.716]

Notes: Estimates are exponentiated coefficients predicting log wage rates. Brackets contain 95% confidence intervals. Sample restricted to employed immigrants aged 23–76 who are not (and have never been) retired and lived in the U.S. in 2003. Model D+ includes controls for degree and job characteristics.

*** p<0.001;
** p<0.01;
* p<0.05

Table A2

Linear Probability Models Predicting Whether Job is Unrelated to Degree, by Sex

	WOMEN (N=5,942)				MEN (N=10,424)			
	Model C	Model D	Model L	Model D+	Model C	Model D	Model L	Model D+
<i>Most Recent Degree Earned...</i>								
...in the US								
...Abroad	0.082*** [0.035–0.130]	—	—	—	0.085*** [0.052–0.118]	—	—	—
<i>Most Recent Degree Earned in...</i>								
... Canada	—	−0.06 [−0.143–0.023]	—	−0.051 [−0.131–0.030]	—	0.008 [−0.056–0.072]	—	−0.004 [−0.068–0.059]
...South or Cent. Am. or the Caribbean	—	0.224*** [0.133–0.315]	—	0.218*** [0.128–0.307]	—	0.180*** [0.106–0.254]	—	0.165*** [0.093–0.237]
... the Un. Kingdom or Ireland	—	0.054 [−0.054–0.161]	—	0.026 [−0.081–0.133]	—	0.054 [−0.018–0.126]	—	0.036 [−0.039–0.112]
... the Rest of Europe	—	0.078* [0.007–0.149]	—	0.085* [0.018–0.152]	—	0.086** [0.026–0.145]	—	0.072* [0.016–0.129]
... the Middle East or Africa	—	0.075 [−0.058–0.208]	—	0.086 [−0.039–0.210]	—	0.08 [−0.001–0.161]	—	0.064 [−0.015–0.144]
... India	—	0.135** [0.048–0.222]	—	0.122** [0.037–0.208]	—	0.036 [−0.014–0.086]	—	0.033 [−0.017–0.084]
... Asia or the Pacific Islands	—	0.027 [−0.030–0.085]	—	0.044 [−0.013–0.101]	—	0.104*** [0.054–0.155]	—	0.075** [0.026–0.124]
<i>Most Recent Degree Earned in...</i>								
... Canada	—	—	−0.055 [−0.138–0.029]	—	—	—	0.008 [−0.056–0.072]	—
... the Un. Kingdom or Ireland	—	—	0.058 [−0.051–0.167]	—	—	—	0.054 [−0.018–0.126]	—
... the Rest of the World	—	—	0.096*** [0.046–0.145]	—	—	—	0.096*** [0.061–0.131]	—
<i>Human Capital Characteristics</i>								
Age	0.003 [−0.008–0.015]	0.003 [−0.009–0.015]	0.003 [−0.009–0.015]	0.003 [−0.009–0.015]	0.010* [0.001–0.020]	0.008 [−0.001–0.018]	0.010* [0.001–0.020]	0.005 [−0.004–0.014]
Age Squared	0 [−0.000–0.000]	0 [−0.000–0.000]	0 [−0.000–0.000]	0 [−0.000–0.000]	−0.000** [−0.000–0.000]	−0.000** [−0.000–0.000]	−0.000** [−0.000–0.000]	−0.000* [−0.000–0.000]
Age At Immigration	−0.001 [−0.003–0.001]	−0.001 [−0.003–0.001]	−0.001 [−0.002–0.001]	−0.001 [−0.003–0.001]	0 [−0.002–0.002]	0 [−0.001–0.002]	0 [−0.001–0.002]	−0.001 [−0.002–0.001]
<i>Citizenship Status</i> [Naturalized Citizen]								
Green Card	0.057** [0.017–0.097]	0.055** [0.015–0.095]	0.063** [0.023–0.104]	0.049* [0.010–0.087]	−0.014 [−0.048–0.019]	−0.014 [−0.047–0.018]	−0.011 [−0.045–0.023]	−0.013 [−0.045–0.019]
Temp Visa	−0.059* [−0.115–0.004]	−0.051 [−0.104–0.002]	−0.051 [−0.106–0.005]	−0.035 [−0.093–0.022]	−0.081*** [−0.124–0.039]	−0.080*** [−0.122–0.038]	−0.076*** [−0.118–0.034]	−0.071*** [−0.112–0.031]
<i>Most Recent Degree</i> [BA]								
MA	−0.092*** [−0.127–0.056]	−0.097*** [−0.132–0.062]	−0.093*** [−0.128–0.058]	−0.088*** [−0.123–0.053]	−0.058*** [−0.090–0.027]	−0.057*** [−0.088–0.025]	−0.059*** [−0.091–0.027]	−0.045*** [−0.076–0.014]

	WOMEN (N=5,942)				MEN (N=10,424)			
	Model C	Model D	Model L	Model D+	Model C	Model D	Model L	Model D+
PhD	-0.142*** [-0.191-0.093]	-0.144*** [-0.192-0.095]	-0.143*** [-0.191-0.094]	-0.098*** [-0.152-0.045]	-0.085*** [-0.122-0.048]	-0.084*** [-0.121-0.046]	-0.084*** [-0.121-0.047]	-0.052* [-0.094-0.010]
Professional	-0.201*** [-0.239-0.163]	-0.210*** [-0.248-0.172]	-0.203*** [-0.241-0.165]	-0.168*** [-0.232-0.103]	-0.136*** [-0.182-0.090]	-0.145*** [-0.189-0.101]	-0.137*** [-0.183-0.091]	-0.165*** [-0.231-0.098]
Years Since Grad	0.004** [0.002-0.007]	0.005*** [0.002-0.007]	0.004** [0.001-0.007]	0.004** [0.001-0.006]	0.003* [0.001-0.005]	0.003* [0.001-0.005]	0.003* [0.000-0.005]	0.003** [0.001-0.006]
Region [Northeast]								
North Central	0.008 [-0.043-0.059]	0.009 [-0.040-0.059]	0.006 [-0.045-0.057]	0.018 [-0.030-0.065]	-0.01 [-0.046-0.026]	-0.009 [-0.045-0.027]	-0.009 [-0.045-0.027]	-0.006 [-0.041-0.029]
South Atlantic	0.006 [-0.039-0.051]	-0.005 [-0.049-0.039]	0.005 [-0.040-0.050]	-0.007 [-0.051-0.036]	0.080*** [0.039-0.122]	0.068** [0.027-0.109]	0.079*** [0.038-0.121]	0.061** [0.022-0.101]
South Central	-0.035 [-0.091-0.022]	-0.041 [-0.097-0.016]	-0.037 [-0.094-0.019]	-0.026 [-0.082-0.031]	-0.02 [-0.066-0.025]	-0.028 [-0.074-0.017]	-0.021 [-0.066-0.025]	-0.013 [-0.058-0.031]
Mountain/Pacific	-0.019 [-0.057-0.019]	-0.009 [-0.045-0.027]	-0.019 [-0.057-0.018]	-0.016 [-0.051-0.019]	0.013 [-0.020-0.046]	0.008 [-0.025-0.041]	0.013 [-0.020-0.046]	0.015 [-0.017-0.047]
Parent Education [Less than HS]								
HS	-0.006 [-0.056-0.045]	-0.016 [-0.066-0.034]	-0.009 [-0.059-0.041]	-0.012 [-0.061-0.037]	0.033 [-0.007-0.073]	0.026 [-0.013-0.066]	0.031 [-0.009-0.071]	0.021 [-0.018-0.059]
Some College	-0.050* [-0.099-0.000]	-0.048 [-0.096-0.000]	-0.047 [-0.096-0.002]	-0.037 [-0.084-0.010]	-0.007 [-0.051-0.038]	-0.005 [-0.049-0.039]	-0.006 [-0.050-0.039]	-0.004 [-0.046-0.038]
BA	-0.052* [-0.099-0.004]	-0.053* [-0.100-0.007]	-0.054* [-0.101-0.007]	-0.045 [-0.091-0.001]	-0.052** [-0.089-0.015]	-0.052** [-0.089-0.015]	-0.053** [-0.090-0.016]	-0.044* [-0.079-0.009]
More than BA	-0.057* [-0.103-0.011]	-0.059** [-0.105-0.014]	-0.058* [-0.104-0.013]	-0.055* [-0.099-0.011]	-0.026 [-0.064-0.013]	-0.026 [-0.064-0.013]	-0.027 [-0.065-0.012]	-0.024 [-0.062-0.013]
Work Activity [Management and Administration]								
Research and Development				0.978 [0.888-1.078]				1.051 [0.991-1.116]
Teaching				0.926 [0.855-1.003]				0.888** [0.816-0.966]
Computer Applications				1.145** [1.036-1.265]				1.145*** [1.081-1.214]
Other				0.996 [0.928-1.070]				0.904** [0.842-0.970]
Degree Characteristics [Engineering]								
Computer Science				1.042 [0.899-1.208]				1.184** [1.057-1.326]
Bio and Life Sciences				0.660*** [0.571-0.763]				0.680*** [0.614-0.755]
Physical Sciences				1.219* [1.022-1.455]				1.218*** [1.085-1.367]
Social Sciences				0.840** [0.746-0.946]				0.918 [0.839-1.004]
Other Science and Engineering				0.881 [0.725-1.071]				0.863* [-0.760-0.980]
Other, not STEM				0.810*** [0.716-0.917]				0.918 [0.841-1.003]
Medical				0.832*** [0.752-0.920]				0.854** [0.775-0.942]
Inverse Mills Ratio	0.035 [-0.088-0.157]	0.025 [-0.097-0.148]	0.028 [-0.094-0.150]	0.026 [-0.095-0.148]	1.108*** [0.822-1.393]	1.018*** [0.732-1.304]	1.089*** [0.801-1.376]	0.865*** [0.581-1.149]

WOMEN (N=5,942)						MEN (N=10,424)			
	Model C	Model D	Model L	Model D+	Model C	Model D	Model L	Model D+	Model D+
Constant	0.115 [−0.171−0.402]	0.134 [−0.155−0.422]	0.123 [−0.163−0.410]	0.127 [−0.162−0.416]	−0.13 [−0.376−0.117]	−0.071 [−0.315−0.173]	−0.132 [−0.378−0.115]	0.011 [−0.226−0.248]	

Notes: Brackets contain 95% confidence intervals. Sample restricted to employed immigrants aged 23–76 who are not (and have never been) retired and lived in the U.S. in 2003. Model D+ includes controls for degree and job characteristics.

p<0.001;
**
p<0.01;
*
p<0.05

Table A3
Fit Statistics for Models as a Function of Method for Operationalizing Key Independent Variable A1

Model	Operationalization of Key Independent Variable: Any/Highest/Most Recent Degree Was Earned in the US (Reference Category)	df	Wages						Relationship of Job to Degree					
			WOMEN (N=5,942)			MEN (N=10,424)			WOMEN (N=5,942)			MEN (N=10,424)		
			exp. coef	R ²	BIC'	exp. co	R ²	BIC'	coef	R ²	BIC'	coef	R ²	BIC'
1C	Any Degree Earned Abroad	19	0.820	0.084		0.883	0.112		0.081	0.089		0.089	0.092	
2C	Highest Degree Earned Abroad	19	0.822	0.083		0.904	0.111		0.084	0.089		0.07	0.090	
3C	Most Recent Degree Earned Abroad	19	0.828	0.083	-152	0.890	0.107	-436	0.082	0.089	-237	0.085	0.093	-366
4D	Born in One of Eight Global Regions	25		0.087	-141		0.121	-483		0.090	-243		0.096	-356
5D	Educated in One of Eight Global Regions	25		0.095	-163		0.130	-530		0.103	-281		0.099	-371
4E	Born in One of Eighteen "Countries"	35		0.093	-120		0.118	-428		0.111	-304		0.100	-336
5E	Educated in One of Eighteen "Countries"	35		0.098	-134		0.126	-469		0.125	-345		0.103	-351

Note: Sample restricted to employed immigrants aged 23–76 who are not (and have never been) retired and lived in the U.S. in 2003. All models control for Human capital covariates, selection into work using a Heckman Selection Correction (using an inverse mills ratio). Models 4D–5E all use the "Most Recent Degree Earned Abroad." All listed coefficients are significant to the p<.001 level. All decisions about which models to include in the paper were made looking at a full set of covariates; these fit statistics and coefficients are summarized here for our reviewers.

Table A4

Comparing the Average Marginal Effects of a Probit Selection Model to a Linear Probability Model with Sample Selection (WOMEN)

	Degree Abroad			Selection			Human Capital			Region		
	<u>Probit AME</u>	<u>LPM</u>	<u>Probit AME</u>	<u>Probit AME</u>	<u>LPM</u>	<u>Probit AME</u>	<u>Probit AME</u>	<u>LPM</u>	<u>Probit AME</u>	<u>Probit AME</u>	<u>LPM</u>	<u>LPM</u>
<i>Most Recent Degree Earned...</i>												
...in the US												
...Abroad	0.166*** (0.02)	0.166*** (0.02)	0.151*** (0.02)	0.151*** (0.02)	0.151*** (0.02)	0.084*** (0.03)	0.082*** (0.02)					
<i>Most Recent Degree Earned in...</i>												
... Canada									-0.045 (0.04)			-0.06 (0.04)
...South or Cent. Am. or the Caribbean									0.224*** (0.05)			0.224*** (0.05)
... the Un. Kingdom or Ireland									0.056 (0.05)			0.054 (0.06)
... the Rest of Europe									0.086* (0.04)			0.078* (0.04)
... the Middle East or Africa									0.089 (0.07)			0.075 (0.07)
... India									0.139** (0.05)			0.135** (0.04)
... Asia or the Pacific Islands									0.029 (0.03)			0.027 (0.03)
<i>Human Capital Characteristics</i>												
Age						0.004 (0.01)	0.003 (0.01)		0.004 (0.01)			0.002 (0.01)
Age Squared						0	0		0			0
						0.00	0.00		0.00			0.00
Age At Immigration						0 (0.00)	0.001 (0.00)		0.001 (0.00)			0.001 (0.00)
<i>Citizenship Status [Naturalized Citizen]</i>												
Green Card						0.056** (0.02)	0.057** (0.02)		0.054** (0.02)			0.038 (0.02)
Temp Visa						-0.072** (0.03)	-0.059* (0.03)		-0.069* (0.03)			-0.079** (0.03)
<i>Most Recent Degree [BA]</i>												
MA						-0.097*** (0.02)	-0.092*** (0.02)		-0.103*** (0.02)			-0.097*** (0.02)
PhD						-0.150*** (0.03)	-0.142*** (0.03)		-0.153*** (0.03)			-0.144*** (0.03)
Professional						-0.213*** (0.02)	-0.201*** (0.02)		-0.217*** (0.02)			-0.210*** (0.02)
Years Since Grad						0.004** (0.00)	0.004** (0.00)		0.005** (0.00)			0.005*** (0.00)
<i>Region [Northeast]</i>												
North Central						0.011 (0.03)	0.008 (0.03)		0.012 (0.03)			0.009 (0.03)
South Atlantic						0.007 (0.02)	0.006 (0.02)		-0.005 (0.02)			-0.005 (0.02)

	Degree Abroad		Selection		Human Capital		Region	
	Probit AME	LPM	Probit AME	LPM	Probit AME	LPM	Probit AME	LPM
South Central					-0.032 (0.03)	-0.035 (0.03)	-0.036 (0.03)	-0.041 (0.03)
Moutain/Pacific					-0.021 (0.02)	-0.019 (0.02)	-0.01 (0.02)	-0.009 (0.02)
<i>Parent Education</i> [Less than HS]								
HS					0.005 (0.03)	0.006 (0.03)	0.015 (0.03)	0.016 (0.03)
Some College					-0.042 (0.03)	-0.044 (0.03)	-0.031 (0.03)	-0.033 (0.03)
BA					-0.044 (0.02)	-0.046 (0.03)	-0.036 (0.02)	-0.038 (0.03)
More than BA					-0.049* (0.02)	-0.052* (0.02)	-0.043 (0.02)	-0.044 (0.02)
Inverse Mills Ratio			0.139** (0.05)	0.141** (0.05)	0.043 (0.06)	0.035 (0.06)	0.037 (0.06)	0.025 (0.06)
Constant		0.142*** (0.01)		0.101*** (0.02)		0.11 (0.15)		0.118 (0.15)

Table A5

Comparing the Average Marginal Effects of a Probit Selection Model to a Linear Probability Model with Sample Selection (MEN)

	Selection			Degree Abroad			Human Capital			Region		
	Probit AME	LPM	Probit AME	LPM	Probit AME	LPM	Probit AME	LPM	Probit AME	LPM	Probit AME	LPM
<i>Most Recent Degree Earned...</i>												
...in the US	0.104*** (0.01)	0.104*** (0.01)	0.093*** (0.01)	0.093*** (0.01)	0.094*** (0.02)	0.085*** (0.02)						
...Abroad												
[Reference Category in All Models]												
<i>Most Recent Degree Earned in...</i>												
... Canada							0.008 (0.04)	0.008 (0.03)				
...South or Cent. Am. or the Caribbean							0.183*** (0.04)	0.180*** (0.04)				
... the Un. Kingdom or Ireland							0.058 (0.04)	0.054 (0.04)				
... the Rest of Europe							0.100** (0.03)	0.086** (0.03)				
... the Middle East or Africa							0.087* (0.04)	0.08 (0.04)				
... India							0.043 (0.03)	0.036 (0.03)				
... Asia or the Pacific Islands							0.109*** (0.03)	0.104*** (0.03)				
<i>Human Capital Characteristics</i>												
Age					0.010* (0.01)	0.010* (0.01)			0.008 (0.01)	0.009 (0.01)		
Age Squared					-0.000** 0.00	-0.000** 0.00			-0.000** 0.00	-0.000** 0.00		
Age At Immigration					-0.001 (0.00)	0 (0.00)			-0.001 (0.00)	0 (0.00)		
<i>Citizenship Status [Naturalized Citizen]</i>												
Green Card					-0.017 (0.02)	-0.014 (0.02)			-0.017 (0.02)	-0.014 (0.02)		
Temp Visa					-0.090*** (0.02)	-0.081*** (0.02)			-0.088*** (0.02)	-0.080*** (0.02)		
<i>Most Recent Degree [BA]</i>												
MA					-0.062*** (0.02)	-0.058*** (0.02)			-0.061*** (0.02)	-0.057*** (0.02)		
PhD					-0.121*** (0.02)	-0.085*** (0.02)			-0.121*** (0.02)	-0.084*** (0.02)		
Professional					-0.159*** (0.02)	-0.136*** (0.02)			-0.165*** (0.02)	-0.145*** (0.02)		
Years Since Grad					0.002 (0.00)	0.003* (0.00)			0.003* (0.00)	0.003* (0.00)		
<i>Region [Northeast]</i>												
North Central					-0.013 (0.02)	-0.01 (0.02)			-0.012 (0.02)	-0.009 (0.02)		
South Atlantic					0.081*** (0.02)	0.080*** (0.02)			0.067** (0.02)	0.068*** (0.02)		

	Selection		Degree Abroad		Human Capital		Region	
	Probit AME	LPM	Probit AME	LPM	Probit AME	LPM	Probit AME	LPM
South Central					-0.015 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.028 (0.02)
Moutain/Pacific					0.011 (0.02)	0.013 (0.02)	0.006 (0.02)	0.008 (0.02)
<i>Parent Education</i> [Less than HS]								
HS					-0.033 (0.02)	-0.033 (0.02)	-0.026 (0.02)	-0.026 (0.02)
Some College					-0.033 (0.02)	-0.039 (0.02)	-0.026 (0.02)	-0.032 (0.02)
BA					-0.083*** (0.02)	-0.085*** (0.02)	-0.077*** (0.02)	-0.079*** (0.02)
More than BA					-0.056** (0.02)	-0.058** (0.02)	-0.049* (0.02)	-0.052** (0.02)
Inverse Mills Ratio			1.148*** (0.09)	1.239*** (0.10)	0.923*** (0.12)	1.108*** (0.15)	0.845*** (0.12)	1.018*** (0.15)
Constant		0.150*** (0.01)		-0.012 (0.01)		-0.097 (0.12)		-0.045 (0.12)