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Admission-Group Salary Differentials in the United States: The Significance of Labor Market Institutional Selection of High-Skilled Workers*

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Abstract

In 1990 a temporary-to-permanent pathway was established for highly skilled workers admitted to the United States under nonimmigrant programs. The paper argues that this policy shift has allowed employers to play a crucial role in the immigration of highly skilled workers, thereby creating labor-market institutional selection that gives a salary advantage to highly skilled temporary-admitted workers retained in the United States. Through analyses of the salary differentials among admission-category groups, the paper finds that the salary advantage is based on recruitment from Western countries, adjustment from temporary to permanent status after a second employer screening, working in the information technology sector and the private sector, holding a supervisory position, or having a skill-matched job, all of which are consequences of institutional selection rather than individual self-selection. Our results also reveal a difference between those admitted from abroad and those recruited from graduating foreign students in USA higher educational institutions, which suggests a distinction between overseas hiring and domestic hiring. Policy implications for the United States and other receiving countries are discussed.

Keywords

immigration policy; high-skilled; labor-market institutional selection; salary structure; Oaxaca method

Introduction

High-skilled workers in the United States are increasingly foreign-born and foreign-trained individuals admitted to the United States through a variety of admission programs (National Science Board 2008). At admission, permanent-residence programs grant legal-immigrant visas while temporary-worker and foreign-student programs grant nonimmigrant visas. Under the 1990 Immigration Act, nonimmigrants can later have their status adjusted to that of legal immigrant. In this paper, I hypothesize that nonimmigrant admission programs and the built-in temporary-to-permanent pathway facilitate labor-market institutional selection.

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This selection contributes to nonimmigrant admission groups having a salary advantage over immigrant admission groups. Through an analysis of admission-group salary differentials, this paper addresses the central questions of whether there is evidence for an emerging labor-market institutional selection of high-skilled workers and what is its significance in salary differentials among admission groups.

U.S. immigration policy has increasingly favored the admission of high-skilled workers to sectors facing labor shortages. The temporary-worker category under the 1952 Immigration Act allowed labor recruitment from abroad or the pool of graduating foreign students from U.S. colleges and universities. The employment-based permanent residence provision under the 1965 Immigration Law is a channel for high-skilled immigration. The 1990 Immigration Act allowed formal pathways toward permanent residency from temporary-worker status. The far-reaching significance of this law can be seen in the rapidly rising importance of high-skilled nonimmigrant admission programs over high-skilled immigrant admission programs and the dramatically growing number of highly skilled nonimmigrant workers who eventually become legal immigrants. In the absence of a point-based system for admitting permanent or temporary workers practiced in the U.K. and Denmark, which assign points to a worker according to his/her education, skills, work experience, language proficiency, and age, U.S. nonimmigrant admission programs activate labor-market forces to recruit and retain high-skilled workers.

This paper focuses on nonimmigrant programs that regulate the admission of highly skilled foreign nationals to the United States and may, thereby, induce a labor-market institutional selection and contribute to group salary differentials. The empirical analysis of this linkage requires data on the admission visa and the timing and place of academic or professional degrees, and information on the basic salary, occupational specialty, workplace supervising position, and employment sectors of the principal job among highly skilled workers. These critical data are available in the National Survey of College Graduates 2003 (NSCG 2003), a nationally representative survey of a large sample of college-educated persons from the 2000 Census. If evidence from analyzing NSCG 2003 data supports the labor-market institutional selection argument, it will shed new light on high-skilled labor-market transformation and its relationship with immigrant and nonimmigrant admission programs.

Highly Skilled Foreign-Born Workers

Although numerous studies have examined the economic outcomes of immigrants in the U.S. labor market since Chiswick (1978), there has been relatively less research on the higher end of the U.S. labor force. Earlier research on U.S. admission-group earning differentials focused on legal immigrants and documented the at-admission lower earning levels and over-time greater earning growth of family-based immigrants than employment-based immigrants, because family-based immigrants enjoyed greater assistance from immigrant communities and networks (Duleep and Regets 1996) or because employment-based immigrants experienced occupational downgrading while family-based immigrants experienced occupational upgrading (Jasso and Rosenzweig 1995). Research on admission-group differentials in other developed countries also has focused on legal immigrants. For example, group differential unemployment rates have been explained by immigrant

characteristics as well as host country demand for workers in specific occupations (Miller 1999).

More recent research has paid attention to nonimmigrant admission categories. Luthra (2009) showed that skilled workers with estimated H-1B status were channeled into contingent employment during the probationary period, and while temporary workers receive prevailing salaries, they are less likely to receive employer-provided health care and retirement benefits. Brown and Bean (2009) showed that the temporary-to-permanent pathway of H-1B helps foreign graduate students obtain immigrant status in the United States. Most science and engineering foreign graduate students have stayed and worked in the United States after graduation, and they have become a key source of skilled labor (Freeman 2007). Empirical research has found that temporary-admission skilled workers receive a salary premium compared to native skilled workers in the information technology industry (Hunt 2011; Mithas and Lucas 2010) and in major science, technology, engineering, and mathematics industries (Lofstrom and Hays 2012). In order to better understand the labor market transformation, the theoretical rationale for this salary premium of workers admitted via temporary programs needs to be better developed and more comprehensive comparisons across the different admission categories need to be made.

Among nonimmigrant groups, those who are temporary workers at admission are often left out. Studies based on only U.S.-trained workers, for example, did not include the large number of temporary workers at admission (who are unlikely to be enrolled in universities) as well as employment-based permanent residents at admission. In addition, research that relies on estimated rather than observed temporary-worker status introduced a substantial degree of uncertainty. This paper fills these gaps by using data from the NSCG 2003 that identifies admission-visa groups.

Nonimmigrant Admission Programs and Labor-Market Institutional Selection

For over four decades, most highly skilled foreigners have entered the United States as legal immigrants. High-skilled immigrant admission programs were established in 1965 under the Immigration Law. Employment-based preference categories target extraordinary, outstanding, or exceptional levels of ability in fields with short supply. Highly educated foreign nationals also arrive through non-employment-based provisions, including family-sponsored, diversity, political asylum, and refugee programs.

Nonimmigrant admission programs had been small until the 1990 Immigration Act. A temporary high-skilled worker program was initiated under the H-1 nonimmigrant category in the Immigration and Nationality Act of 1952. The Immigration Act of 1990 created a number of nonimmigrant programs for admitting highly skilled workers, among which the H-1B allows employers to hire highly skilled workers in specialty occupations and the L-1 allows employers to transfer managers/executives (L-1A) and professionals (L-1B) from transnational companies (USCIS 2010). The H-1B visa program scaled up the annual limit to 65,000 per year in 1990 and this cap was raised again in some later years,¹ while educational and research institutions are not subject to a numerical limit of H-1B

applications. The 3-year period of H-1B is one-time renewable, for a total of up to 6 years.² The L-1 program is not subject to numerical limits and the maximum length of stay is up to 5 years. The number of actual granted L-1 visas has been lower (e.g., 38,000 in 1998 and 59,000 in 2001) than the number of actual approved H-1B visas (e.g., 65,000 in 1998 and 163,600 in 2001) (GAO 2011). The unique feature of both H-1B and L-1 is that they allow applicants to have *dual intent*. That is, foreign nationals with H-1B and L-1 can intend to work in the United States both temporarily and permanently. This dual intent provides a legal basis for temporary-to-permanent pathways.

Employers also use H-1B to hire graduating foreign students from U.S. higher education institutions. Once enrolled in an academic or professional institution, foreign nationals can obtain a nonimmigrant student visa to come to the United States and stay until graduation or the end of the study program. In recent years, U.S. universities have admitted a large number of foreign students each year (e.g., 565,000 in 2006) (Institute of International Education 2007). The H-1B program greatly expands U.S. employment opportunities for foreign students, and in response, more foreign students are from Asian countries and are gravitating toward fast-growing fields with high demand (National Science Board 2008).

Nonimmigrant programs facilitate two specific pathways to legal immigrant status. In the first pathway, foreign nationals become temporary workers in the first step and change from temporary-worker status to permanent-resident status in the second step. The second pathway has three steps and is for foreign students: becoming a foreign student in the first step, changing from a foreign student status to a temporary-worker status in the second step, and changing from a temporary-worker status to a permanent-resident status in the third step. A difference between the two-step pathway and the three-step pathway, as I argue later, lies in whether the labor recruitment occurs domestically or internationally.

How nonimmigrant admission programs may induce a new labor-market institutional selection can be conceived as follows. First, firms experiencing a shortage of domestically supplied highly skilled workers, such as those in information technology (IT), would take advantage of these programs. Thus what occupational specialties are selected is driven by demand rather than a supply-side individual characteristic. In addition, the L-1 program transfers managers/executives of transnational corporations, such that the transfer of supervision positions across nation boundaries is also demand driven.

Second, the cost of hiring a temporary worker is high. Employers must obtain a certification from the U.S. Department of Labor stating that there are no able, willing, and qualified U.S. workers available for the job. Also they must pay a high petition fee per temporary worker and pay the temporary worker the prevailing wage.³ To recruit high-quality workers to offset the high cost, employers often use international institution networks and governmental/private employment services in a source country (Massey et al. 1998).

¹The limit was raised to 195,000 in 2001–2003.

²The period between petitioning for status adjustment and approval varies by the availability of a home-country quota. Temporary workers who are sponsored, however, can continue to work legally during the waiting period.

³Although incidences of program abuse have occurred, they are largely related to back wages that employers failed to pay H-1B workers between the time they arrived and the time the jobs were available (GAO 2011).

Domestically, graduating international students are legitimate candidates for temporary or permanent jobs. Domestic hiring, however, is different from overseas hiring because in domestic hiring individuals are free agents rather than being channeled through institutional networks.

Third, temporary-worker programs provide employers with the visa portability of temporary workers. Thus employers are virtually the vested authority to select suitable temporary workers and to retain them as permanent workers. Within the 3–6 years of the temporary-work period, employers can observe temporary workers' performance on the job and determine whom to retain and whom to dismiss. In a fundamentally different way, this employer selection overcomes the inherent uncertainty of traditional recruiting practices for native-born workers and employment-based immigrants. In traditional recruitment, employers must resort to such signals as educational credentials and recommendation letters (Arrow 1973; Spence 1974). Under the signaling argument, educational credentials certify the completion of an academic or professional program and thus indicate the prospective employee's performance on the job. Rather than relying on signals, employers have an additional screening based on a temporary worker's actual performance at the time of retaining this worker permanently. This employer second-time screening may retain qualified workers with faster future career advancement, which constitutes a long-term salary advantage.

In sum, nonimmigrant admission programs enable firms to exercise more stringent screening of workers according to demand-driven factors, be they overseas recruitment, occupational specialties, supervision positions, employment sectors, or worker performance. I subsume these factors under the term "labor-market institutional selection" to distinguish from individual self-selection widely recognized in the immigration literature. Labor-market institutional selection is uniquely present for nonimmigrants but absent for employment-based legal immigrants, as they are offered a permanent job and permanent residence at admission. Institutional selection, in contrast, occurs not only at admission but also after admission, up to the point of status adjustment. This contrast between nonimmigrant and immigrant admission groups provides an opportunity to empirically examine whether the institutional selection argument can be substantiated.

The NSCG 2003 provides data on individual work-related characteristics at different points since admission, which reflect, among other things, labor-market institutional selection if it is present. This paper's empirical analysis focuses on three types of admission: legal immigrant admission with a permanent-residence visa (PR), nonimmigrant admission with a temporary-worker visa (TW), and nonimmigrant admission with a foreign-student visa (ST). I characterize individuals with five concepts that consider the different experiences of the three different focal admission groups who share the same migration purpose of U.S. employment.

First, individual self-selection is captured by human capital and race/ethnicity at the time of admission. The nature of self-selection differs by the purpose of migration (Filiciano 2005; Josso and Rosenzweig 1990). Since all three focal admission groups have an intention to work permanently in U.S. high-skilled jobs, I do not expect systematic differences in these

at-admission characteristics among the three admission groups. Second, I conceptualize country/region of origin as employer preference to overseas recruitment sites for TWs, which is irrelevant for STs and PRs. Third, employer second-time screening before sponsoring a nonimmigrant to transition to legal immigrant status is for TWs and STs only, which is irrelevant for PRs. Fourth, human-capital growth from the time of admission to the time of survey includes additional U.S. educational attainment and U.S. work experience, capturing educational and work opportunities and constraints differentially accessible for the three admission groups. STs and PRs have greater opportunity to obtain a U.S. degree than TWs. The timing and nature of admission programs also constrain which group has longer U.S. work experience, because PRs are under the 1965 Immigration Law and the majority of TW is under the 1990 Immigration Act. Fifth, demand-side-related characteristics by the time of the survey directly capture institutional selection on occupational specialties, supervising positions, the match between the degree field and job requirements, and employment sector. These institutional selected characteristics differ across the three admission groups.

Assuming that institutional selection raises worker productivity and firm efficiency, my central hypothesis is that labor-market institutional selection, manifested in recruitment-site preference, second-time screening, and demand-driven occupational specialties, supervision positions, degree-job match, and employment sectors, will create a post-admission salary advantage for nonimmigrant admission groups over the immigrant admission group. If this empirical linkage can be established, we have evidence that nonimmigrant admission programs open the door for a labor-market institutional selection of high-skilled workers not seen before.

As in all other studies on foreign-born populations, it is important to recognize that foreign-born stock at any point in time depends upon not only who were admitted to the country in the first place but also who returned home subsequently. Return migration may be more negatively selected among TWs than among STs and PRs. Some temporary workers are recruited for definite temporary work, and these workers may have been less rigorously screened and must return home. In addition, TWs are less attached to American society than STs and PRs. The uncertainty of future permanency sponsorship associated with temporary-worker programs may lower these workers' efforts to acculturate and integrate. Less adapted TWs are more likely to go back to their home country. Having less invested, TWs are also more likely to respond to pure economic shocks and return when laid off or during economic downturns. In contrast, the higher-educational institutions transmit American cultural heritage to STs more strongly than the workplace does for TWs. The cultural capital cultivated in higher educational institutions helps form and maintain social networks of prestigious and powerful members, which facilitate job searching (Lin 1982). With these means, less successful STs may stay rather than return home. Given their initial permanent status, PRs are likely to make greater efforts to acculturate and integrate than TWs. The negative selectivity of return migration among TWs may lead to an additional post-admission salary advantage of the TW stock, thereby leading to unexplained group-salary advantage of TWs.

Data and Methods

The analysis draws on data from the 2003 National Survey of College Graduates (NSCG), which interviewed a probability sample of 100,402 college graduates enumerated in the decennial U.S. Census long-form 2000. The respondents were aged 75 or younger and living in the United States in October 2003. The NSCG 2003 is the only college-graduate survey that covers the complete foreign-born stock with their highest degree from the U.S. or abroad. The rarely available information includes visa status at admission and at the present time among the foreign-born; the year, place, and field of up to five academic degrees; and the basic salary, occupational specialty, workplace supervising position, and employment sector of the principal job, in addition to the usually available information on country of origin and current resident regions. This set of information is necessary for the present study.

The NSCG foreign-born sample represents the stock, which is the cumulated inflow minus the cumulated outflow and mortality. One way to get a sense of whether and how the outflow is selected is to compare key characteristics of NSCG temporary workers and foreign students who entered the U.S. labor market 6–8 years earlier than the U.S. Citizen and Immigration Service (USCIS) approved H-1b cases. The results in Appendix Table 1 show that, compared to the new approved H-1b cases, the TW stock in NSCG 2003 are more likely to come from Western countries and less from India, and less in IT and more in health fields. The 6–8 year salary growth is greater in IT and architecture than in health. The ST stock resembles the TW stock except that STs have more Master's and doctoral degrees and higher salaries in health fields. These comparisons suggest that TWs and STs from India and those in IT are more likely to return home, whereas TWs and STs from Western countries and those in health fields are more likely to stay.

Previous studies have suggested that labor-market experiences are different for men and women (Oaxaca 1973; England and Farkas 1986), and this difference among the foreign-born is more complicated. To focus attention, this study examines foreign-born men who were aged 24–64 and working on a principal full- or part-time job (not retired or enrolled in school) during the week of October 1, 2003, and came to the U.S. with the highest degree or completed the highest degree in the U.S. (whichever occurred later) after 1970. The NSCG 2003 collected information on whether a foreign-born respondent first arrived in the United States to stay for six months or more on one of the following visa types – 1) permanent residence, 2) temporary worker, 3) foreign student, 4) dependent, and 5) other visa types – and the reason of migration among those with a permanent residence visa. To focus comparisons among foreign-born individuals who came to the U.S. as an adult and for economic purposes, I excluded from the analytic sample those who completed high school in the United States and those with a permanent residence visa for non-economic reasons. As a result, the analytic sample includes three admission groups: those with an employment-based permanent-residence visa (PR n=963), those with a temporary-worker visa (TW n=1,434), and those with a foreign-student visa (ST n=3,476).

The dependent variable is the annualized basic salary of the principal job. I constructed the full-time-equivalent, annualized basic salary, utilizing the reported basic salary and the week

basis on which the salary was set.⁴ This measure uses the 52-week basis, given that 77% of reported salaries were on the 52-week basis, 18% on the 36–51 week basis, and less than 5% on a smaller basis. The maximum 52-week salary is top-coded at the highest reported 52-week salary of \$516,172 (1.2% of the analytic sample was top coded). I did not use the total earned income in calendar year 2002, because this variable is a sum of earnings from all jobs, overtime, bonuses, and business profits, of which the information on occupational specialty, supervising position, and employment sector and region are unavailable.

Five blocks of explanatory variables correspond to the five concepts for individual work-related characteristics. First, at-admission human capital and race/ethnicity include the highest academic degree obtained in the home country (Bachelor's or lower, Master's, doctoral, and professional), years of work experiences in the home country, and race/ethnicity (White, Black, Hispanic, and Asian). Second, country/region of origin distinguishes among India, Mainland China, the Philippines, other Asian countries, Western countries (United Kingdom, Germany, Canada, Australia, and other Western, Northern, and Southern European countries), and all others. Third, temporary-to-permanent status change is a dichotomous variable indicating whether such a transfer for TWs and STs had been completed by the time of survey. By definition, PRs take a 0 value for this variable. Fourth, human-capital growth after arrival includes whether or not individuals obtained a U.S. degree after arrival, the number of years of U.S. work experience (since the highest degree obtainment or arrival in the United States with the highest degree, whichever occurred later). Other supply-side-related characteristics include working full- or part-time, being married, and having a health condition that limits work. Fifth, demand-side-related characteristics by the time of survey include occupational specialty (IT, architecture, health, business/financial, physical/life sciences, and social sciences/humanities/education), the match between the degree field and job requirements (closely, somewhat, and not matched), supervising position (not supervising, direct supervising, and supervising through subordinates), employment sector (private, non-private), and employment region (Northeast, Midwest, South, and West).

The first step of the analysis is to document the group salary differentials among the three admission groups, unadjusted and incrementally adjusted to the five blocks of explanatory variables using pooled models for all three groups. The pooled models specify the same regression coefficients for all groups, and this restriction was relaxed in the second-step analysis to facilitate an understanding of the sources of group salary differentials. The Blinder-Oaxaca approach (Blinder 1973; Oaxaca 1973) decomposes the overall group difference into two components: the contribution of differences in the distribution of regressors (composition contribution) and the contribution of differences in the coefficients for regressors (residual contribution). Oaxaca and Ransom (1994) and Yun (2005a) advanced the method by clarifying the estimation under no group differences and standard errors of the decomposition components. I applied the updated Oaxaca method to three pairwise comparisons of the three focal admission groups (TW vs. PR, ST vs. PR, and TW

⁴According to the NSCG staff, The NSCG 2003 does not provide annualized salary as did the NSCG 1993 and the label of the 2003 variable is misleading.

vs. ST). Below I use the TW vs. PR salary differential decomposition as an example to illustrate the decomposition method.

Let G , the gross (unadjusted) salary differential, be defined as

$$G = W_{TW} / W_{PR} - 1 \quad (1)$$

where W_{TW} is the mean salary of TW and W_{PR} is the mean salary of PR. Assuming a neutral labor-market process for both groups, the salary differential between TW and PR (indicated by the superscript (0)) would be entirely caused by the compositional contribution (Q) in supply-side-related characteristics:

$$Q = W_{TW}^0 / W_{PR}^0 - 1 \quad (2)$$

The contribution of differential demand-side-related characteristics (D) is defined as

$$D = (W_{TW} / W_{PR} - W_{TW}^0 / W_{PR}^0) / (W_{TW}^0 / W_{PR}^0) \quad (3)$$

The log transformation of Equations (1)–(3) implies that the gross group differential is the sum of the composition contribution and the residual contribution.

$$\ln(G+1) = \ln(Q+1) + \ln(D+1) = \ln(Q+1) + residual \quad (4)$$

In other words, the residual contribution, $\ln(D+1)$, is what remains after taking out the composition contribution from the gross group differential, all log-transformed.

Under the regression framework, I regress log salary on a vector of explanatory variables (X), such that Equation (4) becomes:

$$\begin{aligned} \ln(G+1) &= \ln(\tilde{W}_{TW} / \tilde{W}_{PR}) \\ &= \bar{X}_{TW}' \hat{\beta}_{TW} - \bar{X}_{PR}' \hat{\beta}_{PR} \\ &= (\bar{X}_{TW} - \bar{X}_{PR})' \hat{\beta}^* + \bar{X}_{TW}' (\hat{\beta}_{TW} - \hat{\beta}^*) + \bar{X}_{PR}' (\hat{\beta}^* - \hat{\beta}_{PR}) \\ &= (\bar{X}_{TW} - \bar{X}_{PR})' \hat{\beta}^* + residual \end{aligned} \quad (5)$$

where $\tilde{W}$ is the geometric mean salary,⁵ and $\hat{\beta}^*$ are estimated from the pooled regression model for both TW and PR. The $(\bar{X}_{TW} - \bar{X}_{PR})' \hat{\beta}^*$ term is for the overall composition contribution. If TWs are more advantaged in X than PRs, the contribution to the positive TW/PR salary differential is positive, i.e., it helps explain the group salary differential. Alternatively, if TWs are less advantaged in X than PRs, the composition contribution is negative, i.e., it enlarges the group salary differential. The residual contribution includes two terms as in $\bar{X}_{TW}' (\hat{\beta}_{TW} - \hat{\beta}^*) + \bar{X}_{PR}' (\hat{\beta}^* - \hat{\beta}_{PR})$. When the coefficient for a covariate is more

⁵The exponential of the log salary mean is the geometric mean of salary.

positive (or less negative) for TW than for PR, the contribution of the coefficient difference is positive, and the reverse constitutes a negative contribution.

For hypothesis testing, standard errors of estimates for composition contributions and residual contributions can be estimated for both overall and detailed components of decomposition.⁶ The focus of pairwise analysis of group salary differentials is to identify which blocks of explanatory variables better capture the unique labor-market institutional selection of TWs and STs, but not PRs, by entering the blocks of regressors along the time line from admission to the survey time.

When contrasting TWs and PRs, I have the following specific expectations about which decomposition components can provide evidence of labor-market institutional selection. Model 1 includes at-admission characteristics that capture self-selection on human capital accumulated at home, as well as implications of the U.S. racialized hierarchy for one's race/ethnicity. Because the TW and PR stock share the same intention to work permanently in the United States, the composition of this set of variables will be unlikely to contribute to the TW/PR salary differential and thus the bulk of the salary differential will be left in the residual component. Model 2 adds country/region of origin, and its composition contribution reflects the employer preference of overseas recruitment sites for TWs and is irrelevant for PRs. Thus a significant composition contribution of this variable will provide a piece of evidence for labor-market institutional selection of TWs. In Model 3, status change to permanent residence signifies the pass of employer's second screening for TWs. A significant composition contribution of this variable provides another piece of evidence to support the labor-market institutional selection idea. The set of current individual characteristics in Model 4 may reflect programmatic opportunities to human-capital growth, such as the longer U.S. work experience of PRs as compared with TWs, and permanent residence provides PRs an incentive to pursue a U.S. degree. As TWs are disadvantaged in post-arrival additional education, the composition of this set of variables is expected to negatively contribute to the group salary differential. Finally, the labor-market institutional selection of TWs is expected to be mainly captured in the set of demand-side-related characteristics. The TW program is used in certain specialty occupations and the private sector, a close match between the degree field and job requirements, and includes transfers of supervisors within transnational corporations, all of which are largely absent for PRs. I expect that the composition contribution of these variables will explain most of the remaining TW/PR salary differential.

Given that foreign students must be approved by a temporary-worker program in order to work in the United States, I expect that sources of the ST/PR salary differential largely resemble those of TW/PR, but that the TW/PR differential and the ST/PR differential are distinct in two important ways. First, unlike TWs, STs are not recruited from overseas but as free agents in the domestic market, and thus country/region of origin may not vary between STs and PRs, leading to a lack of composition contribution of country/region of origin to the ST/PR salary differential. Second, unlike TWs, STs resemble PRs in active acculturation and assimilation, albeit the process for ST is through the higher-education system.

⁶This paper used the `-oaxaca-` command programmed by Ben Jann, which implements the updated Oaxaca method (see Jann 2008).

Therefore, current supply-side-related characteristics are more similar for STs and PRs, such that the composition contribution of these variables to the ST/PR differential is less negative than that for the TW/PR differential.

A third contrast is TW against ST. Although both groups utilize temporary-worker programs in their status adjustment, I suggest that their salary differential may be relatively small but may obscure important labor-market process differences. The stepwise decomposition of sources of the TW/ST salary differential may help reveal where the labor-market process differences rest. I expect that employer preference for country/region sites of overseas recruitment and current supply-side-related characteristics distinguish TWs from STs. The composition contribution of these two sets of variables will cancel each other out, leading to a small TW/ST salary differential.

Results

We first examine the distribution differences of the five blocks of explanatory variables among the three focal admission groups, PR, TW, and ST, in Table 1. This examination prepares for interpreting the results of the decomposing analysis of group salary differentials. We compare PR with TW first and TW with ST next. Differences in at-admission characteristics are large between PR and TW. Compared to PRs, TWs are more likely to have Master's and doctoral degrees, to have longer home work experience, and to be White. Regarding country/region of origin, PRs are more likely to origin in the Philippines, other Asian countries, and other parts of the world, whereas the origin of TWs is more concentrated in Western countries. Over the course of the U.S. stay, employers sponsored visa-status changes of 70% of TWs to permanent residence visa and the rest of TWs were still within their temporary-stay length, while no change in visa status is needed for PR. By the survey time, a larger proportion of PRs had obtained an additional U.S. degree than TWs; U.S. work experience is longer for PRs than for TWs, reflecting that the 1990 Immigration Act expanded temporary-worker programs and boosted larger influxes of skilled temporary workers afterwards. Concerning current supply-side-related characteristics, a majority of PRs and TWs are full-time working and married but relatively fewer TWs are disabled. Current demand-side-related characteristics differ greatly between PRs and TWs. In particular, TWs are more likely to specialize in IT and business and less likely to concentrate in health fields, and social-sciences/humanities/education. Compared to PRs, TWs' degree fields more closely match their job requirements; more TWs hold supervisory positions and work in the private sector.

While TWs and PRs are very different, TWs and STs are more alike but they still differ in notable ways. Unlike TWs, STs have almost no work experience at admission and are more likely to be in racial minority groups. More STs than TWs are from Mainland China and other Asian countries, but fewer are from Western countries. More STs than TWs have their visa status changed, due in part to the fact that more STs arrived earlier than TWs. And for the same reason, STs have worked longer in the United States than TWs. Over three quarters of STs obtained a U.S. degree, compared to only 9% of TWs. STs also differ from TWs in demand-side-related characteristics – fewer STs work in IT and business as well in the private sector.

Because the three focal admission groups in this study (TW, ST, and PR) are only a part of the larger population of highly skilled workers, a brief description of the salary pattern of all groups is informative and helps position the focal groups in a more complete picture of group salary differentials. We compare family-based permanent residence (PRf), other visa programs (OV), the 1.5 generation (a term for those who arrived as a child and received U.S. high school and above education) (1.5G), as well as the native-born (NB). Since log salary is used throughout the analysis, I list the geometric mean salary,⁷ ranking from high to low: TW (\$74,087), ST (\$69,633), 1.5G (\$65,973), NB (\$61,451), PR (\$57,815), PRf (\$45,844), and OV (\$44,135).

Table 2 shows group salary differentials in the form of the geometric mean ratio among TW, ST, and PR, unadjusted and incrementally adjusted to the five blocks of explanatory variables from a set of incremental pooled models for all three groups. The unadjusted geometric mean salary ratio of TW to PR is 1.281 and statistically significant. This ratio reduces to 1.275 after adjusting to at-admission characteristics, in which TWs are more advantaged than PRs. The ratio continues to drop to 1.210 after further adjusting to country/region of origin, as TWs are more likely to be from Western countries. The ratio drops even further and becomes nonsignificant (1.090) after controlling for visa-status change, because such status change indicates a pass of employer second-time screening among TWs, but this is irrelevant for PRs. When current supply-side-related characteristics are added, however, the salary differential is high again at 1.212 and significant, because PRs are more advantaged in U.S. degree attainment and U.S. work experience. After demand-side-related characteristics are entered, the TW/PR salary ratio drops to the lowest level and becomes nonsignificant (1.069), because TWs are more likely to work in higher-paying occupation specialties, to have their degree field matched with their the job requirements, to occupy supervising positions, and to work in the private sector.

The unadjusted ST/PR salary ratio is relatively smaller than the TW/PR ratio. Adjusting to the first two blocks of covariates repeats the patterns for the TW/PR ratio. Controlling for current supply-side-related characteristics does not lead to the regain of a significant ST/PR salary differential, because STs are more advantaged than PRs in U.S. degree attainment. Further controlling for demand-side-related characteristics plays little additional role, even though STs are more advantaged in demand-side-related characteristics.

The TW/ST salary differential is very different from the above two patterns. All but one ratio shown in Table 2 are close to 1 and nonsignificant. Examining the significant differential when current supply-side-related characteristics are added to the model, we recall that over three quarters of STs have U.S. degree attainment, whereas only 9% of TWs have it. In addition, STs have a longer U.S. work experience than TWs do. When these supply-side related advantages of STs are controlled, the TW/ST salary ratio is greater than one. When the demand-side-related advantages of TWs are considered, however, there is no longer a significant salary differential between TWs and STs.

⁷Geometric mean salary is the exponential of mean log salary, which is always not greater than the arithmetic mean.

The pooled models used in Table 2 restrict coefficients of explanatory variables to be the same for the three admission groups. The next analysis relaxes this restriction and estimates salary models separately for each admission group. We estimated five incremental models: (1) at-admission experience, (2) adding country/region of origin, (3) adding visa status change, (4) adding current supply-side-related characteristics, and (5) adding current demand-side-related characteristics. The results for the full model are presented in Table 3, which prepares us to interpret the decomposition analysis results. Examining the coefficient differences between PRs and TWs, we see three patterns. First, at-admission experience is important for PRs only. Second, country/region of origin matters more for TW, as Western country origin is associated with the highest salary and Mainland China origin with the lowest salary among TWs but not among PRs. U.S. degree attainment boosts PRs' salary but does not affect TWs' salary. Third, the highest return to occupational specialty is IT for TWs and health fields for PRs. Yet, PRs and TWs share similarly nonsignificant effects of race/ethnicity, many current supply-side-related characteristics, private sector, and region. At the same time, degree-job match and supervising positions are significant for both PRs and TWs.

The information from Tables 1–3 suggests that admission groups exhibit different distributions of explanatory variables, which constitute one source of the group salary differential, and different coefficients for explanatory variables, which constitute another source of the group salary differential. These two sources correspond to the composition and residual contributions discussed in the method section. I estimated five incremental Oaxaca decomposition models. By examining the composition and residual contributions to the salary differential between two admission groups in the five models, I can test the hypotheses derived from the labor-market institutional selection argument and specific labor-market processes for TW, ST, and PR.

Table 4 shows the results of the Oaxaca models for the TW/PR, ST/PR, and TW/ST salary differentials. The overall and detailed composition and residual contributions are expressed in log scale and as a percentage of the overall group salary differential. The significance level of each overall and detailed contribution is also obtained. Deviation-contrast parameterization is used for categorical covariates, that is, the coefficients for the complete set of dummy variables indicating the categorical variable sum to zero. This parameterization is necessary for comparing two groups' salaries that are estimated separately (Yun 2005b).

The first three rows of Table 4 list the unadjusted mean log salary for each group and the pairwise group salary differentials. In the TW/PR section, the mean log salary is 11.213 for TW and 10.965 for PR and the group salary differential is 0.248. The rest of the table is organized by Models 1–5. Overall composition contribution considers group differences in the distribution of all covariates in the model, and overall residual contribution takes into account group differences in the coefficients of all covariates and the constant term. Detailed composition and residual contributions are for sets of explanatory variables grouped by concepts. In Model 1, the explanatory variables are grouped into at-admission education, at-admission work experience, and race/ethnicity. To the TW/PR differential, the overall composition contribution is 0.030 in log scale, meaning that the composition differences of

at-admission variables explain 0.030 out of the 0.248 group salary differential, accounting for 11.9% of the total differential. This contribution is nonsignificant. The positive contribution of race/ethnicity (0.038 log scale, 15.3%) is significant, however. In other words, the group difference in race/ethnicity significantly explains 15.3% of the group salary differential because over 40% of TWs are White and the percentage is 29 for PR (see Table 1). Subtracting the small explanation by at-admission variables from the total group salary differential, the overall residual contribution is 0.219 log scale, 88.1%. The difference in the constant term contributes 108.3% of the group salary differential, suggesting that more explanatory variables are needed to explain the group salary differential.

The additional set of explanatory variables in Model 2 is country/region of origin. The overall composition contribution increases to a significant 37.3%, and much of this increase is because of the positive, significant composition contribution of country/region of origin at 34.2%. Because country/region of origin is highly correlated with race/ethnicity, the composition contribution of race/ethnicity is no longer significant in Model 2. The overall residual contribution is now 62.7%, which is significant, but the estimates cannot discern which variable's or constant's coefficient makes a significant contribution.

Model 3 focuses on employer second-time screening before sponsoring the visa status change for TWs. As a result of this addition, the overall composition contribution continues to rise, to 61.3%. The detailed composition contribution of changed visa status is 24.4% but does not reach the 0.10 significance level ($t=1.34$). Neither the overall residual contribution nor the detailed residual contribution of visa status change is significant. This overall composition contribution, however, suggests that employer second-time screening gives TWs a salary advantage.

Because salary was measured at the survey time, the analysis should consider both current supply-side and demand-side related characteristics at the survey time. Model 4 considers supply side and Model 5 adds demand side. It is interesting to see that after introducing the current supply-side-related characteristics (additional human capital measured by U.S. degree attainment and U.S. work experience, as well as full-time, marital, and disabled status) the overall composition contribution drops to 13.3% and becomes nonsignificant. Recall that (and see Table 1) PRs are much more advantaged in post-admission human-capital accumulation, as they are more likely to gain a U.S. degree and have longer U.S. work experience. Thus controlling for these variables actually enlarges the TW/PR salary gap and entails the negative, significant composition contribution of U.S. degree attainment (−31.2%).

The residual contribution in Model 4 is correspondingly large and significant at 86.7%. Here the estimation identifies that differences in a number of coefficients make a significant contribution. As discussed in the method section, a positive contribution of the coefficient of a covariate can be understood as favorable for the salary-advantaged group, whereas a negative contribution should be regarded as favorable for the salary-disadvantaged group. For instance, the coefficient for visa-status change has a positive contribution at 36.3%, given that the effect is positive, large, and significant for TWs, the salary-advantaged group, and irrelevant for PRs, the salary-disadvantaged group (see Table 3). The contribution of the

coefficient for U.S. degree attainment, however, is negative (−50.3%), because the coefficient is positive, large, and significant for PRs but small and nonsignificant for TWs. The coefficient for U.S. work experience has a negative, significant contribution at −234.2%. Here, the coefficient is positive, small, and nonsignificant for PRs but negative and significant for TWs (see Model 4 of Table 3). TWs with longer U.S. work experience are those who arrived earlier, before the 1990 Immigration Act, and the unique labor-market institutional selection for TWs did not occur then. Thus the disfavoring effect of U.S. work experience for TWs negatively contributes to the TW/PR differential. In addition to these specific coefficient contributions, the constant term's contribution is large and significant, suggesting that demand-side-related variables are needed.

The demand-side-related characteristics added to Model 5 reverse the situation and increase the overall composition contribution to a significant 72.5% and decrease the overall residual contribution to a nonsignificant 27.5%. The detailed output shows that the positive composition contribution of three demand-side-related characteristics (25.7% for occupational specialty, 15.8% for degree-job match, and 17.0% for supervising position) capture the specific labor-market institutional selection for TWs, as group differences in these variables favor TWs over PRs and reflect the unique labor-market institutional selection of TWs. In addition, country/region of origin retains its positive composition contribution (25.6%), supporting the idea of employer site preference for overseas recruitment. These findings provide strong evidence to support my argument that there is labor-market institutional selection of TWs and this institutional selection contributes to the higher salary of TWs as compared with PRs. It is important to point out that this finding is obtained while taking into account other composition and residual contributions. The significant negative contributions include the composition contribution of U.S. degree attainment and the coefficient contribution of at-admission work experience, U.S. degree attainment, U.S. work experience, and disabled status. These disfavoring supply-side effects suggest that despite the supply-side disadvantages of TWs, the labor-market institutional selection, via overseas site preference for recruiting high-skilled labor from Western countries, second-time screening of TWs, and the selection of occupational specialties, degree-job matches, supervising position, and private employment sectors, place TWs at a substantial salary advantage.

Space limitation permits only a brief discussion of the ST/PR decomposition analysis. The visa-status change of STs also utilizes temporary-worker program provisions, but STs are not recruited overseas and have their unique U.S. higher education experience. How do these similarities and differences play out in the decomposition analysis? The overall composition and residual contribution patterns of ST/PR largely resemble those of TW/PR in Models 1, 2, 3, and 5 but differ in Model 4. Adding current supply-side-related characteristics does not significantly reduce the overall composition contribution, given that STs and PRs are more alike in these characteristics, except that a larger proportion of STs obtained a U.S. degree than PRs. Looking at Model 5, we see three substantive differences from the TW/PR model. First, country/region of origin makes no significant composition contribution to the ST/PR salary differential as it does to the TW/PR differential, given that STs are not recruited overseas. Second, U.S. degree attainment is an advantage of ST over PR, and thus this variable makes a positive composition contribution to the ST/PR

differential, whereas it is a disadvantage of TWs compared to PRs, so that its composition contribution is negative to the TW/PR differential. Third, unlike TWs, who have an advantage in higher-paying occupational specialties, STs and PRs are not concentrated in IT so that occupational specialty does not make a positive composition contribution to the ST/PR differential.

The TW/ST differential decomposition helps reveal important detailed contribution patterns obscured by the generally nonsignificant overall composition and residual contributions to the small, nonsignificant TW/ST differential. I highlight two such patterns from Model 5. First, country/region of origin has a positive composition contribution that results from more TWs being recruited from Western countries, as well as a positive coefficient contribution because of the strong positive effect of Western origin for TWs and the small, nonsignificant effect for STs. Second and out of my expectation, the effect of IT specialty favors TW over ST such that a positive coefficient contribution is constituted. Taken together, these detailed patterns support important differences of labor-market selection through preferred overseas recruitment from Western countries and higher returns to the IT specialty for TWs but not for STs.

Finally, the decomposition analysis of the TW/PR and ST/PR salary differentials show that group differences in the explanatory variables included in the full model significantly explain a large proportion of the total salary differentials and that the overall residual contribution is small and nonsignificant. Subtle differences between the two analyses, including the significant constant term for the TW/PR analysis and the over-contribution of composition in the ST/PR analysis may suggest a difference in return migration of these two groups. A deeper understanding of differential return migration will depend on future research.

Conclusions

An important policy change in the U.S. 1990 Immigration Act was the establishment of a pathway to permanent immigration for highly skilled workers entering the country under temporary worker programs. These temporary worker programs recruit highly skilled workers from overseas as well as from foreign students graduating from U.S. institutions of higher education. In response to this change, the number of temporary workers and foreign students increased and the nature of admitting the highly skilled was transformed. This paper argues that this policy shift has allowed employers to play a crucial role in the immigration of highly skilled workers, thereby creating a labor-market institutional selection that gives salary advantage to nonimmigrant admission groups over immigrant admission groups. To test for this labor-market institutional selection, we used data from admission visas to assign current foreign-born workers into four categories representing their visa status at entry into the United States: 1) employment-based permanent residents, 2) family-based permanent residents, 3) temporary workers (TW), and 4) foreign students (ST). We then decomposed the sources of salary differentials among the four categories of foreign workers as well as native workers.

The analysis provides evidence for an emerging labor-market institutional selection in three ways. First, the TW/PR salary differential analysis finds that the salary advantage of temporary workers can be traced to several factors: recruitment from Western countries, completion of the temporary-to-permanent transition, working as IT professionals and in the private sector, holding a supervisory position, and having a job that matches the worker's degree field. These results support an emerging labor-market institutional selection rather than individual self-selection. Second, the ST/PR salary differential analysis finds that STs are not particularly more likely from Western countries, and origin country/region does not contribute to the substantial ST/PR salary differential. This suggests that institutional selection arises from overseas hiring that is large in scale, institutional-network-based, and using pre-admission contracts rather than hiring within the United States from the pool of native-born and foreign-born free agents. Third, compared to STs, more TWs are from Western countries and the effect of Western origin more strongly increases TWs' salary. This further strengthens the important distinction between overseas and domestic hiring. The overall results support the significance of labor-market institutional selection in salary structure and its emergence from employers' role in recruiting from overseas, the second employer screening that occurs at the adjustment from temporary to permanent status, occupational specialties, holding a supervisory position, or having a skill-matched job.

Our major findings about the salaries of nonimmigrant admission groups contribute to the literature on immigrant admission groups' wage growth over the duration of their U.S. stay (e.g., Duleep and Regets 1996; Jasso and Rosenzweig 1995). The previous literature found an earnings advantage for family-based immigrants over employment-based immigrants. Conversely, we found that employment-based immigrants earn more than family-based immigrants, further supporting the important role of the demand side in the salary structure of foreign-born workers.

The findings of this study provide fresh information for U.S. immigration policy makers. If the purpose of immigration policy is to admit qualified workers in sectors of short supply, then the temporary-worker programs for highly skilled workers can be considered as a success. Key to this success is the role of employers in overseas recruiting, second employer screening, and sponsoring permanent residence combined with federal regulation of prevailing wage. At the same time, potential problems facing such programs need to be guarded against. Governmental regulations may need to go beyond prevailing wage to other domains, such as the degree of access to the international labor pool vis-a-vis the employment opportunities of domestic workers, enforcing end-of-contract departures of temporary workers to prevent illegal overstays, as well as alleviating the over-dependence of temporary workers on their contractual employers.

Within the debate over immigration reform in the United States, temporary-worker programs with pathways to citizenship have been proposed for less-skilled workers. These proposals include requirements regarding the payment of income and payroll tax before the pathway can be used. The findings of this paper also point out a possible role for employers in overseeing the pathway. While the employers' role will be restricted by the nature of less-skilled workers' jobs that may be unstable and have high turnover, employers may still play an important role in post-arrival employment and integration. A combination of employer

sponsorship and indirect evidence of labor-market performance, such as payment of payroll tax, may be a viable solution. At the same time, rigorous governmental regulation, mentioned above, will be equally essential for less-skilled workers to protect both native-born and foreign-born workers.

This study's findings also have implications for immigration policy makers in receiving countries of highly skilled workers. The point-based systems adopted in certain advanced industrial countries place greater weight on individual human capital endowment at admission than the role of employers. For example, Australia awarded points to applicants with a job offer before 2010 (Department of Immigration and Citizenship, Australian Government 2011). Yet, point-based systems like that is still not demand-driven and point-based admitted immigrants without a pre-migration job offer will have a lower prospect of employment and social integration. This paper clearly shows that admission programs that actively incorporate a role of employers will initiate labor-market institutional selection of the workers in demand.

Further research is needed to validate the emerging labor-market institutional selection in different periods and in different receiving countries. In addition, shorter- and longer-term consequences of the institutional selection in multifaceted labor-market outcomes will advance our understanding of the nature of this labor-market institutional transformation.

Biography

Lingxin Hao, Professor of Sociology, Johns Hopkins University, is specialized in immigration, social inequality, family and public policy, and quantitative methodology. She has conducted and published research on the impact of immigration on social inequality, assimilation of immigrant generations, and the impact of welfare policy on families and adolescents. Her articles in *Demography*, *International Migration Review*, and *Journal of Marriage and Families* studied immigrant employment, wage, welfare participation, and private support networks. Her research on children of immigrants was published in *Sociology of Education*, *ANNALS*, *Social Science Quarterly*, etc. Her book *Color Lines, Country Lines: Race, Immigration, and Wealth Stratification* examines immigrants' wealth accumulation and immigration's impact on racial stratification of wealth in the United States.

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Appendix

Table 1

Comparison of Sample Characteristics between NSCG and USCIS

Variable	USCIS 2003	NSCG 2003	
	H1-B	TW	ST
Country of origin (%)			
India	36.5	27.8	15.6
Mainland China	9.2	5.3	20.0
Philippines	4.8	8.9	1.4
Western	12.6	19.7	26.3
Age when entering US labor market (%)			
25–34	65.5	64.9	61.1
Education (%)			
Bachelor's	48.7	58.7	22.1
Master's	33.9	31.8	45.2
Doctoral	11.2	5.0	26.4
Professional	5.0	4.5	6.3
Occupational specialty (%)			
IT	38.5	32.9	20.0
Architecture	12.4	9.3	13.6
Health	7.2	17.8	9.2
Median annual salary (\$) ^a			
Total	53,000	72,000	70,000
IT	58,000	84,000	85,000
Architecture	60,000	85,000	85,000
Health	49,000	60,000	82,000

Note: The statistics from NSCG 2003 are for respondents who had worked for 6–8 years in the U.S. The statistics from USCIS are for approved H-1B cases in 2003 (USCIS 2004).

^aThe USCIS salary is the initial salary while the NSCG salary is the salary 6–8 years after initial.

Table 1

Mean Values of Variables Used in Analysis by Admission Groups

Variable	PR	TW	ST
Salary (geometric mean)	57,815	74,087	69,633
<u>At-admission characteristic</u>			
Education			
Bachelor's or lower	0.73	0.63	0.64
Master's	0.16	0.26	0.25
Doctoral	0.03	0.07	0.07
Professional	0.08	0.04	0.04
Non-U.S. work experience	5.09	6.22	0.85
Race/ethnicity			
White	0.29	0.42	0.28
Black	0.06	0.02	0.08
Hispanic	0.12	0.09	0.09
Asian	0.53	0.47	0.56
<u>Country/region of origin</u>			
India	0.23	0.26	0.19
Mainland China	0.03	0.03	0.14
Philippines	0.09	0.05	0.01
Other Asian countries	0.21	0.15	0.31
Other non-Western countries	0.32	0.21	0.24
Western countries	0.12	0.29	0.12
<u>Visa status change</u>	0.00	0.70	0.83
<u>Current supply-side-related characteristics</u>			
U.S. degree attainment	0.26	0.09	0.77
U.S. work experience	13.92	9.24	13.10
Full-time worker	0.97	0.97	0.96
Married	0.89	0.87	0.84
Disabled	0.13	0.10	0.12
<u>Current demand-side-related characteristics</u>			
Occupational specialty			
IT	0.11	0.30	0.18
Architecture	0.14	0.14	0.17
Health fields	0.14	0.06	0.09
Business	0.28	0.34	0.27
Physical sciences	0.03	0.03	0.13
Social sciences, humanities, education	0.31	0.13	0.16
Degree-job-requirements match			
Closely	0.51	0.62	0.69
Somewhat	0.24	0.28	0.21
Not matched	0.25	0.11	0.10

Variable	PR	TW	ST
Supervising position			
Not supervising	0.61	0.46	0.49
Supervising directly	0.22	0.30	0.30
Supervising through subordinates	0.17	0.24	0.21
Private sectors	0.59	0.69	0.51
Region			
Northeast	0.30	0.27	0.23
Midwest	0.15	0.18	0.17
South	0.27	0.25	0.31
West	0.28	0.30	0.30
n	962	1,434	3,475

Note: Means are weighted means.

Table 2

Unadjusted and Adjusted Group Salary Differentials among Admission Groups

Geometric mean ratio	Unadj.	adj1	adj2	adj3	adj4	adj5
TW/PR	1.281***	1.275***	1.210***	1.090	1.212**	1.069
ST/PR	1.206***	1.164*	1.155**	1.019	1.006	0.962
TW/ST	1.064	1.094	1.048	1.069	1.206***	1.112
Adjust to:						
At-admission char.	no	yes	yes	yes	yes	yes
Country/region of origin	no	no	yes	yes	yes	yes
Visa status change	no	no	no	yes	yes	yes
Current supply-side-rel. char.	no	no	no	no	yes	yes
Current demand-side-rel. char.	no	no	no	no	no	yes

Note: Ratios of geometric mean salary are weighted.

* p<.10

** p<.05

*** p<.01

Table 3

Estimates from the Full Log Salary Model by Admission Groups

Variable	PR	TW	ST
<u>At-admission char.</u>			
Non-U.S. education (ref. <=BA)			
Master's	-0.031	0.108*	0.120
Doctoral	0.371**	0.300*	0.138
Professional	-0.040	0.700***	0.075
Non-U.S. work experience	0.094**	0.002	0.000
Non-U.S. work experience squared	-0.004***	0.000	0.000
Race/ethnicity (ref. White)			
Black	-0.150	0.104	0.024
Hispanic	-0.124	0.057	-0.006
Asian	-0.193	0.232	0.035
<u>Country/region of origin (ref. Western)</u>			
India	-0.115	-0.538***	-0.009
Mainland China	-0.163	-1.319**	-0.039
Philippines	-0.472	-0.656***	0.091
Other Asian countries	0.012	-0.395**	-0.089
Other non-Western countries	-0.357**	-0.305***	-0.168
<u>Visa status change</u>	0.000	0.099	0.068
<u>Current supply-side-related characteristics</u>			
U.S. degree attainment	0.671***	0.066	0.137
U.S. work experience	0.065	-0.019	0.006
U.S. work experience squared	-0.002	0.001	0.000
Full-time worker	0.110	0.020	-0.100
Married	0.094	0.046	0.125
Disabled	0.209	-0.143	0.058
<u>Current demand-side-related characteristics</u>			
Occupational specialty (ref. IT)			
Architecture	-0.306	-0.282***	0.144
Health fields	0.362*	-0.535**	0.654***
Business	-0.011	-0.235**	0.183
Physical sciences	-0.145	-0.391***	0.107
Social sciences, humanities, education	-0.250	-0.490***	-0.144
Degree-job match (ref. closely)			
Somewhat	-0.197*	-0.114	-0.070
Not matched	-0.344**	-0.238***	-0.324***
Supervising position (ref. not)			

Variable	PR	TW	ST
Supervising directly	0.303***	0.126*	0.191**
Supervising through subordinates	0.217	0.435***	0.387***
Private sectors	0.031	0.102	0.234***
Region (ref. North-East)			
Mid-West	−0.071	−0.090	0.102
South	−0.023	0.034	−0.066
West	−0.202	0.006	0.047
Constant	10.408***	11.387***	10.571***
R-squared	0.163	0.161	0.086

Note: The regression estimates are weighted by sampling weights.

*
p<.10

**
p<.05

p<.01

Table 4

Decomposing Sources of Group Salary Differentials

Component	TW/PR			ST/PR			TW/ST		
	log-scale	%	Sig.	log-scale	%	Sig.	log-scale	%	Sig.
group_1	11.213			11.151			11.213		
group_2	10.965			10.965			11.151		
Differential	0.248	100.0	***	0.187	100.0	***	0.062	100.0	
<u>Model 1</u>									
Composition contribution	0.030	11.9		0.050	27.0		-0.033	-54.0	
At-admission education	-0.003	-1.2		-0.006	-3.4		-0.001	-1.6	
At-admission experience	-0.005	-2.1		0.051	27.2		-0.047	-76.7	
Race/ethnicity	0.038	15.3	***	0.006	3.2		0.015	24.3	
Residual contribution	0.219	88.1	***	0.136	73.0		0.095	154.0	
At-admission education	-0.013	-5.4		0.004	2.1		-0.013	-21.4	
At-admission experience	0.041	16.5		-0.024	-13.0		0.056	91.8	
Race/ethnicity	-0.078	-31.3		-0.030	-16.2		-0.030	-49.5	
Constant	0.269	108.3	***	0.187	100.2		0.082	133.1	
<u>Model 2</u>									
Composition contribution	0.093	37.3	***	0.059	31.8	*	0.011	17.5	
At-admission education	-0.002	-0.8		-0.008	-4.1		-0.001	-1.8	
At-admission experience	0.000	0.1		0.035	18.9		-0.044	-71.3	
Race/ethnicity	0.009	3.8		0.003	1.8		-0.003	-4.9	
Country/region of origin	0.085	34.2	***	0.028	15.2		0.059	95.5	***
Residual contribution	0.156	62.7	**	0.127	68.2	*	0.051	82.5	
At-admission education	-0.070	-28.3		-0.034	-18.4		-0.029	-47.5	
At-admission experience	-0.001	-0.3		-0.048	-25.5		0.056	90.4	
Race/ethnicity	0.006	2.4		0.019	10.2		-0.004	-6.4	
Country/region of origin	0.143	57.4		-0.091	-48.8		0.231	376.0	***
Constant	0.078	31.5		0.281	150.6	*	-0.203	-330.0	
<u>Model 3</u>									
Composition contribution	0.152	61.3	***	0.226	121.2	***	-0.010	-15.6	

Component	TW/PR			ST/PR			TW/ST		
	log-scale	%	Sig.	log-scale	%	Sig.	log-scale	%	Sig.
At-admission education	-0.003	-1.0		-0.006	-3.3		-0.001	-1.7	
At-admission experience	0.000	0.1		0.037	19.6		-0.044	-71.9	
Race/ethnicity	0.009	3.7		0.003	1.6		-0.004	-5.9	
Country/region of origin	0.085	34.1	***	0.029	15.4		0.059	95.8	***
Changed visa status	0.061	24.4		0.164	87.9	***	-0.020	-31.9	***
Residual contribution	0.096	38.7		-0.039	-21.2		0.071	115.6	
At-admission education	-0.066	-26.4		-0.043	-22.9		-0.018	-29.8	
At-admission experience	-0.002	-0.6		-0.050	-26.6		0.056	91.1	
Race/ethnicity	0.011	4.4		0.020	10.5		0.001	2.1	
Country/region of origin	0.146	58.7		-0.088	-46.9		0.230	374.2	***
Changed visa status	-0.001	-0.3		0.002	1.2		-0.087	-141.0	
Constant	0.007	2.9		0.119	63.5		-0.111	-181.0	
<u>Model 4</u>									
Composition contribution	0.033	13.3		0.206	110.2	***	-0.069	-112.5	
At-admission education	0.005	2.2		0.000	0.3		-0.001	-1.2	
At-admission experience	0.026	10.5	*	-0.073	-38.9		0.006	10.0	
Race/ethnicity	0.007	2.8		0.002	1.3		-0.003	-5.0	
Country/region of origin	0.087	34.9	***	0.021	11.2		0.066	106.5	***
Changed visa status	0.002	0.7		0.057	30.4		-0.014	-22.4	*
Gained a U.S. degree	-0.078	-31.2	***	0.210	112.7	***	-0.119	-193.8	**
U.S. work experience	-0.016	-6.5		-0.004	-1.9		-0.011	-18.4	
Full-time worker	0.001	0.5		-0.001	-0.4		0.002	2.9	
Married	-0.002	-1.0		-0.008	-4.1		0.005	7.3	
Disabled	0.001	0.5		0.000	-0.2		0.001	1.6	
Residual contribution	0.215	86.7	**	-0.019	-10.2		0.131	212.5	*
At-admission education	0.024	9.6		0.015	8.2		0.014	23.0	
At-admission experience	-0.219	-88.1	*	-0.142	-76.0	**	0.016	25.7	
Race/ethnicity	-0.003	-1.2		0.012	6.4		-0.007	-12.0	
Country/region of origin	0.139	55.9		-0.080	-43.1		0.219	356.3	***
Changed visa status	0.090	36.3	***	0.031	16.7		0.018	29.0	

Component	TW/PR			ST/PR			TW/ST		
	log-scale	%	Sig.	log-scale	%	Sig.	log-scale	%	Sig.
Gained a U.S. degree	-0.125	-50.3	***	-0.267	-142.9	**	-0.027	-43.4	
U.S. work experience	-0.581	-234.2	**	-0.279	-149.2		-0.304	-494.2	**
Full-time worker	-0.050	-20.1		-0.182	-97.3		0.132	214.8	
Married	-0.065	-26.0		0.023	12.6		-0.087	-141.8	
Disabled	-0.034	-13.7		-0.014	-7.6		-0.019	-31.2	
Constant	1.039	418.4	*	0.863	461.9	*	0.176	286.4	
<u>Model 5</u>									
Composition contribution	0.180	72.5	***	0.219	117.1	***	0.001	1.1	
At-admission education	0.014	5.6		0.016	8.6		0.001	1.0	
At-admission experience	0.029	11.6	*	-0.094	-50.3	*	0.020	32.3	
Race/ethnicity	0.008	3.0		0.000	0.0		-0.007	-11.5	
Country/region of origin	0.063	25.6	***	0.033	17.7		0.041	66.4	**
Visa status change	0.007	2.9		0.031	16.4		-0.010	-17.0	
U.S. degree attainment	-0.068	-27.5	***	0.175	93.5	***	-0.084	-135.9	
U.S. work experience	-0.019	-7.5		-0.003	-1.5		-0.016	-26.2	
Full-time worker	0.000	0.0		0.000	0.2		-0.001	-0.9	
Married	-0.002	-0.7		-0.005	-2.8		0.003	5.1	
Disabled	-0.001	-0.2		-0.001	-0.6		0.000	0.1	
Occupation specialty	0.064	25.7	***	0.000	-0.1		0.009	13.9	
Degree-job match	0.039	15.8	**	0.053	28.5	***	-0.006	-10.3	
Supervising position	0.042	17.0	***	0.031	16.6	***	0.013	20.6	
Sector	0.007	2.9		-0.014	-7.6	**	0.036	58.5	***
Regions	-0.004	-1.6		-0.002	-1.3		0.003	4.9	
Residual contribution	0.068	27.5		-0.032	-17.1		0.061	98.9	
At-admission education	-0.143	-57.5		0.016	8.5		-0.161	-262.0	
At-admission experience	-0.234	-94.2	**	-0.126	-67.3	**	-0.005	-8.9	
Race/ethnicity	0.019	7.7		0.017	9.3		0.016	26.8	
Country/region of origin	0.138	55.4		-0.067	-36.1		0.195	316.2	**
Visa status change	0.062	25.1	**	0.026	13.9		0.023	38.1	
U.S. degree attainment	-0.102	-41.1	**	-0.246	-131.7	**	-0.015	-24.9	

Component	TW/PR			ST/PR			TW/ST		
	log-scale	%	Sig.	log-scale	%	Sig.	log-scale	%	Sig.
U.S. work experience	-0.483	-194.6	*	-0.347	-185.6		-0.136	-221.3	
Full-time worker	-0.088	-35.3		-0.203	-108.8		0.116	188.4	
Married	-0.042	-16.8		0.027	14.7		-0.069	-111.9	
Disabled	-0.040	-16.0	*	-0.019	-9.9		-0.021	-33.9	
Occupation specialty	0.051	20.5		-0.013	-7.1		0.120	194.3	***
Degree-job match	-0.026	-10.5		-0.017	-9.0		-0.017	-27.5	
Supervising position	-0.016	-6.3		-0.014	-7.7		-0.003	-4.5	
Sector	0.045	18.0		0.115	61.6		-0.085	-137.8	
Regions	0.010	4.0		-0.009	-4.6		0.014	22.9	**
Constant	0.916	368.9	*	0.827	442.7		0.089	145.0	

Note: The updated Oaxaka estimates are weighted by sampling weights.

* p<.10

** p<.05

*** p<.01