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The Price of Being International: Career Outcomes of International Master's Recipients in U.S. Labor Market

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ABSTRACT

This study sought to examine whether international master's recipients (IMRs) who graduated from U.S. institutions have different early career outcomes in major and job match, annual earnings, and career satisfaction from their counterpart domestic master's recipients (DMRs). By analyzing combined datasets of National Survey of Recent College Graduates, this study found that IMRs were 2 times more likely than DMRs to hold jobs that are related to their master's degree. On the other hand, IMRs faced an 8% earnings disadvantage as compared with DMRs. There was no statistically significant difference in job satisfaction between IMRs and DMRs. The policy implications for postsecondary institutions and the U.S. were discussed.

Keywords: annual salary, career outcomes, international master's recipients job satisfaction, major–job match

During the 2014–2015 academic year, more than 200,000 international students at the master's level studied in the United States, representing a 71% increase from 120,000 in 2004–2005 (Institute of International Education, 2015). Reflecting the trends, the number of foreigners with a master's degree who stayed after their education and worked in the U.S. labor market has also increased over time. Of all temporary foreign workers (i.e., H-1B visa holders) employed in the US in 2009, 62% were those with advanced degrees, representing an approximately 20% increase from the year 2000 (U.S. Government Accountability Office, 2011).

Foreign workers in U.S. labor markets are considered important contributors to the development of the U.S. economy. They provide a young workforce for the nation, which suffers from declining birth rates and aging populations (Arthur &

Flynn, 2011; Stephan & Levin, 2003). Foreign workers who have received U.S. degrees in science, technology, engineering, and mathematics (STEM) fields are especially seen as a coveted pool of talent that is critical for the nation to maintain and improve its competitive advantages in the knowledge-based global economy (National Academy of Sciences, 2007; Organisation for Economic Co-operation and Development, 2008). While the US has been considered the “IQ magnet” for highly skilled foreign workers (Shachar, 2006, p.148), this trend has recently changed, and the US is no longer the sole country actively recruiting the best foreign talent. Instead, other developed countries, such as Canada, Australia, and the United Kingdom, have recently begun to compete for the highly skilled foreign talent (Shachar, 2006).

From an international student’s perspective, with an increasing number of students studying abroad, the value of an overseas degree in their home countries is likely to depreciate. Therefore, acquiring foreign work experience has become more important than ever, even for those who choose to move back to their home country—work experience abroad makes international students better able to compete in the home country job market (Gribble, 2014). Regardless of whether they plan to work in their host or home country in the future, therefore, the career prospects of international master’s recipients (IMRs) may have significant implications for higher education institutions’ recruitment of future international students (Gribble, 2014).

Previous literature on career outcomes of foreign-born workers with degrees acquired at U.S. institutions has primarily focused on those with doctoral degrees (Corley & Sabharwal, 2007; Kim, WolfWendel, & Twombly, 2011; Mamiseishvili, 2011) or those with bachelor’s degrees who graduated from U.S. institutions (Jiang, 2018). This study, in contrast, seeks to understand how foreign workers with master’s degrees from U.S. higher education institutions experience the transition from degree seekers to highly skilled workers, with particular emphasis on their employment outcomes in the U.S. job market. Recognizing the significant differences in language, culture, and socioeconomic conditions by countries of origin (Lee & Rice, 2007; Phythian, Walters, & Anisef, 2011), this study further explores possible differences in career outcomes of IMRs by their countries of origin. Our specific research questions are as follows:

1. Of those who received their master’s degree from U.S. higher education institutions, are there different patterns in early career outcomes (major–job match, annual earnings, and job satisfaction) by international status?
2. Of those who received their master’s degree from U.S. higher education institutions, does international status play a unique role in determining early career outcomes, all things considered?
3. Of the international workers with temporary visas, do the countries of origin have a unique effect on early career outcomes?

LITERATURE REVIEW

Challenges for Foreign Workers with Temporary Visas

While IMRs have successfully acquired their human capital from their education in the US, their ability to convert their U.S. credentials into career success may be strongly limited by possible discrimination against foreigners (Cantwell & Lee, 2010). International students face numerous challenges in transitioning from postsecondary institutions to the job market and to working in the US (Sangganjanavanich, Lenz, & Cavazos, 2011). Examples of the culturally based barriers to employment that international students experience are negative perceptions of an English accent (Carlson & Mchenry, 2006), unfamiliarity with available job options/promotion opportunities, and acculturation stress (Fritz, Chin, & Demarinis, 2008), to name a few. Even after successfully locating jobs in the US, foreign workers may still face significant barriers in gaining career advancement comparable to their domestic peers.

Examining the experiences of international postdoctoral researchers, Cantwell and Lee (2010) argued that international status does not represent a legal category only, but is also defined by a sense of alienation and discrimination. International workers' career success may be further restricted by immigration regulations, which largely limit their freedom to change jobs. International workers who are professionals with a baccalaureate or higher degree have to apply for the H-1B temporary visa through their employers in order to legally work in the US. The visa allows for a 3-year stay that is renewable for another 3 years and permits a change of employers upon issuances of a new visa (U.S. Citizenship and Immigration Services, 2015). Since the H-1B visa is tied to a specific employer, foreign temporary workers risk the possibility of losing their working visas if they switch jobs (Lan, 2013). The restricted mobility of H-1B workers makes temporary foreigner workers vulnerable to exploitation in the form of lower pay and longer working hours (Matloff, 2003) and constrains their negotiating power from gaining better career outcomes (Lowell, 1999). Therefore, the possible discrimination against foreigners, coupled with the restricted job mobility due to the limitations of temporary visas, may put IMRs in a vulnerable position in the U.S. job market, which may negatively affect their likelihood of achieving career outcomes that are comparable to their U.S. peers.

Career Outcome: Major–Job Match

Prior research focusing only on immigrants who did not receive postsecondary degrees from host countries found that these immigrants were more likely to hold jobs unrelated to their college major in the host country relative to domestic workers (Arbeit & Warren, 2013; Dean, 2009). This line of research revealed that immigrants who received college degrees from their home country, but did not attain degrees from their host country were more likely to encounter the mismatch between education from home country and jobs they hold in the host country than domestic workers (Arbeit & Warren, 2013). The primary attribute of immigrants' mismatch may be the incompatibility between degrees or skills acquired through foreign education that immigrants received from their home country and the skill

requirements of the host country. Although foreign credentials, in general, tend to be devalued in the host country's labor market, the extent of major and job mismatch seems to differ by country of origin. Focusing on immigrants in Canada, Dean (2009) found that foreign workers from western regions were more likely to succeed in locating jobs related to their field of studies than immigrants from the Middle East and Asia. Immigrants who received their postsecondary degrees from countries that are predominantly White and English-speaking were more likely to locate jobs that matched their fields of study than immigrants who received their degrees from Asian and African countries (Arbeit & Warren, 2013).

Career Outcome: Earnings

In previous studies, researchers primarily have utilized measures of human capital, including language proficiency and devalued foreign education, to explain the earning gap between immigrants and native-born workers (Bratsberg & Ragan, 2002; Chiswick & Miller, 2007). Yet, discriminatory practices in the host country have been found to negatively affect the labor-market value of immigrants' human capital; thus, all things equal, immigrants are penalized due to their foreign status in the job market (Boyd & Thomas, 2002). Moreover, focusing on international students, prior research found that international students' college experiences vary by country of origin (Lee & Opio, 2011; Lee & Rice, 2007). Specifically, this line of research revealed that while students from Asia, India, Latin America, and the Middle East reported that they faced considerable indirect or direct discrimination experiences, students from Europe, Canada, and New Zealand did not consider their studying experiences in the U.S. campus related to their race or culture as negative (Lee & Opio, 2011; Lee & Rice, 2007). Consistent with this view, prior research on employment outcomes of immigrants also suggests that immigrants from non-European countries are more likely to have lower economic achievement than immigrants of European origin. One factor that possibly causes the discrepancy of economic accomplishments in the job market by country of origin is that primarily coming from non-European countries (such as Asian countries) with a different skin color from previous immigrants from European countries, makes immigrants from non-European countries visible targets for racial, cultural, or ethnic discrimination in the host country (Bratsberg & Ragan, 2002; Hou & Balakrishnan, 1996; Phythian et al., 2010).

Career Outcome: Job Satisfaction

Job satisfaction is crucial in studying career outcomes of workers in that job satisfaction has a close association with labor market mobility, employee well-being, and job performance (Freeman, 1978; Hellman, 1997, Mount, Ilies, & Johnson, 2006; Rode, 2004). Immigrants, especially visible minority immigrants, generally defined as those who are of non-Caucasian race or non-White in skin color, reported lower job satisfaction compared with domestic workers, and lower career satisfaction compared with non-visible minority immigrants (Yap, Holmes, Hannan, & Cukier, 2014).

Focusing on international doctorate recipients and faculty who received their degrees from U.S. institutions of higher education, previous studies revealed that foreign-born scientists were more likely to report lower work satisfaction than U.S.-born peers (Corley & Sabharwal, 2007). In examining the job satisfaction difference between foreign-born and U.S.-born scientists and engineers employed at American universities, Sabharwal (2011) found that foreign-born faculty members across all citizenship categories (naturalized citizens, permanent residents, and temporary residents) had lower job satisfaction than native-born faculty members, after controlling for various job, organizational, personal, and cultural factors. Further, examining job satisfaction of managers and professionals in Canada, Yap et al. (2014) found that foreign-born employees experienced significantly lower levels of career satisfaction than native-born workers.

THEORETICAL FRAMEWORK

This research utilizes human capital theory and neo-racism theory, which provide complementary perspectives in understanding if and how IMRs experience career outcomes differently from their domestic peers. Human capital theory suggests that individuals, by investing in education and career training, become more productive, which in turn improves their career outcomes in terms of the amount of life-time earnings, occupational choice, and occupational status (Becker, 2009; Paulsen, 2001). Human capital theory is based on the premise that the labor market tends to reward merit (certain measures of ability and efforts). In a meritocratic labor market, individuals with more education and career training will be rewarded with better career achievements. However, the labor market is hardly completely meritocratic in reality. Instead, the market value of educational achievements and credentials must be negotiated with potential employers. In other words, through the negotiation process, the market value of the educational achievements and credentials workers have attained is eventually determined. The market value determined by the negotiation between workers and employers may be different from the one determined in a real meritocratic labor market (Anisef, Sweet, & Frempong, 2003). More importantly, in this negotiation process, race/ethnicity, gender, and/or immigration status play a role and neo-racism, with its emphasis on the discrimination against foreigners, add its explanatory power to the study of understanding the career outcomes of immigrants and foreign workers.

Neo-racism theory, also called new racism, proposes a unique type of discrimination based on culture and nationality instead of on race (Balibar, 1992; Hervik, 2004). As defined by Balibar (1992), neo-racism is “a racism whose dominant theme is not biological heredity but the insurmountability of cultural differences, the incompatibility of life-styles and traditions” (p. 21). Neo-racism emerges and flourishes in a society where the culture of political individualism is promoted and the dominant culture is considered superior. Therefore, the culture of immigrants, differing from the dominant culture, is likely to be excluded and discriminated against (Balibar, 1992; Hervik, 2004). It is critical to point out that neo-racism and biological racism are not mutually exclusive but can coexist and share similar goals in creating

a cultural hierarchy by exclusion, denial of rights, and mistreatment toward foreigners and outsiders (Hervik, 2004).

Although neo-racism was first used to explain discrimination against immigrants in France (Balibar, 1992), Lee and Rice (2007) extended its application by studying international students and postdoctoral scholars in U.S. higher education institutions. They uncovered a range of neo-racist encounters toward international students and scholars, ranging from verbal insults to physical assaults that stemmed from the international students and scholars being perceived as unwelcome outsiders in the US. The effect of neo-racism on IMRs in the U.S. job market may not be fixed but differs by country of origin. As indicated in the previous studies, students from Asia (including India), Latin America, and the Middle East reported considerable indirect or direct discrimination, whereas students from countries in Europe, Canada, and New Zealand did not report any direct negative experiences related to their race or culture (Lee & Opio, 2011; Lee & Rice, 2007).

Drawing on the neo-racism theory and the prior literature relating to career outcomes of foreign-born workers, this study hypothesizes that IMRs may experience significant neo-racism in their career outcomes and therefore, all things being equal, IMRs have significantly disadvantaged career outcomes compared with their DMR peers. Going one step further, this study hypothesizes that of the IMRs, those from countries that are culturally similar to the US (e.g., English-speaking countries) enjoy better career outcomes than those from countries that are culturally distinct from the US.

METHOD

Data Sources and Sample

The data used in the present study are the National Survey of Recent College Graduates (NSRCG) from the National Science Foundation (NSF). The NSRCG data provide detailed information about demographic characteristics, educational background, career information, and visa status for individuals holding a master's degree from U.S. academic institutions and living in the United States during the survey reference week (NSF, 2013). To have a greater sample size of the foreign workers with temporary visas, we built data sets by combining five NSRCG surveys over 10 years (2001, 2003, 2006, 2008, and 2010). The NSRCG survey consisted of individuals who received either a bachelor's or master's degree from U.S. institutions 2 or 3 years prior to the survey year. NSRCG data are collected through surveys that utilize stratified and two-stage probability proportional to size sampling techniques. Therefore, this study used the command SVY in STATA, in order to effectively control for the sample design effect using the final survey weight, WTSURVY (Kim, Saatcioglu & Neufeld, 2012).

IMRs are defined as non-U.S. citizens holding temporary working visas (H-1B) and DMRs are defined as native U.S. citizens (excluding naturalized citizens). The total numbers of IMRs and DMRs for the study are 1,664 (14.3%) and 9,972 (85.7%), respectively. The majority of IMRs were from India (49.94%) and China (20.78%). The remaining 29.28% of IMR are from 13 other countries. The data include only the individuals who are full-time workers with an age range of 19 to 65.

As defined by NSF (2013), full-time employees are those who work more than 35 hours per week.

Variables

The dependent variables, three career outcome measures, are (a) major-job match; (2) annual salary; and (3) job satisfaction. The major-job match variable is an ordinal categorical variable that indicates the extent to which college graduates' principal job is related to the highest degree (1 = not related, 2 = somewhat related, and 3 = closely related). The salary variable is a continuous variable that measures the basic annual salary of master's recipients as of the week the survey was taken. Job satisfaction is defined by how master's recipients rated their overall satisfaction with the job they held. Job satisfaction is measured by an ordinal categorical variable with a 4-point Likert scale (1 = *very dissatisfied*, 2 = *somewhat dissatisfied*, 3 = *somewhat satisfied*, and 4 = *very satisfied*).

A list of independent variables is categorized into three groups: demographic, academic experience, and labor market-related variables. Demographic variables include gender, race/ethnicity, age, marital status, having children, and parental education. Previous research has consistently found that gender and race/ethnicity play an important role in career stratifications: By being male or White, individuals enjoy advantaged career outcomes relative to female and racial minorities (Kim & Sakamoto, 2010; Robst, 2007). Prior research has revealed that college graduates from affluent families are more likely to convert their postsecondary education into career success in the labor market; thus parental education is included in the present study as a proxy of family socioeconomic background (Borgen, 2015; Rivera, 2015). A first-generation student is defined in the present study as having no parents or guardians with at least a bachelor's degree. Marital status, having children, and age have been found in previous studies to influence career outcomes including earnings, career advancement, and the chance of major-job match (Fogg & Harrington, 2012; Robst, 2007).

Academic experience variables include the field of study where master's recipients received their degrees (math and computer science, physics, chemistry and physical science, biology and agricultural science, health, psychology, and social science with engineering as the reference group). The self-reported overall undergraduate grade point average (GPA), following previous studies (e.g., Jones & Jackson, 1990), is coded into three categories (high = 3.75–4.0; middle = 3.25–3.74; and low = <3.24 being a reference group). Since the NSRCG does not provide information of GPA for master's programs, this study used undergraduate GPA as a proxy for master's program GPAs given that previous studies reported close correlations between academic performance in undergraduate and graduate school (Kuncel, Crede, & Thomas, 2007; McKee, Mallory, & Campbell, 2001). The selectivity of higher education that individuals received their degree is known to influence career outcomes. The most selective institutions are defined as the top 25 institutions from *U.S. News and World Report* in this research. It is worth noting that rankings of universities tend to remain significantly stable (Morphew & Swanson, 2011).

Job-related variables include employer sector, employer size, employer region, and having a supervisory role. According to the current immigration code, if foreign workers work in a non-profit entity related to or affiliated with higher education institutions and government, they are exempt from the H-1B statutory cap (U.S. Chamber of Commerce, 2016). Given that IMRs working at higher education institutions or in the government could receive the H-1B status more easily than their peers working outside of higher education or the government, this study includes employer sector, coded as whether or not the employer is a postsecondary institution or government entity. Employer regions are controlled in this study in that previous studies have uncovered the influence of employer regions on earnings, partially because of the varied regional economic conditions of labor markets and the living costs discrepancies across regions (Fog & Harrington, 2012): Employer region was coded as Northeast, Midwest, South, and West, with Northeast being the reference group. It is particularly worth noting that larger employers are more likely to obey the immigration law to give international workers comparable salaries to domestic workers (Levina & Xin, 2007; Matloff, 2003). Therefore, employer size, a continuous variable was included in the statistical analysis.

There is the glass ceiling effect in the labor market where racial and ethnic minorities are less likely to be promoted to be managers as compared to Whites (Zeng, 2011). To examine if the glass ceiling effect is found among IMRs, this study includes whether individuals hold supervisor status recoded: 1 = supervisors and 0 = non-supervisors.

Previous studies have consistently documented the significant associations among career outcome variables—major–job match, salary, and job satisfaction (Bender & Heywood, 2011; Judge, Cable, Boudreau, & Bretz, 1995; Robst, 2007; Xu, 2013). For example, the mismatch between college academic training and postgraduation careers has significant negative effects on earnings, job satisfaction, and turn-overs (Bender & Heywood, 2011; Robst, 2007; Xu, 2013). In addition, earnings have been found in previous studies to be one of the most influential predictors of job satisfaction (Judge, Cable, Boudreau, & Bretz, 1995). Therefore, major–job match is included as a controlled variable in the analysis on earnings. Similarly, major–job match and earnings are controlled in the analysis on job satisfaction.

It is worth noting that the data set for this study consists of individuals from five data collection points over a 10-year period. In order to capture the effect of graduation timing on career outcomes, this study included a series of year dummy variables from 1999 to 2009, with 1999 being the reference year.

Considering immigrants coming from an English-speaking country may do better in the job market due to their language advantage than ones from non-English-speaking countries, previous studies have used languages of the immigrants' country of origin, along with other language related variables (e.g., age at arrival) as a proxy for immigrants' language proficiency (Bleakley & Chin, 2010; Espenshade & Fu, 1997). To understand if languages of countries of origin make any differences in career outcomes, a separate set of analysis in which the DMR variable was replaced with languages of countries of origin (India, China, and other countries).

Statistical Analysis

For the two career outcome measures that are ordered categorical variables—major–job match and job satisfaction, two separate sets of ordered logistic regression analyses are conducted to study whether international status significantly influences the probability of having jobs related to majors (or job satisfaction) after controlling for all other relevant predictors (Hosmer, Lemeshow, & Sturdivant, 2000). The final model for the ordered logistic regression is specified as follows:

$$\text{Log} \left(\frac{p(y_i \leq m|x)}{p(y_i > m|x)} \right) = \beta_0 + \beta * INTER + \alpha * DEM + \gamma * EDU + \delta * JOB + \sum_{t=2}^{11} \kappa_t YEAR_{ti}$$

The results of ordered logistic regression are reported in odds ratio (the exponent of the log odds; Long & Freese, 2006): Odds ratio is interpreted as the odds of an outcome being less than or equal to *m* versus being greater than *m* with one unit change in the predictor variable after controlling for other covariates (Bruin, 2006). In the model, the variable INTER denotes IMRs with DMRs being the reference group, DEM denotes a vector of demographic indicators, EDU represents a vector of academic experience indicators, JOB denotes a vector of job market characteristics, and the variable YEAR represents a vector of series of year dummy variables from 1999 to 2009.

Because the distribution of annual earnings is highly skewed, log transformation is used for the value of annual earnings and logged earnings are considered to have a linear relationship with international status and other demographic (DEM), educational (EDU), and job market (JOB), and major–job match (MJM) variables plus an error term (Pohlman & Leitner, 2003).

$$\text{Logged(earnings)} = \beta_0 + \beta * INTER + \alpha * DEM + \gamma * EDU + \delta * JOB + \kappa * MJM + \sum_{t=2}^{11} \kappa_t YEAR_{ti} + \mu$$

Data Analysis Process

We first conducted chi-square tests to examine if the three career outcomes, as well as demographic, educational background, and job market factors, differ significantly by international status. Additional descriptive analyses were conducted for the percentage distributions of categorical variables and mean and standard deviation of continuous variables by career outcome measures. Sequential regression analyses were conducted to examine if international status has a significant and unique association with career outcome measures and if the unique association changes as additional variables were entered into the model (Keith, 2014). By successively adding variables to the regression model at each step, we were able to examine how the effect of international status on career outcomes changes with additional subsets of variables added to the model. Model 1 included only the

international status variable in the regression. Additional demographic variables (i.e., gender, race/ethnicity, and parental education) were added to Model 2; academic experience variables including major, undergraduate GPA, and the selectivity of the higher education institutions were added to Model 3; and lastly, job market-related variables were added to Model 4. In analyses on earnings, Model 4 had one additional variable—major–job match. In analyses on job satisfaction, Model 4 had two additional variables—major–job match and annual earnings. Lastly, to understand if the countries of origin have a unique effect on early career outcomes, a separate full regression model (Model 4) was conducted with three variables (India, China, and other non-U.S. countries) with DMRs as the reference group.

RESULTS

IMRs: Are They Different from DMRs?

In general, IMRs are more likely to be males (67.4% as compared with 46.6% of DMRs), younger (the average age for IMRs is 28, 3 years younger than DMRs), and from families with parents holding college degrees. On the other hand, IMRs are less likely to be married and to have children. More than four fifths of IMRs are Asian, followed by Hispanic, White, and Black. The majority of DMRs are White (65.23%), followed by Hispanic, Black, and Asian.

IMRs are likely to have higher GPAs than DMRs. Over 83% of IMRs held GPAs higher than 3.25 as compared with only 65% of DMRs. With regard to field of study, IMRs are highly concentrated in the STEM fields (94%), while DMRs are distributed relatively evenly in STEM (64%) and non-STEM (36%) fields. While IMRs are slightly less likely to graduate from the highly selective top 25 institutions than DMRs, the difference was not statistically different.

For the job-related variables, IMRs are more likely to work in business and industry (than education institution or government), more likely to work for employers with smaller number of employees, and more likely to work in the Northeast than their DMR peers. On the other hand, IMRs are less likely than DMR to work in the South and are less likely to hold supervisory roles than DMR (See Tables 1 and 2).

Table 1: Descriptive Statistics of Categorical Independent Variables (N = 11,604)

	IMRs	DMRs	χ^2	<i>p</i>
Demographic characteristics				
Gender				
Male	67.43%	46.62%		
Female	32.57%	53.38%	246.88***	0.0001
Marital status				
Married	43.99%	47.26%		
Not married	56.01%	52.74%	6.140*	0.013

	IMRs	DMRs	χ^2	<i>P</i>
Having children				
Yes	11.48%	25.54%		
No	88.52%	74.46%	156.72***	0.0001
First generation				
College degree	78.05%	61.40%		
Less than college degree	21.95%	38.60%	169.19***	0.0001
Race				
White	4.87%	65.23%		
Asian	83.17%	3.38%		
Hispanic	10.46%	16.39%		
Black	1.50%	15.00%	730.00***	0.0001
Educational background				
Major				
Biology & agriculture	4.21%	8.89%		
Math & computer science	25.24%	70.85%		
Physics & chemistry science	7.33%	7.01%		
Engineering	57.21%	37.17%		
Health	0.72%	8.76%		
Social science	4.69%	16.80%		
Psychology	0.60%	11.09%	861.90***	0.0001
College selectivity				
Top 25	12.86%	13.20%		
Not top 25	87.14%	86.80%	0.14	0.7
GPA				
3.75–4.0	36.25%	24.59%		
3.25–3.74	47.07%	41.65%		
<3.24	16.69%	33.76%	11.88**	0.001
Year master's degree awarded				
1999	8.89%	6.50%		
2000	10.40%	7.48%		
2001	7.33%	7.32%		
2002	4.69%	6.50%		
2003	5.47%	7.10%		
2004	7.63%	7.65%		
2005	16.11%	9.11%		
2006	11.54%	11.74%		

	IMRs	DMRs	χ^2	<i>p</i>
2007	10.94%	12.53%		
2008	10.10%	11.60%		
2009	12.56	12.46%	48.85***	0.0001
Job market characteristics				
Employer sector				
Education and government	21.81%	42.72%		
Business and industry	78.19%	57.28%	260.07***	0.0001
Employer locations				
Northeast	23.10%	17.91%		
Midwest	17.63%	18.38%		
South	32.37%	38.40%		
West	26.90%	25.32%	35.54***	0.0001
Supervisor status				
Yes	20.31%	31.18%		
No	9.69%	68.82%	80.71***	0.0001

Note. IMR = international master's recipient; DMR = domestic master's recipient.
p* < .05, *p* < .01, ****p* < .001.

Table 2: Descriptive Statistics of Continuous Independent Variables (*N* = 11,604)

	IMR	DMR	Min	Max	<i>t</i> test
Age at the survey year	28	31	19	64	15.68***
Logged earnings	10.91	10.89	0	12.97	ns
Employer size	5.4	5.69	1	8	5.33***

Note. IMR = International Master's Recipient; DMR = domestic master's recipient.
p* < .05, *p* < .01, ****p* < .001.

The logged earnings was an independent variable in career satisfaction analyses.

Career Outcomes: Does International Status Matter?

IMRs are significantly more likely than DMRs to be employed in jobs that are closely related to their majors ($\chi^2 = 125.74$, *p* < .001). As for the overall job satisfaction, IMRs seem to be more satisfied with their jobs relative to DMRs ($\chi^2 = 37.45$, *p* = .0001). IMRs on average had significantly higher annual earnings (after adjusting inflation) than DMRs: The average annual earnings for IMRs (\$62,176) are \$1,635 higher than DMRs (\$60,541).

Of IMRs, Chinese workers had the highest major-match rates, followed by Indians and IMRs from other countries. On the other hand, Indian IMRs had higher job satisfaction than Chinese IMRs or IMRs from other countries. This finding may reflect the differences in annual earnings by countries of origin: Indian IMRs reported the highest annual earnings (\$66,800), significantly higher than DMRs, Chinese IMRs, or IMRs from other countries. The annual earnings of Chinese IMRs were not statistically different from IMR from other countries.

Table 3: Percentage Distribution of Major–Job Match: Differences by International Status

	Not related	Somewhat related	Closely related	χ^2
DMR	9.11%	26.79%	64.09%	125.74***
IMR	3.19%	19.65%	77.16%	
China	2.18%	13.90%	83.92%	23.5***
India	2.83%	22.22%	74.94%	
Other countries	5.61%	22.24%	72.15%	

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 4: Percentage Distribution of Job satisfaction: Differences by International Status

	VD	SD	SS	VS	χ^2
DMR	3.55%	9.68%	41.63%	45.14%	37.45***
IMR	1.62%	6.79%	46.63%	44.95%	
IMR					41.33***
China	1.09%	9.26%	57.49%	32.15%	
India	1.25%	5.44%	43.31%	50.00%	
Other foreign countries	2.71%	7.74%	45.26%	44.29%	

Note. VD = very dissatisfied, SD = somewhat dissatisfied, SS = somewhat satisfied, VS = very satisfied. * $p < .05$, ** $p < .01$, *** $p < .001$.

Table 5: Mean Differences in Earnings by Country of Origin

Group	Group means		Mean difference	HSD test
DMR vs IMR	\$60,541	\$62,176	\$1,635.00	
DMR vs China	\$60,500	\$59,900	\$594.10	0.5748
DMR vs India	\$60,500	\$66,800	\$6,334.42	6.1287*

DMR vs Other countries	\$60,500	\$56,200	\$4,339.02	4.1981*
China vs India	\$59,900	\$66,800	\$6,928.52	6.7035*
China vs Other countries	\$59,900	\$56,200	\$3,744.92	3.6233
India vs other countries	\$66,800	\$56,200	\$10,673.44	10.3268*

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

With the purpose of controlling for the possible influence of currency inflation on earnings, salaries in different years were converted into 2015 dollars using the inflation calculator from Bureau of Labor Statistics (CPI Inflation Calculator, 2015).

Understanding the Effect of International Status on Career Outcomes

For major–job match, the effect of international status has increased consistently from Model 1 (odds ratio = 1.51, $p < .001$) to Model 2 (odds ratio = 1.83, $p < .001$), to Model 3 (odds ratio = 1.87, $p < .001$), and to Model 4 (odds ratio = 1.97, $p < 0.001$). In other words, when only the IMRs (DMRs being the reference group) were included in Model 1, the odds of holding jobs that are related to their majors are 51% higher for IMRs than their domestic counterparts. In Model 4, after taking into account master’s recipients’ demographic characteristics, educational experiences, and a series of job market characteristics, the odds ratio of IMRs is 1.97, suggesting that IMRs are about 2 times more likely than DMRs to hold jobs that are related to their master’s degree, all things being controlled (see Table 6).

By contrast, IMRs are not statistically different from their DMR counterparts on career satisfaction, across all sequential models examined. This suggests that regardless of whether IMRs share similar characteristics with their DMR counterparts, there is no consistent difference in career satisfaction by IMR status.

For earnings, Model 1 shows that before controlling for any other relevant variables, the logged annual earnings for IMRs is 7% higher than the annual earning for DMRs, and this difference is statistically significant at the .01 level. After adding demographic factors in Model 2, however, the significant positive effect of being IMRs on earnings disappeared, suggesting that the reason why IMRs had higher earnings than DMRs is because of the demographic characteristics that are associated with higher earnings. In Model 3 when both demographic and educational background factors were assumed to be equal, IMRs had 6% lower logged annual earnings compared to DMRs. The earnings gap between IMRs and DMRs even grew larger in Model 4 where all independent variables were entered: IMRs who work in the U.S. labor market for less than 3 years face a 8% earning disadvantage as compared to their DMR counterparts, all things being considered (see Table 6 for details).

Table 6: Coefficients of IMR Relative to DMR on Career Outcomes

	Model 1	Model 2	Model 3	Model 4
Major–job match ⁺	1.51***	1.83***	1.87***	1.97***
Career satisfaction ⁺	1.09	1.14	1.16	1.08
Earnings	0.07**	-0.02	-0.06**	-0.08**

Note. ⁺Odds ratio. * $p < .05$, ** $p < .01$, *** $p < .001$.

Does Country of Origin Matter in Career Outcomes?

To understand if countries of origin matter in career outcomes, a separate set of analyses in which the DMR variable was replaced with countries of origin (India, China, and other countries) was conducted and the findings are presented in Table 7. Of 1,664 IMRs in the data, 52.6% of them are from India ($n = 875$), 21.7% from China ($n = 361$) and 25.7% from other countries of origin ($n = 428$). The purpose of categorizing countries into India, China, and other countries was to test if IMRs from India where English is the official language had better career outcomes in the U.S. job market as compared with IMRs from China whose official language is Chinese.

Table 7: Coefficients of IMR Relative to DMR on Career Outcomes: By Countries of Origin

	Major job match ⁺	Career satisfaction ⁺	Earnings
India	1.85***	1.45*	0.01
China	2.9***	0.72	-0.1**
Other countries	1.38*	0.97	-0.11***

Note. ⁺Odds ratio. * $p < .05$, ** $p < .01$, *** $p < .001$.

For the analysis on career satisfaction, major and job match and earnings added to Model 4, as additional job market characteristics. For the analysis on earnings, major and job match was included in Model 4 as a job market characteristic.

While IMRs altogether were more likely to have a job that is significantly more related to their majors than their DMR counterparts, unique and significantly different sizes of positive effects were found by countries of origin as compared to DMRs: The odds of having a job matched major were nearly 3 times greater for Chinese IMRs, 1.85 times greater for Indians, and 1.38 times greater for IMRs from other countries than their counterpart DMRs.

Similarly, the levels of career satisfaction were significantly different by countries of origin: Only Indian IMRs reported to have higher career satisfaction than their DMR counterparts. No significant differences were found between Chinese IMRs and DMRs or IMRs from other countries and DMRs.

For earnings, IMRs born in China and other countries presented significant earning loss as compared to their DMR counterparts. On the other hand, IMRs from

India did not show significant earning differences from their DMR counterparts. With these findings, it became clear that country of origin is an important factor that determines career outcomes of IMRs even if all of IMRs were born in foreign countries and work in the United States on temporary visas.

DISCUSSION AND CONCLUSIONS

Of the three career outcomes this study examined, IMRs were significantly more likely to have jobs related to their majors but less likely to have equivalent earnings in comparison to their DMR counterparts. For career satisfaction, no significant difference between IMRs and DMRs was found. The seemingly positive relationship between major–job match for IMRs should be understood in the context of the current U.S. temporary visa regulations. In order for IMRs to legally work in the US, they have to apply for an H-1B working visa, which imposes several constraints on what employment can be taken. One key requirement for international students to gain the H-1B visa is that the international student’s job must be in an occupation that is *closely related* to their field of study (USCIS, 2015). Under this regulation, IMRs can be employed only in jobs that are related to their major, whereas DMRs can freely select jobs at their will. The effect of H-1B regulation on major and job match, however, may particularly be evident before IMRs gain their permanent resident status. Once foreign workers gained permanent resident status, their career outcomes were largely improved such as better pay, no limitation for job mobility, and job opportunities (Lan, 2013).

From a different angle, this finding also suggests that as compared with immigrants without U.S. degrees, IMRs were able to locate jobs that were related to their majors. Prior literature studying foreign immigrants, most of whom did not hold U.S. postsecondary degrees, indicates that immigrants were more likely to hold jobs unrelated to their college major in the host country compared with domestic workers (Arbeit & Warren, 2013). Therefore, this study finds that the skills and knowledge IMRs acquired from U.S. higher education institutions—human capital—help them locate jobs in the United States, indicates that human capital is location-bound, meaning that the value and applicability of human capital in the job market is highly dependent on where it is acquired.

The net negative effect of international status on earnings is consistent with the previous literature—although international students received degrees from U.S. institutions, they still face a significant earning loss as compared with their domestic counterparts with the same degrees (Chakravarty, 2006). This finding may suggest that international students suffer from a form of discrimination against their culture, not necessarily by their race, which prevents them from advancing their career success as much as their domestic peers, even with similar professional qualifications (Lee & Opio, 2011; Lee & Rice, 2007). As explained by Cantwell and Lee (2010), international status in the job market is more than a mere legal category, but rather a perception of cultural stereotypes, which may have influenced IMRs experiencing loss of earnings. At the same time, the finding supports that human capital theory has its own flaw that limits its ability to fully explain the career outcomes of IMRs. In the U.S. job market, IMRs need to negotiate with employers to determine the market

value of their U.S. credentials; thus in this process, international status may play an important role in negatively shaping their ability to convert their U.S. education into career success, especially in earnings.

Contrary to the negative effect of international status on earnings (Hervik, 2004; Lee & Opio, 2011; Lee & Rice, 2007), this study found that IMRs are equally satisfied with their jobs as their DMR counterparts. IMRs may perceive the struggles of converting their human capital into career success at the early stage of their careers as a price they need to pay for gaining permanent resident status (Matloff, 2003). IMRs may also realize that after they receive their permanent resident status, they will be freed from visa restrictions and can expect to gain better employment outcomes (Lan, 2013). Ultimately, despite the earning loss compared with their domestic peers, IMRs are still more likely to enjoy advantaged career outcomes as compared to their peers in their home countries with similar professional qualifications. For instance, the average monthly salary for chemical engineers in the United States in 2005 was \$4,710, whereas the corresponding figure in China was \$1,076 (International Average Salary Income Database, 2008). All these may have contributed to the career satisfaction that IMRs have reported, despite their loss of earnings as compared to DMRs.

Going one step further, however, not all IMRs experience career outcomes in the same way. IMRs from India perform much better in the U.S. job market than IMRs from China or other countries in annual earnings and job satisfaction. Given that major-job match does not necessarily indicate a positive career outcome, due to H-1B regulations for IMRs, the fact that IMRs from China were much more likely to have jobs related to their major than IMRs from India suggests that Chinese IMRs may experience more restriction in major-job match when they first apply for and secure jobs in the United States than IMRs from India.

The advantages and positive outcomes that Indian IMRs experience over Chinese IMRs are particularly noticeable in annual earnings and career satisfaction. In terms of annual earnings, IMRs from China and other countries have significantly lower annual earnings than DMRs, while Indian IMRs gained almost parity with DMRs. Furthermore, Indian IMRs are significantly more satisfied with their jobs in the U.S. as compared with DMRs, whereas IMRs from China and other countries are not different from their DMR counterparts.

This finding supports previous studies, which emphasized the importance of studying the effects of countries of origin on immigrants' career outcomes (Bratsberg & Ragan, 2002; Hou & Balakrishnan, 1996). Suggesting that the distinct cultural differences between Asian and European international workers may be associated with different career advancements (Cantwell & Lee, 2010; Chakravarty, 2006), this finding reveals that even within Asian countries, there are still significant career differences among different countries of origin.

The significantly different career outcomes between Indian and Chinese IMRs may support the view based on neo-racism theory that the extent to which IMRs suffer from this new discrimination in the labor market may be not universal but instead could differ by nationality (Cantwell & Lee, 2010; Lee & Rice, 2007). One of the possible factors that explain how Indian IMRs experience better and more positive career outcomes than other IMRs might be related to English language skill. Previous

studies have documented that Asian Indian immigrants integrate into U.S. culture at a faster rate compared with Chinese immigrants, possibly due to language advantages and differences in national cultures (Chand & Ghorbani, 2011; Hofstede, 2007). Against this context, this study extends our understanding of a neo-racism that emphasizes cultural hierarchies by recognizing the influence of culturally and linguistically specific advantages in career outcomes that IMRs from certain country experience more than others.

Limitations

While prior literature consistently finds that language skills are closely associated with career outcomes of immigrants in the host country (Frank, 2013; Robertson, Hoare & Harwood, 2011), with lack of variables in NSRCG, this study was not able to consider IMRs' language skills and their association with career outcomes. The strong positive or negative effects of international status on career outcome measures in this study, therefore, may have been over (or under) estimated due to the incomplete controls of language capabilities of individuals. Nevertheless, by examining the unique effect of countries of origin on career outcomes—we believe that this study still captured the unique influences of cultures and language skills (as represented by the countries of origin) on immigrants' career success and outcomes. Future research that considers language proficiency exclusively may provide in-depth understanding on the specific mechanism through which language proficiency plays a role in immigrants' career experiences, in both positive and negative ways.

Another limitation of NSRCG data also prevented us from building a comprehensive statistical model with appropriate individual academic capability measures: undergraduate and graduate GPAs. The data only provided GPAs from undergraduate institutions but not from graduate schools. Given that undergraduate GPA is not the strongest predictor of graduate performance (McKee, Mallory & Campbell, 2001), our approach of using undergraduate GPA as a proxy of graduate GPA might not be able to fully capture the effect of college academic performance on career outcomes. Finally, although NSRCG provides key variables to examine the differences in career outcomes between IMRs and DMRs, the data from NSRCG is, in essence, secondary data. Therefore, the measurement and reliability of variables affect the robustness of the statistical analyses.

Implications for Policy, Theory, and Future Research

The disadvantaged career outcomes—earnings, in particular—of IMRs in the study, coupled with the alarming slowdown in the number of international applications to American graduate schools, may serve as a wake-up call for U.S. institutions to pay more attention to track, examine, and assess the career outcomes of international students. The fact that IMRs as a group have significant disadvantages in fully converting their U.S. degrees into economic career outcomes in the early stage of their careers may discourage future international graduate students to choose the U.S. as their study abroad destination. In fact, according to research from Council of Graduate Schools (Gonzales, Remington, & Allum, 2013), U.S. higher education in 2013 witnessed an alarming slowdown in the number of international applications to

American graduate schools—only 1% increase in international graduate applications and a 5% decline in the number of Chinese students applying to U.S. graduate schools. This decrease is potentially troubling for U.S. graduate schools, especially engineering and science departments, which rely heavily on international students to offset the decreasing domestic enrollments (Carnevale, Smith & Strohl, 2010; Fischer, 2013).

While this slowdown in international graduate applications could be attributed to a variety of factors, U.S. higher education should take this decline seriously, since it is almost inevitable that U.S. institutions will face more rigid challenges in attracting high quality international graduate students in the future. With the large number of international students returning to home countries voluntarily or involuntarily, U.S. degrees alone are not enough for international students to stand out in competitive job markets in their home countries. This situation makes U.S. work experience more important than ever for many international students to improve their career outcomes in their home countries (Gribble, 2014; Lawrence, 2013). However, the rigid visa restrictions in the US, coupled with the common disadvantages in locating jobs associated with international students, has led to the majority of international students at the bachelor's and master's level returning to their home countries without enough work experiences (Fischer, 2014; U.S. Government Accountability Office, 2011). Recent studies have indicated that Chinese returnees (who once studied abroad) working in venture capital in China were actually less successful than their counterparts who had remained at home possibly due to a mismatch in skills and weaker social networks (Lawrence, 2013; Sun, 2013). Therefore, U.S. institutions, especially graduate schools, should recognize the increasing importance of work experience for international students' career outcomes (Gribble, 2014; Lawrence, 2013). Furthermore, U.S. postsecondary institutions and graduate education policymakers should expand the definition of institutional effectiveness from attracting and graduating international students to preparing them for improved and rewarding careers by effectively developing, resourcing, and implementing initiatives and strategies to improve the career outcomes of international students (Lawrence, 2013, Xu, 2013).

This study points to a direction that the U.S. immigration policy may be a significant factor to be considered in improving international students' career success. Foreign workers with H-1B visas are typically in no position to seek other employments freely under current H-1B regulations. Consequentially, H-1B employees in industry have become cheap labor as a means for companies to save costs (Matloff, 2003). The mechanism of the employer-driven selection in the H-1B system is to assure that employers identify the most appropriate workers with various skill sets (Papademetriou & Sumption, 2011), but it seems that the H-1B system has provided an opportunity for some employers to abuse the system and to get cheap and compliant workers (Matloff, 2003). With international students being considered as the talent pool for the U.S. and the intensified global competition for foreign talent among developed countries (Altbach, 2004; Shachar, 2006), immigration policymakers need to constantly monitor, assess, and revisit the effect of immigration policies toward international students, and should consider removing barriers of the

employer-driven H-1B system and granting international students full mobility in the labor market before they gain permanent resident status (Lan, 2013; Matloff, 2003).

This study focusing on temporary immigrants with the same education credentials as their native counterparts found that the earnings gaps still exist even if immigrants are educated from U.S. graduate schools—different from previous research that tends to examine immigrants with foreign education (Arbeit & Warren, 2013; Bratsberg & Ragan, 2002; Chiswick & Miller, 2007; Dean, 2009). Furthermore, this study found that there are different career outcomes even among the immigrants by their countries of origin; English language skills and cultural similarities to the American system are seemingly two factors that influence differences in career outcomes. This finding may shed an important light on the applicability of neo-racism to higher education settings; discrimination against international status is not fixed but varies by country of origin (Lee & Opio, 2011), among international students (Lee & Rice, 2007), postdoctoral scholars, (Cantwell & Lee, 2010), and master's recipients working in American labor markets.

While this study found earning gaps by immigration status, since the data examines only individuals who recently graduated with a master's degree, it is not clear if the earning loss that IMRs experience is a temporary or a lasting issue that follows IMRs' long-term career ladder. Future research that examines longitudinal datasets and traces the patterns of the income disparity and career trajectories over a longer period of time will contribute further to our understanding of career outcomes of immigrants, especially those who are educated and received credentials from American higher education institutions.

In this study, we examined individuals who have a full-time job at the time of survey. However, during the first stage of career outcomes—whether or not one is able to secure a job—significantly large numbers of IMRs fail and return back home. Therefore, the IMRs in the data are already highly capable individuals who have successfully secured their jobs in the competitive labor market in the United States. According to recent statistics (IIE, 2015; Koh, 2015), during the 10-year study period from 2001 to 2010, international students at master's or doctoral levels from India and China contributed approximately 20.9% and 33.7%, respectively, to the total international students studying in the US. Given that 49.94% in the study sample were Indian IMRs and 20.78% were Chinese IMRs, it is likely that IMRs from India are overrepresented and IMRs from China are underrepresented among those who have full-time jobs and thus included in the study. Future research, therefore, that provides an in-depth understanding of one's career trajectory—from searching for jobs to experiencing career outcomes—by examining international students who returned back home versus those who stayed in the United States after graduation would certainly enhance our understanding of the motivation behind the job search, discrimination throughout the process, and global mobility of international students that influence both host and home countries.

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