

**Inequality in the Work Visa Approvals of U.S. Immigrants**

by

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Submitted to the Department of Alfred P. Sloan School of Management

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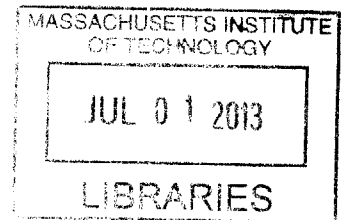
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## **Abstract**

This study examines how U.S. immigration policies, as implemented by agents acting on behalf of the federal government, shape migration and key employment outcomes of skilled foreign nationals. Using a unique dataset, which encompasses the entire population of 1,441,856 H-1B temporary work visa requests evaluated by government agents from May 2005 to April 2010, I assess whether agents' visa approval and denial decisions are shaped by immigrants' sending country characteristics. Through this program, government agents mediate a key institutional boundary: access to the U.S. labor market, by conferring or withholding "current" legal standing to potential immigrants. Controlling for important application evaluation criteria, I find that immigrant workers from sending countries with lower levels of economic development are less likely to receive approvals for initial and continuing employment requests, all else equal. Government agents' visa approvals may also shape career mobility among those immigrants previously granted legal standing through the evaluation of requests to change jobs or employers. In these evaluations, however, sending country level of economic development is not a statistically significant predictor of approval. The paper concludes by discussing the implications of these findings for theories of inequality and labor market mobility, in addition to practical considerations regarding the efficient and fair administration of immigration policy.

**Thesis Supervisor: Emilio J. Castilla**

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The employment of immigrant workers in the United States is a topic that has received great theoretical and policy attention. Foreign-born individuals comprise 15 percent of the U.S. labor force (U.S. Census Bureau 2012), and scholars have argued that skilled foreign nationals disproportionately contribute to domestic patenting, startup creation, and scholarly work (Kerr and Lincoln 2008; Hunt 2011). Researchers have thus been keenly interested in factors that shape these foreign individuals' migration decisions and subsequent destination country employment (see Massey et al. 1993; Waters and Eschbach 1995; or Freeman 2006 for reviews). Studies have suggested that select immigrants may experience unequal destination country labor market outcomes due to organizational sources of inequality inside firms (see, e.g. Castilla 2008), variations in immigrants' educational investments (Hirschman and Wong 1984; Friedberg 2000), and immigrant sending country characteristics (Chiswick 1978; Borjas 1987; Jasso and Rosenzweig 1990a, 1990b; Tubergen, Mass and Flap 2004), among others.

Yet, existing immigration and labor market theories rarely account for the employment approval decisions of destination country governments and the agents acting on their behalf. In many developed countries, government agents assess the qualifications of immigrant workers, resulting in the approval or denial of migration and employment requests. With regards to immigrant workers, we are rarely privy to the subtleties of destination countries' legal immigration selection processes, and heretofore we have been unable to study how such work authorization decisions shape the employment of individuals. Frequently unobserved are those potential immigrants who attempt to legally migrate to, or work in, a destination country but are nonetheless turned away due to the decisions of government agents.<sup>1</sup>

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<sup>1</sup> For a parallel discussion of the risks inherent in selection bias when studying employment outcomes, see, e.g., Fernandez and Weinberg (1997) and Castilla (2005).

In the United States, a key context in which government agents play a major role in shaping the work outcomes of individuals is through the implementation of employment-based immigration policies, specifically visa reviews. By law, employment-based immigration into the United States today contains no evaluation criteria pertaining to immigrant country of origin, and immigrant workers are selected based upon their skills and qualifications (see Title VII of the 1964 Civil Rights Act and the Hart-Celler Immigration Act). Despite available information about the content of visa evaluation criteria, little is known about how the migration and employment outcomes of potential immigrants are shaped by the visa decisions of government agents. Just as key studies have argued that hiring managers play a critical role in affecting labor market inequality within organizations (see, e.g., Petersen and Saporta 2004; Fernandez and Sosa 2005; Fernandez and Friedrich 2011; Castilla 2011 for reviews), so too may the work authorization decisions of government agents differentially shape the employment of specific immigrant groups in the United States.

Studying the impact of these government agent decisions is critical, as U.S. immigration authorities may view immigrants from specific sending countries as relatively more desirable than others (Jasso 1988; Calavita 1992:172; Ngai 2003; Rissing and Castilla 2012). For instance, immigration border control agents may stereotype foreign nationals by sending country to determine which individuals should receive detailed and time-consuming entry inspections (Gilboy 1991).

This study investigates the employment authorization decisions of government agents, through the analysis of a dataset containing information on the entire population of both approved and denied foreign workers seeking H-1B temporary work visas in the United States over a period spanning five federal fiscal years. The H-1B work visa is reserved for skilled

foreign workers of “distinguished merit and ability” (U.S. CIS 2010a, 2010b), who typically hold a minimum of a bachelor’s degree (see Lowell 2001; Kapur and McHale 2005: 54; or Mithas and Lucas 2010 for a policy discussion of this visa). The unique data for this study have never before been publicly available outside of U.S. Citizenship and Immigration Services (U.S. CIS), and the critical visa decision outcomes in this dataset shape hundreds of thousands of skilled foreign workers’ employment outcomes annually, in positions ranging from technicians to corporate managers and surgeons.

Despite new interest in how legal status affects immigrant outcomes in the United States (Menjívar 2006; King et al. 2012; Menjívar and Abrego 2012), recent studies have been unable to examine the process by which legal status is conferred, and any inequality that may exist within such a system. I make initial steps to address this question by examining a critical aspect of legal foreign-born workers’ careers – the authorization of employment status – within the largest temporary employment-based visa system in the United States. These key work authorization decisions are reached by government agents acting on behalf of U.S. CIS within the U.S. Department of Homeland Security (U.S. DHS). For the first time in the literature, I specifically assess whether any visa approval disparities exist among qualified immigrants from different sending countries seeking employment in the United States through the H-1B temporary work visa program. Through this visa program, government agents approve or deny the key employment requests of foreign workers, including: (1) initial hiring, (2) three-year employment continuation, (3) change of job within an existing employer, and (4) change of employer.

Consistent with the literature on the labor market experiences of U.S. immigrants (Chiswick 1978; Borjas 1987; Jasso and Rosenzweig 1990a, 1990b; Tubergen, Mass and Flap 2004), I

examine whether disparities in visa approvals for immigrants with the same measured skills may be attributable to variations in immigrant sending country characteristics, such as level of economic development. Further, I study visa approval outcomes while controlling for key factors including immigrants' annual offered salary, education level, occupation, industry, month of application receipt, and whether the application meets key U.S. CIS review criteria. In contrast to existing studies that frequently examine firm-level employment decisions or samples of workers, I examine the process by which U.S. CIS agents evaluate immigrant human capital across every hiring, promotion, and employment continuation request that has taken place among all foreign workers seeking H-1B temporary work visas at every U.S. employer over the span of five federal fiscal years.

I also build upon existing literature that explores the reduction of labor market inequality among immigrants in destination countries as they assimilate. Scholars have argued that initial labor market inequalities among immigrants from different sending countries can be overcome as new foreign workers acquire destination country work experience (Chiswick 1978; Borjas 1988:62; Jasso and Rosenzweig 1990a:237-307). In keeping with this argument, I assess inequality among previously approved immigrant workers seeking employment continuation visas that have already resided in the United States on an H-1B visa for a period of three years.

Finally, this work contributes to literature examining the importance of legal status among immigrants seeking employment in destination country labor markets (Jasso and Rosenzweig 1990a; Menjívar 2006; King et al. 2012; Menjívar and Abrego 2012), and studies examining how inequality may emerge around key socially-constructed boundaries (see Lamont and Molnar 2002 for a review), such as work authorization. I study whether inequality may be associated primarily with evaluations that confer "current" legal work standing to immigrants and thus grant

the ability to work and reside in the United States, rather than those decisions that shape labor market mobility (change of job or employer) among workers previously granted “current” legal status. Through the analysis of government agents’ visa approval and denial determinations reached for a variety of key employment events, I contribute to these debates through the exploration of where unequal outcomes may emerge in this system of federal work authorization.

### **Employing Skilled Immigrants in the United States**

Each year, government agents review hundreds of thousands of H-1B visa requests to determine whether potential immigrants are qualified to work in specified U.S. jobs based on their human capital. These key visa decisions, based on a paper application and reached without meeting the foreign national in person, shape immigrants’ ability to reside and work in the United States. Today potential foreign national workers are evaluated through a system of lawful federal guidelines that focus on the skills of these individuals. Moreover, with the passage of the 1965 Hart-Celler Immigration Act, immigrant admissions are no longer limited by country-specific quotas (for a discussion of immigrant admissions to the United States while under the 1882 Chinese Exclusion Act, see Calavita 2000). Rather, current visa evaluation systems mandate fairness and equality, regardless of immigrant nationality or place of origin.<sup>2</sup>

### *Immigrant Sending Country Economic Conditions and Labor Market Inequality*

Scholars have argued that foreign nationals’ country of origin may affect their desirability as determined by immigration authorities (Jasso 1988; Gilboy 1991; Calavita 1992:172; Ngai 2003; Rissing and Castilla 2012; Hainmueller and Hangartner 2013). Further, immigrants from less developed sending countries may be particularly disadvantaged during labor market assessments made in industrialized destination countries, such as the United States. The prior experiences of

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<sup>2</sup> See also the academic literature seeking to understand the intended effects of equal employment opportunity laws (Kalev et al. 2006; Tomaskovic-Devey and Stainback 2007), and the joint role of both firms and the government in these processes (see Edelman and Suchman 1997).



immigrants originating from sending countries with less similar institutions, occupational structures, and technical systems to those used in a destination country may be perceived to be less valuable. Thus, immigrants with the same measured skills may nonetheless experience unequal labor market outcomes associated with variations in the economic conditions of their sending country (see e.g. Chiswick 1978, 1979; Borjas 1987, 1988; Jasso and Rosenzweig 1990a, 1990b; Friedberg 2000; Tubergen, Mass and Flap 2004). Further, foreign nationals' self-selection to migrate may shape the relative labor market performance of particular groups of immigrants based on variations in sending country competitive pressures and income inequality (see for instance, Borjas 1987).

Foreign nationals' migration and subsequent labor market outcomes are notably affected by destination country immigration laws – i.e. the system of federal regulations that govern the lawful entry and employment of foreign nationals (as described, for instance, in Higham 1955; Soysal 1994: 126; Richardson and Lester 2004; Zolberg 2006; Jasso and Rosenzweig 2009; Jasso 2011; Rissing and Castilla 2012). The effect of these work authorization decisions, however, is rarely examined in the literature seeking to understand the determinants of foreign nationals' migration and the labor market experiences in destination countries. Although industrialized economies, such as the United States, seek to attract foreign workers and coordinate their stay, we are rarely privy to the subtleties of destination country selection processes as they affect potential immigrants.

In the United States, government assessment of immigrant credentials during the review of key employment-based visas is intended to be fair and merit-based, specifically protecting immigrants regardless of nationality or place of origin. Yet, government agents' evaluations too may be shaped by perceptions regarding the value of immigrant human capital from particular

sending countries when these foreign workers seek employment. This leads to this study's first theoretical proposition, *that initial employment visa approvals will be more likely for immigrants originating from sending countries with higher levels of economic development (as measured by annual sending-country GDP per capita), all else equal.*

Studies examining immigrants' destination country employment and economic assimilation have argued that labor market inequality among immigrants from sending countries with varying levels of economic development tend to decrease over time (Chiswick 1978; Borjas 1988:62; Jasso and Rosenzweig 1990a:237-307). Unequal labor market outcomes attributable to sending country differences may erode as foreign workers obtain destination country work experience, develop greater English-language fluency, and establish new social networks.

From the perspective of government agents, immigrant sending country characteristics, such as level of economic development, may become less meaningful or reliable measures of the value of immigrant human capital after the foreign worker has accrued U.S. experience. In the United States, the H-1B temporary work visa system is uniquely well-suited to facilitate the examination of how immigrants' sending country characteristics may shape visa approval outcomes for those foreign workers that have accrued U.S. experience. Initial employment H-1B visas (analyzed in proposition 1), are valid for a period of three years. At the end of this three-year period, a foreign worker may request a continuation of their employment visa for a subsequent three-year period. All requests for continuing employment are evaluated for foreign workers' previously approved to work in the same occupation, at the same employer, and with the same work duties. Common visa evaluation criterion is also applied to both request types.

In support of theories pertaining to the reduction of destination country labor market inequality among immigrants over time, I examine if immigrant sending country level of

economic development will affect visa approval outcomes for employment continuation requests. This leads to the second theoretical proposition, *that among immigrants who have worked in the United States for three years on an H-1B visa and previously received visa approvals for their current job and employer, requests for employment continuation will not be affected by the immigrants' sending country level of economic development, all else equal.*

Finally, unequal outcomes may emerge surrounding employment-based evaluations that confer “current” legal status to immigrants and the ability to work and reside in the United States. Socially constructed boundaries, such as “legal” or “documented” status among immigrants, have received great attention from a variety of academic disciplines and have been argued to be key structural components of inequality (for a review, see Lamont and Molnar 2002). Social boundaries (also referred to as “bright” boundaries, for instance, in Zolberg and Woon 1999; Alba 2005) are unambiguous institutionalized barriers that shape members’ life chances and social standing. In the case of the authorization of immigrants’ legal employment opportunities, government agents are the exclusive gatekeepers of this unique and critical boundary that determines which foreign nationals are, and are not, eligible to legally work and reside in a destination country.

Recent sociological theories of immigrant labor market assimilation have argued that immigrant destination country incorporation and labor market outcomes are shaped by a variety of factors beyond human capital and destination country work experience. These theories notably draw attention to the importance destination country institutions, such as immigration and equal employment opportunity laws, in shaping foreign workers’ employment outcomes (see for instance Portes and Zhou 1993; Portes 1995: 24; Alba and Nee 2003:53; Massey and Sanchez 2010).

Obtaining legal or documented status is key for immigrants seeking to succeed in destination country labor markets (Jasso and Rosenzweig 1990a; Menjívar 2006; King et al. 2012; Menjívar and Abrego 2012). Scholars have argued that bias may exist in the evaluation of potential immigrant candidates where approval confers destination country legal entry or membership (Jasso 1988; Gilboy 1991; Calavita 1992:172; Ngai 2003; Rissing and Castilla 2012; Hainmueller and Hangartner 2013). Similarly, studies of in-group and out-group bias have found that U.S. citizens' perceptions of immigrant groups by sending country vary greatly, yet U.S. citizens regard "documented" immigrants as similar to Americans themselves (the in-group) on dimensions of warmth and competence (Lee and Fiske 2006).

Through the H-1B temporary work visa program, government agents mediate a key institutional boundary: access to the U.S. labor market, by conferring or withholding legal standing to potential immigrants seeking initial or continuing employment. For these employment requests in particular, approval confers "current" H-1B status and three years of U.S. employment eligibility. This, as a result, may trigger assessment of immigrant similarity to U.S. natives, and comparisons of foreign workers' sending country characteristics to that of the United States. Sending country attributions, however, may be less salient during evaluations of those previously-vetted immigrants in "current" legal status seeking to change job or change employer. If such requests are denied, the immigrant may continue to work with a previously approved employer and job, provided this opportunity still exists.<sup>3</sup> This leads to the study's third and final theoretical proposition, *that unequal approval outcomes attributable to sending country level of economic development will be associated with employment evaluations that grant*

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<sup>3</sup> Most immigrants with "current" H-1B status thus file for requests to change jobs or employers while they are still actively employed to avoid the risk of falling out of status in the event of application denial.

*“current” immigration status (initial or continuing employment), rather than decisions affecting employment mobility (change of job or employer), all else equal.*

For the first time in the literature, I empirically examine the process by U.S. CIS agents evaluate immigrant requests to work in the United States. In particular, I address whether foreign workers with the same measured educational credentials, seeking to migrate from sending countries with various levels of economic development, are differentially able to immigrate to (and remain in) the United States through initial employment (and continuing employment) requests, and subsequently transition between jobs and employers. The aforementioned three research propositions are tested controlling for key variables that could account for immigrants’ differential treatment during visa evaluations, including annual offered salary, education level, occupation, industry, month of application receipt, whether the application meets key U.S. CIS’s review criteria, and employer fixed effects.

### **Research Setting**

With this study, I examine the U.S. CIS evaluation process that shapes skilled immigrants’ ability to work in the United States on the H-1B temporary work visa program. Under law, there is a limited quantity of approximately 85,000 initial employment H-1B visas available during each of the five federal fiscal years under analysis in this study (for additional policy and visa background, see Lowell 2001; Kapur and McHale 2005: 54; Mithas and Lucas 2010). In practice, however, more than 100,000 initial employment visas are granted each year as select occupations (university faculty or academic researchers, among others) and employers (e.g., nonprofit organizations, institutions of higher education, and governmental research organizations) are exempt from this visa cap (see 20 USC 1001(a) or 8 Code of Federal Regulations (CFR) 214.2h(19)(iii)(c)). Here, I examine only those visas that qualify for

government agent evaluation. Applications that are turned away by U.S. CIS because they were received after the annual cap on initial employment visas has been reached are not the subject of this empirical investigation and do not appear in the records available for this study. Further, while a finite quantity of initial employment H-1B visas are available each year; no constraints limit the quantity of H-1B visas that might be granted for requests for continuing employment, change of job, or change of employer.

The H-1B temporary work visa is reserved for foreign nationals of “distinguished merit and ability and who [are] coming temporarily to the United States to perform temporary services of an exceptional nature requiring such merit and ability” (see 8 CFR 214.2h). Consistent with this view, academic studies have shown that foreign workers residing on the H-1B visa may make significant U.S. economic contributions during their stay (Wadhwa et al. 2007a; Wadhwa et al. 2007b; Kerr and Lincoln 2008; Hunt 2011). Employers wishing to hire a foreign worker through this program must file an I-129 Petition for a Nonimmigrant Worker, which is reviewed by agents acting on behalf of the U.S. CIS (Neufeld 2011).<sup>4</sup> The agents that evaluate these visa requests *never* meet the immigrant worker in person and visa approval or denial decisions are made solely on the basis of an evaluated visa application.<sup>5</sup> U.S. CIS agents are afforded a degree of discretion in interpreting H-1B evaluation criteria (U.S. CIS 2010b; Patrick 2012), which may lead to the inconsistent application of their legal directives (Davis 1969; Lipsky 1976, 1980; Wilson 1980). It is unknown if government agents’ judgments are applied uniformly, especially

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<sup>4</sup> I-129 petitions are submitted to the U.S. CIS alongside a Labor Condition Application (LCA) to confirm that the salary offering for the foreign worker is above a “prevailing,” or minimum, salary associated with the immigrant’s occupation. The U.S. Department of Labor reviews LCAs through an automated system that is highly likely to result in a certification.

<sup>5</sup> Unlike some other U.S. employment-based visas, the H-1B temporary work visa does not require a “labor market test.” That is, a foreign national worker can be employed on a temporary H-1B visa even if qualified and willing U.S. citizen workers might be available for the position. While this study’s quantitative models control for the month of application receipt, and thus domestic economic fluctuations, the availability of qualified U.S. citizen workers are not factors affecting the evaluation of these visa requests.

given concerns regarding information transparency issues (restricted by agency jurisdiction and law), employer accountability (U.S. GAO 2011), and U.S. CIS employee morale and job satisfaction (U.S. GAO 2012a, 2012b).<sup>6</sup>

U.S. CIS agents' evaluation of these visa requests pertain to three broad areas: job position, immigrant human capital, and the completeness of the application itself (for additional information on evaluation criteria, see Kurzban 2010). Job position evaluation criteria include the form and extent of compensation, and whether the job position described requires a specific course of study and theoretical knowledge. Immigrant worker criteria include whether the immigrant worker holds at least a bachelor's degree or equivalent, whether the immigrant's highest degree field matches the occupation field as specified by O\*NET data,<sup>7</sup> whether the immigrant holds any necessary professional licensure, and whether or not the immigrant holds a non-technical degree in business or the liberal arts – which may be grounds for denial.<sup>8</sup> Finally, applications filed by employers previously identified by the government as “willful violators” of immigration visa programs are evaluated with greater scrutiny.

None of the aforementioned H-1B visa evaluation criteria pertain to immigrant sending country characteristics, nor do any country-specific visa quotas limit U.S. CIS agent's approval decisions. Given existing law that mandates equality on the basis of nationality during government immigration decisions, and the current H-1B temporary work visa evaluation criteria, which contain *no* provisions surrounding immigrant citizenship, we should not expect to

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<sup>6</sup> In an internal U.S. DHS survey, one out of every three U.S. CIS workers indicated that they were not satisfied with their job.

<sup>7</sup> Additional information on O\*Net can be found at <http://www.onetonline.org/>

<sup>8</sup> If an immigrant has obtained a college degree in business or the liberal arts without further credentials, this immigrant may not be eligible for an H-1B visa. For more information see *Matter of Michael Hertz Assoc., 19 I&N Dec. 558 (Comm. 1988)*.

observe differences in visa approval outcomes across citizenship groups, all else equal (see 20 CFR 656.17, Title VII of the 1964 Civil Rights Act, and also the Immigration Act of 1990).

## **Data**

To address the question of whether key visa approval outcomes may vary by immigrant sending country characteristics, I analyze internal U.S. CIS records on the entire population of *all approved and denied* H-1B temporary work visa requests across *all work classifications* evaluated between May 2005 and April 2010. These records were obtained through two years of negotiations and discussions across multiple federal departments including the U.S. Department of Homeland Security (U.S. DHS), U.S. Citizenship and Immigration Services (U.S. CIS), U.S. Government Accountability Office (U.S. GAO), and National Science Foundation (NSF), among others. This culminated in a Freedom of Information Act (FOIA) request describing the individual-level H-1B records stored within U.S. CIS. This request was subsequently approved, processed, and completed in August of 2011 (see Calavita 1992:10-17 for a discussion of the challenges of obtaining immigration data through the FOIA, and Kerr and Lincoln 2008 for a description of data constraints that have limited past empirical study of the H-1B program). The released files include detailed information on the characteristics of the immigrant worker (country of citizenship, highest degree level, and highest degree field), occupation (salary and job title), employer (name and industry), and the government agent review process (visa approval outcome, work classification, and date of application receipt). With regards to the immigrant worker-level approval data sought for this study, personal correspondence with the U.S. DHS Director of the Office of Immigration Statistics indicates that “there is no precedent where these data have been made available in individual form to the public.”



The unique records obtained for this research describe the full population of 1,441,856 visa applications filed by 246,378 domestic employers between May 2005 and April 2010. This dataset includes 684,629 applications for initial employment, 461,512 applications requesting continuing employment, and a further 205,090 and 53,374 applications requesting a change in employer or change in occupation, respectively.<sup>9</sup> The approval rate of these applications varied by the requested work classification, including applications for initial employment (87.7 percent approved), change in employer (93.5 percent approved), continuing employment (95.6 percent approved), and change in occupation (96.2 percent approved).<sup>10</sup>

Immigrants in this dataset claimed citizenship from 226 distinct countries, the largest of which is India, followed by China and Canada, respectively comprising 52.1, 8.6, and 3.9 percent of all applications over this five-year period. Consistent with other studies of labor market inequality among foreign workers in the United States (Borjas 1987; Jasso and Rosenzweig 1990; Tubergen, Mass and Flap 2004, among others), this data includes key controls to account for differences associated with variations in immigrants' sending country, including distance from the United States (measured in thousands of miles with a mean value of 6.62), sending country income inequality (measured using Gini ratios, with a mean value of 0.36),<sup>11</sup> and application volume (the natural log of the quantity of visa applications received by country per year, with a mean value of 7.85). With specific attention to this study's theoretical

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<sup>9</sup> The dataset includes a further 31,618 applications representing petition amendments, and 5,633 applications for foreign nationals seeking concurrent employment with a secondary firm. Approval and denial determinations are available for these applications but are not evaluated in this study.

<sup>10</sup> Internal memorandums obtained from the U.S. CIS History Office and Library (<http://www.uscis.gov/USCIS/Resources/USCIS%20Historical%20Library/Library%20brochure.pdf>) indicate that these approval rates are consistent with those reached in the mid-1990s (see U.S. Immigration and Naturalization Services 1999).

<sup>11</sup> A Gini ratio of zero represents complete income equality in a country where all citizens have identical income, while a Gini value of one expresses the maximum level of income inequality where all wealth is held by a single individual.

propositions, I control for immigrants' sending country level of economic development, measured as the natural log of year- and country-specific GDP per capita, with a mean value of 7.77 (or \$2,236 USD).

Regressions further include broad controls for the world region associated with each immigrant's country of origin. Due to this great diversity in sending countries, and for simplicity reasons, sending countries are aggregated into seven world regions (Asia, Europe, Canada, Latin America, Africa, The Middle East, and Australia and Oceania). For regression analyses, Canada is the reference category among these world regions, as Canada and the United States have a number of commonalities, including similar GDP growth, levels of unemployment, English language fluency, and geographic proximity (Lipset 1990). Further, survey evidence suggests that Americans' have strong feelings of favorability toward Canada (Jones and Saad 2012). The data available for this study allows for detailed controls pertaining to the characteristics and qualifications of the immigrant. H-1B immigrant worker salaries are relatively high, with the mean natural log salary for an initial hire is 10.42 (\$60,093). Mean natural log salaries are higher for immigrants seeking visa approval for mid-career events, including employment continuation visas with mean salaries of 10.87 (\$73,135), requests to change employers with mean salaries of 11.01 (\$75,245), and requests to change jobs with mean salaries of 10.96 (\$75,631).

This dataset also allows for detailed analysis of immigrants' prior human capital investments, which in general are substantial. The H-1B temporary work visa program requires potential immigrant workers to hold a minimum of a bachelor's degree, or equivalent, and as a result, the vast majority of immigrants are college educated and most hold graduate degrees. Only 0.8

percent of potential H-1B immigrant workers hold less than a bachelor's degree,<sup>12</sup> 44.5 percent hold bachelor's degrees, and the remaining 54.7 percent hold graduate degrees. Immigrant workers with graduate degrees include individuals with masters (39.3 percent), doctorates (10.5 percent), and professional degrees (4.9 percent).<sup>13</sup> Further, for this research I have access to the exact fields in which each of the aforementioned degrees are granted. Degree titles are aggregated into one or more of 16 broad education categories,<sup>14</sup> these classifications are utilized as controls for this study's quantitative analysis and also to evaluate if a given application met the U.S. CIS evaluation criteria regarding an immigrant's investment in occupation-relevant human capital. The largest degree classification in this study is engineering, held by 23.8 percent of all immigrants, this is followed by computer science and business degrees, which described a further 17.2 and 13.9 percent of all immigrants, respectively.

Each application further includes detailed information on the immigrant worker's occupation, employer, and industry. Occupation-level information is provided in the form of a three-digit Dictionary of Occupational Titles (DOT) classification. Immigrant workers described in H-1B visa applications seek employment in 121 different DOT classifications, with the most common being "Occupations in Systems Analysis and Programming" (43 percent of all applications), "Occupations in College and University Education" (6.9 percent) and "Accountants, Auditors,

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<sup>12</sup> These applications described immigrants with no high school diploma (0.1 percent of all applications), a high school diploma (0.2 percent), less than one year of college (0.1 percent), one or more years of college but no degree (0.3 percent) and those with associate's degrees (0.2 percent).

<sup>13</sup> Several prior academic studies have suggested educational investments obtained abroad may be less valuable to destination country employers (Friedberg 2000; Mattoo et al. 2008). Evidence from the H-1B Standard Operating Procedures (a U.S. CIS visa decision guidance manual) indicates that government agents too may discount immigrants' prior educational investments if these are obtained abroad. Specifically, the Procedures instruct government agents as follows: "If the beneficiary is educated outside the U.S., determine whether the foreign education is equivalent to a United States degree. Just because the degree says it is a bachelor's degree does not necessarily mean that it is equivalent to a United States bachelor's degree" (U.S. CIS 2010b: 8). Unfortunately, the electronic records retained by the U.S. CIS do not track the country in which an immigrant's highest education is obtained (U.S. CIS 2010a: 21).

<sup>14</sup> These degree fields include agriculture, art, business, communications, engineering and technology, education, liberal arts, foreign languages, medicine, mathematics and statistics, natural sciences, psychology, legal professionals, social sciences, computer science, and philosophy, religion and theology.

and Related Occupations” (4 percent). Applications are additionally filed from employers within a variety of different industries, identified by North American Industry Classification System (NAICS) codes, which classifies businesses by industry according to similarity in the processes they utilize to produce goods or services. The most common industries described in applications are “Custom Computer Programming Services, (24.7 percent of all applications), “Colleges, Universities and Professional Schools” (9 percent) and “Computer Design and Related Services” (6 percent).

Information on the day and year in which an application is received by the U.S. CIS are additionally encoded in this dataset. This timing data allows for the control of macro-level economic variations between May 2005 and April 2010 that may have affected the review of these applications. The quantity of applications received by the U.S. CIS declined slightly in the wake of the 2008 financial recession and slowly began to recover thereafter. In Federal Fiscal year 2007, 319,908 applications were received by U.S. CIS, while 289,170 and 248,897 were filed in 2008 and 2009, respectively.

Finally, the aforementioned information on the immigrant, requested occupation, and employer allow for the control of whether an H-1B visa application meets certain U.S. CIS visa evaluation criteria (see also 8 CFR 214.2(h), *Matter of Michael Hertz Associates* 19 I&N Dec. 558, Kurzban 2010, or U.S. CIS 2010b for detailed descriptions of U.S. CIS agents’ review criteria). The U.S. H-1B visa evaluation process encompasses three broad areas: job position, immigrant human capital, and application-level features, which are used to determine if an immigrant worker is qualified to work in the position described in the application. Approval criteria include the form and extent of compensation (represented by the natural log of immigrant salary), whether the application describes a “specialty occupation” requiring a specific course of

study, and theoretical knowledge (which is true of 79.9 percent of applications),<sup>15</sup> whether the immigrant holds a minimum of a bachelor's degree or equivalent – which is required to qualify for the vast majority of positions described (99.2 percent), and whether the immigrant's human capital is relevant to the position sought. Potential grounds for denial include those immigrants holding liberal arts or business degrees (13.7 percent of applications), and applications filed by “willful violator” employers – which are organizations that are known to U.S. CIS to have made either intentional errors or misrepresented material facts in prior visa requests (0.2 percent).<sup>16</sup> Additional details on these application review criteria and the application characteristics described above can be found in Table 1.

[Insert Table 1 about here]

To complement these quantitative records, I make use of a key primary source document obtained from federal employees inside the U.S. CIS, the 2010 I-129 H-1B Standard Operating Procedures (effectively, an operations manual). This document includes explicit sequential instructions that outline the stages of government agents' H-1B visa evaluations. Further, the 2010 Procedures are the most current and up-to-date guidelines for U.S. CIS agents at the time of this writing. When relevant, portions of the H-1B Standard Operating Procedures are quoted in this article. Finally, additional details regarding the H-1B program evaluation criteria were obtained from public immigration statutes and physical U.S. DHS and U.S. CIS interoffice

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<sup>15</sup> The definition of what job titles can be classified as specialty occupations is vague, however Federal Statutes have explicitly identified a list of qualifying occupations (see *Matter of Michael Hertz Assoc.* 19 I&N Dec. 558 (Comm. 1988); 8 CFR 214.2(h)(4)(iii)(A)).

<sup>16</sup> U.S. CIS evaluations additionally include three criteria that were not made available for this analysis: (1) whether the immigrant has full state licensure to practice in the occupation, if such licensure is required to practice (8 CFR 214.2(h)(4)(iii)(C)(2)); (2) whether the immigrant's prior work experience may be sufficient in lieu of necessary formal educational investments; and (3) whether the immigrant, as judged by the government agent, can meet the actual requirements of the position as specified by the petitioner and industry documents present in the application. While information sufficient to address these concerns was not made available through this FOIA disclosure, through a unique aspect of this data, unobserved variation along these important application characteristics can be controlled for and are discussed further in the paper's results section.

memorandums made available through the U.S. CIS History Office and Library in Washington D.C.

## **Results**

### *H-1B Visa Approvals and Immigrant Sending Country Characteristics*

In this section I evaluate the differential approval or denial of foreign nationals' H-1B temporary work visa applications as determined by agents acting at the direction of the government. The dependent variable of this analysis is a dichotomous variable indicating whether a given H-1B visa application is approved by a government agent (1 = approved; 0 = denied). A series of logit regressions evaluate the significance of several key variables in predicting the outcome of this visa evaluation process (for more information about logit models, see Aldrich and Nelson 1984; Castilla 2007: 153). Fully-specified regressions include controls for immigrant worker-level (job title, annual salary, education level, the natural log of the immigrant's sending-country GDP per capita, sending country distance, sending country income inequality, quantity of applications filed within a given year, and world region controls), employer-level (industry), and U.S. CIS review process-level factors (the month of application receipt by the U.S. CIS and a vector of dummy variables indicating if the a given application meets key U.S. CIS evaluation review criteria).

These regressions allow for the testing of this study's first theoretical proposition, that is, the greater an immigrant's sending-country level of economic development, the higher the likelihood of initial employment visa approval, all else equal. Model 1 in Table 2 includes controls for key immigrant worker-, occupation-, and U.S. CIS review process-level factors (for simplicity, not all controls are reported). Results from Model 1 indicate that immigrant salary and education level have positive and statistically significant effects on visa approval outcomes. All else equal, an immigrant worker described in an H-1B application with a one-unit higher natural log salary

is 12.9 percent more likely to receive an initial employment visa approval (significant at the  $p < 0.001$  level).<sup>17</sup> Education coefficients show that immigrant workers with less than a bachelor's degree are generally less likely to receive visa approval than those with a bachelor's degree (the reference category) (significance levels vary between  $p < 0.001$  and  $p < 0.01$ ), while those immigrant workers with a graduate education are more likely to receive approvals than those with bachelor's degrees (significant at the  $p < 0.001$  level). Immigrant workers with only a high school diploma are 18.8 percent less likely to receive visa approval than those with a bachelor's degree, all else equal (significant at the  $p < 0.05$  level). In contrast, immigrants with a doctorate are 93.7 percent more likely to receive visa approval than an immigrant worker with a bachelor's degree, all else equal (significant at the  $p < 0.001$  level).

[Insert Table 2 about here]

Model 1 of Table 2 also shows that visa applications failing to meet certain U.S. CIS review criteria are less likely to receive approval. Immigrants that hold non-technical highest degrees, that is, degrees in business or the liberal arts, are 13.5 percent less likely to receive visa approval than those immigrant workers that hold comparable level technical degrees (significant at the  $p < 0.001$  level). Similarly, applications filed by employers identified as “willful violators” by the U.S. Department of Labor are 35.9 percent less likely to receive approval than those employers that had not received this designation ( $p < 0.001$ ).

A key finding from this study can be found in Model 2 of Table 2, which introduces a variable for the natural log of visa immigrant sending country GDP per capita. Results from this model show that immigrant GDP per capita is a positive and statistically significant predictor of visa approval ( $p < 0.001$ ), even with key controls for occupation, industry, immigrant education level, U.S. CIS evaluation criteria, and application month of receipt. To offer further support for

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<sup>17</sup> 15.1 percent =  $100 \times (\exp(0.115) - 1)$

this finding, Model 3 of Table 2 introduces additional key sending country controls, including distance from the United States, income inequality, H-1B application volume, and world region variables. Even with the inclusion of these additional key controls, immigrant sending country GDP per capita remains a positive and statistically significant predictor of visa approval. Model 3 of Table 2 shows that a one-unit increase in the natural log of sending country GDP per capita for an immigrant results in a 7.3 percent increase in the likelihood of visa approval, all else equal ( $p < 0.001$ ). This finding offers support for this study's first theoretical proposition, that initial employment visa approvals are more likely for foreign nationals from sending countries with higher levels of economic development. Additional sending country controls show that visa approval is less likely for immigrants from distant countries ( $p < 0.001$ ), while the effect of sending country income inequality and application volume are both close to zero and are not statistically significant. World region controls indicate that immigrants from Europe, Latin America, and the Middle East are 22.7, 26.1, and 31.8 percent, respectively, less likely to receive visa approvals than Canadian immigrants, all else equal ( $p < 0.001$ ).

#### *H-1B Visa Approval, Economic Assimilation, and Inequality in Approval for Key Employment Events*

Here I address this study's second theoretical proposition, which seeks understand how government agents may affect immigrant labor market assimilation and economic incorporation. This proposition addresses the question of whether immigrants who were previously approved for initial employment and have resided in the United States for three years on an H-1B work visa will still be less likely to receive continuing employment approval if they originated from a less economically developed sending country. Using census records, scholars have noted that inequality among immigrants from sending countries with varying levels of economic



development tends to decrease over time (Chiswick 1978; Borjas 1988:62; Jasso and Rosenzweig 1990a:237-307). Yet it is unknown whether government agents' evaluation of work visas may follow a similar logic – particularly with regards to those requests pertaining to continuing employment requests, that may be less affected by immigrant sending country characteristics.

To address this question, Table 3 contains fully-specified regression models predicting H-1B approvals with controls identical to those present in Model 3 of Table 2. As presented earlier, Model 1 of Table 3 shows that government agents' approval of H-1B applications seeking initial employment in the United States are more likely for those immigrant workers from sending countries with higher GDP per capita and those that are geographically closer to the United States (significant at the  $p < 0.001$  level). For an application describing initial employment, a one-unit increase in immigrant sending country GDP per capita results in a 7.3 percent increase in the likelihood of approval ( $p < 0.001$ ). Sending country income inequality and application volume do not have statistically significant effects on initial employment visa approval.

[Insert Table 3 about here]

A key finding of this paper can be found in Model 2 to Table 3. Initial employment H-1B temporary work visas are valid for a period of three years, with the option to extend the visa duration for an additional three years through a continuing employment request. H-1B evaluation criteria for initial employment and continuing employment requests are identical. This is a conservative setting in which to examine unequal visa approval outcomes associated with immigrants' sending country characteristics because all foreign workers seeking continuing employment are *previously approved to work in the same occupation, and at the same employer, described in the application*. Thus, I am able to examine whether previously approved foreign

workers experience unequal approval outcomes associated with the economic conditions of their sending country after residing in the United States for a period of three years. Model 2 of Table 3 shows that immigrant sending country GDP per capita is a statistically significant predictor of approval outcomes – even among those previously approved on an H-1B visa. An one-unit increase in sending country GDP per capita corresponds to a 5 percent increase in the likelihood of approval ( $p < 0.001$ ). World region controls in Model 2 of Table 3 show that Latin American and Middle Eastern immigrants are less likely to receive continuing employment approvals than Canadians, all else equal (significance varies between the  $p < 0.001$  and  $p < 0.05$  level). No other world region is a statistically significant predictor of approval outcomes.

This finding presents strong evidence against this study's second theoretical proposition. In contrast to arguments of economic assimilation, immigrants from less developed sending countries are less likely to receive H-1B approvals both when initially seeking U.S. employment, and when seeking employment extension after accruing three years of domestic work experience. Both of these requested visa work classifications (initial and continuing employment) confer "current" legal status to potential immigrants. A U.S. CIS interoffice memorandum pertaining to the evaluation of continuing employment H-1B visas indicates that "a recent review of CIS practices has shown that in certain instances, adjudicators have been questioning prior determinations where there is no material change in the underlying facts as a matter of routine" (Yates 2004). This memo provides some intuition as to why applications for continuing employment may be denied, even when these applications describe foreign workers previously approved to work with the same employer, occupation, and job duties.

To explore an alternative to arguments of economic assimilation, the study now turns to the third and final proposition pertaining to inequality along social boundaries such as "legal" or

“documented” status (for a review, see Lamont and Molnar 2002). Government agents evaluate visa requests pertaining to a variety of employment events, only some of which confer destination country membership (i.e., those requests that grant initial entry, and those enabling continuing employment). Other requests grant labor market mobility, that is, those requests to change jobs or change employers, but if denied, the foreign worker can continue to work on their previously approved visa. I argue immigrant requests for initial employment and continuing employment may be subject to status-based attributions or demographic assessments as agents evaluate whether a worker is eligible to work in the U.S. labor market (and thus cross a key institutional boundary). Such attributions may not be applied to those previously-vetted immigrants that have successfully crossed this institutional boundary and subsequently seeking approval to change jobs or employers.

To address this proposition, I now return to Table 3. Model 3 of Table 3 predicts the likelihood of government agent approval for requests describing previously approved foreign workers interested in changing employers. In this model, no immigrant sending country characteristics or world regions have statistically significant effects on approval.

Model 4 of Table 3 predicts H-1B visa requests describing foreign workers seeking to change jobs within a previously approved employer. Model 4 also shows that no sending country controls account for these visa approval outcomes. Immigrant sending country GDP per capita, distance from the United States, and sending country income inequality do not have statistically significant effects on the likelihood of visa approvals for foreign nationals seeking to transition between jobs. No world regions controls are statistically significant predictors of visa approval requests to change jobs, with the exception of immigrants originating from Latin America and

the Middle East, who are less likely to receive approvals than Canadian immigrants, all else equal (significance varies between  $p < 0.01$  and  $p < 0.05$ ).

Taken together regression results from Table 3 support the study's third theoretical proposition. Results here indicate that immigrant sending country level of economic development is a statistically significant predictor of work visa approvals that mediate U.S. institutional boundaries dictating those foreign workers that are eligible for legal employment. In contrast, those visa reviews pertaining to previously-vetted immigrants with current legal standing do not appear to be subject to these sending country attributions when seeking to change jobs or employers.

#### *Alternative Explanations and Robustness Checks*

In this section, I explore potential alternative explanations that may account for the unequal outcomes identified in this study. First, while this analysis benefits from the entire population of approved and denied H-1B temporary work visas over a period of five federal fiscal years, I cannot account for the possibility that immigrants might sort into specific occupations with higher likelihoods of H-1B visa approvals. While detailed occupation-level fixed effects in all of the presented regression models help to minimize this concern, I also examine specific occupations to further address this. I re-run Model 3 of Table 2 for those applications filed within the largest occupation in this dataset, "Systems Analysis and Programming" (job code 030). I again find statistically significant differences by immigrant sending country GDP per capita ( $p < 0.01$ ).

Further, it could also be that U.S. CIS agents, conscious of the U.S. cap of approximately 85,000 H-1B initial employment visas issued in a given year during the five federal fiscal years evaluated in this study, may consciously disadvantage immigrants from the largest sending

countries (India and China) in an effort to reduce strain on the quantity of available visas. To account for this possibility, a regression with the same controls as those present in Model 3 of Table 2 is run on the largest population of initial employment H-1B visa requests that are cap-exempt; those applications describing occupations in college and university education (job code 090) in colleges, universities, and professional schools (NAICS code 611310), totaling 44,110 observations. Results from this analysis show that qualified immigrants from higher GDP per capita sending countries are more likely to be granted visa approvals, even when the quantity of available visas is not a consideration ( $p < 0.01$ ).

Finally, despite the fact that the U.S. CIS H-1B temporary work visa evaluation criteria do not pertain to the health of the U.S. labor market or the relative availability of U.S. citizen workers in a given occupation, it could be that immigrants from specific sending countries might have been affected differently by the 2008 financial recession. The quantity of initial employment visa requests decreased by 20 percent from the year immediately before, to the year immediately after, September of 2008. Further, the limited quantity of initial employment H-1B visas took much longer to be reached (U.S. CIS 2008, 2009). This implies a lower demand for skilled foreign workers after the recession, which may have affected the value of foreign workers' qualifications post-recession. To account for this possibility, I re-run the analyses present in Table 2 for the twelve months prior to, and immediately after September of 2008. Regression results show a positive and statistically significant coefficient for immigrant sending country GDP per capita both directly before and directly after the start of the 2008 recession; however the magnitude of the coefficient did increase in size in the year following the recession. Taken together, these supplementary analyses provide additional support for the main research

propositions pertaining to unequal visa approval outcomes associated with differences in immigrants' sending country level of economic development.

### **Discussion and Conclusion**

The U.S. economy continues to rely on skilled immigrants (NSF 2010), a group that is subject to substantial federal regulation and oversight, but also has been shown to make significant U.S. economic contributions (Wadhwa et al. 2007a; Wadhwa et al. 2007b; Kerr and Lincoln 2008; Hunt 2011). Each year, agents acting at the direction of the U.S. government mediate a key institutional boundary affecting skilled foreign workers, that is, legal access to the U.S. labor market by conferring or withholding work visa authorization. This external review process affects hiring and promotion outcomes at hundreds of thousands of U.S. employers annually. A variety of scholars have argued that destination country laws and immigration policies shape foreign nationals' labor market experiences (Higham 1955; Piore 1979; Portes and Zhou 1993; Soysal 1994: 126; Portes 1995: 24; Alba and Nee 2003:53; Richardson and Lester 2004; Zolberg 2006; Jasso and Rosenzweig 2009; Jasso 2011; Massey and Sanchez 2010). Yet, we are rarely privy to the subtlety of destination country immigration laws or how such policies may affect potential immigrant workers. For the first time in the literature, this study assesses how the individual-level evaluation of immigrant workers, as assessed by agents acting at the direction of the federal government, shapes inequality in skilled foreign workers' ability to migrate, labor market outcomes, and economic assimilation.

This study empirically examines a unique dataset containing employer-, individual-, and occupation-level information on all approved and denied H-1B temporary work visas evaluated by government agents spanning a period of five federal fiscal years. Through the analysis of this data, never before made available outside the U.S. DHS, I assess three theoretical propositions

pertaining to the role of immigrant sending country characteristics in shaping unequal visa approval outcomes. First, my analysis reveals that visa access – a key prerequisite to working in the United States for the majority of foreign nationals who immigrate for employment reasons – may vary systematically based on immigrant workers’ sending country characteristics. Specifically, I find that immigrants seeking initial employment visas from sending countries with higher levels of economic development are more likely to receive approvals, all else equal. Scholars have previously argued that immigrants from sending countries with higher levels of economic development (and thus greater similarity to the United States) tend to receive greater destination country labor market rewards (Chiswick 1978; Borjas 1987; Jasso and Rosenzweig 1990a, 1990b; Tubergen, Mass and Flap 2004). Yet, to my knowledge, no prior study has highlighted that government agents’ visa approval decisions may also disadvantage immigrants from less developed countries seeking entry to work in the United States. Thus, immigrants with the same measured skills but originating from less developed sending countries may not only receive unequal labor market rewards, but may be less likely to be able to participate in destination country labor markets due to higher incidence of visa denials.

Second, I find that immigrants from sending countries with lower levels of economic development that have resided in the United States for a three year period on an H-1B visa and are seeking continuing employment within occupations and employers where they were previously approved are also disadvantaged. While scholars have suggested that destination country experience may reduce initial labor market inequalities among immigrants (Chiswick 1978; Borjas 1988:62; Jasso and Rosenzweig 1990a:237-307), this does not appear to affect government agents’ assessments of immigrants that have accrued three years of domestic work experience on the H-1B visa. This finding may be due to the fact that government agents

charged with visa evaluation do not meet the immigrant worker in person, and thus, they are likely not privy to the specifics of any destination country-specific expertise, language proficiency, or knowledge that cannot be distilled into a submitted visa application.

Given the nature of inequality in this visa approval system, I instead argue that unequal outcomes may be associated with decisions that allow foreign nationals to traverse a key institutional boundary: legal access to a destination country labor market (for a review of literature examining institutional boundaries, see Lamont and Molnar 2002). I find unequal visa approval outcomes associated with sending country level of economic development in visa reviews that confer the ability to work in the United States (initial employment, and continuing employment). Yet, such inequality is not observed for those visa evaluations that shape labor market mobility (change of job or employer) and do not directly affect the immigrants' legal standing in the destination country. This finding suggests that studies seeking to understand the labor market experiences and economic incorporation of skilled immigrants in the United States should attend to key government decisions that affect the legal status of foreign workers, as these institutional boundaries may be important sources of inequality. If these work authorization decisions remain unobserved, findings may be distorted as government visa approval decisions non-randomly shape the immigrant population at risk of labor market participation.

Future work to further explore the role of destination country government and employers in shaping foreign workers' employment outcomes could build upon the findings identified here in several productive directions. One interesting extension pertains to understanding how government decisions regarding foreign workers' visa status might shape these individuals' careers relative to similar U.S. citizen employees within a single organization. The data requirements for such a study would be substantial, involving the collection of individual-level



visa decision outcomes with longitudinal employment data of both U.S. citizens and foreign workers. Yet, such a study would allow for the examination of whether differences in immigrant workers' compensation and career mobility relative to U.S. natives might be shaped by (1) employer willingness to sponsor visa applications, (2) government agent visa approval decisions, or (3) employer-level inequality.

Second, future research may also seek to evaluate government agents' attitudes toward immigrants from specific countries of origin by surveying government agents directly. Such research could examine government agents' approval and denial determinations in a controlled and randomized setting involving fictional visa applications in which immigrant demographic data is manipulated.

Regarding the practical contributions of this research, the unequal visa approval outcomes observed in this uniquely comprehensive dataset raises important questions regarding the fair and efficient administration of federal immigration statutes. Specifically, the empirical findings of this research suggest that discretion afforded to government agents can lead to the inconsistent application of legal mandates. As a result, one potential solution may be to create evaluation criteria that can be more objectively measured. Alternatively, given that immigrant sending country is not a formal review criterion, a one solution is to mask immigrants' observable demographic characteristics (e.g. citizenship) during government agents' review. These applications already do not collect information on immigrants' race or religious orientation. Concealing, or simply not collecting, all immigrant demographic characteristics would likely produce an evaluation process free of the risk that key visa approval outcomes could be shaped by considerations outside of formal U.S. CIS evaluation criteria, such as immigrants' sending country characteristics.

**Table 1. Summary Statistics for Key Dependent and Independent Variables**

Variable	Mean	Percentage of Observations	Percentage Approved
<i>Dependent Variable</i>			
Application Approved		91.5%	Non-Applicable
<i>Immigrant Sending Country Controls</i>			
Ln Sending Country GDP Per Capita	7.87		Non-Applicable
Sending Country Distance in Thousands of Miles	6.62		Non-Applicable
Ln Quantity of Sending Country Applications per Year	7.85		Non-Applicable
Sending Country Gini Ratio	0.36		Non-Applicable
<i>U.S. CIS Evaluation Criteria</i>			
Ln Salary	10.67		
Bachelor's Degree or Higher		99.2%	92.8%
Employment in a "Specialty Occupation"		79.9%	93.0%
Highest Education Field Matches Occ. Requirements		64.3%	93.4%
Immigrant's Highest Degree is Non-Technical		13.7%	92.3%
Employer is a "Willful Violator"		0.2%	82.8%
<i>U.S. Federal Fiscal Year of Application Evaluation</i>			
2005		7.8%	91.9%
2006		21.8%	90.9%
2007		22.5%	93.3%
2008		20.3%	92.7%
2009		17.5%	88.3%
2010		10.1%	91.6%
<i>Immigrant Education Level</i>			
No High School Diploma		0.1%	91.3%
High School Diploma		0.2%	89.3%
Less than One Year of College Credit		0.1%	87.5%
One or More Years of College, No Degree		0.3%	90.3%
Associate's Degree		0.2%	88.7%
Bachelor's Degree		44.5%	91.0%
Master's Degree		39.3%	93.4%
Professional Degree		4.9%	95.2%
Doctorate Degree		10.5%	96.6%
<i>Visa Basis of Classification (Employment Request)</i>			
Initial Employment		47.5%	87.7%
Continuation of Employment, Same Employer		32.0%	95.6%
Change of Job in Previously Approved Employment		3.7%	96.2%
Change of Employer		14.2%	93.6%
Observations (Number of Applications)			1,441,332

**Table 2. Logit Models Predicting U.S. CIS H-1B Visa Approval for Initial Employment**

	(Model 1)	(Model 2)	(Model 3)
U.S. CIS Evaluation Criteria			
Ln Salary	0.115*** (0.002)	0.115*** (0.002)	0.112*** (0.002)
Highest Education Field Matches Occ. Requirements	0.087*** (0.009)	0.085*** (0.009)	0.086*** (0.009)
Immigrant's Highest Degree is Non-Technical	-0.145*** (0.015)	-0.152*** (0.015)	-0.157*** (0.016)
Employer is a "Willful Violator"	-0.446*** (0.073)	-0.430*** (0.073)	-0.435*** (0.073)
Immigrant Education Level [Ref: Bachelor's]			
No High School Diploma	0.147 (0.171)	0.158 (0.178)	0.140 (0.180)
High School Diploma	-0.208* (0.095)	-0.278** (0.097)	-0.283** (0.101)
Less than One Year of College Credit, No Degree	-0.711*** (0.161)	-0.747*** (0.165)	-0.769*** (0.169)
One or More Years of College, No Degree	-0.358*** (0.075)	-0.419*** (0.077)	-0.474*** (0.079)
Associate's Degree	-0.392*** (0.071)	-0.466*** (0.071)	-0.460*** (0.078)
Master's Degree	0.336*** (0.009)	0.347*** (0.009)	0.339*** (0.010)
Professional Degree	0.488*** (0.040)	0.478*** (0.040)	0.471*** (0.041)
Doctorate Degree	0.661*** (0.026)	0.640*** (0.026)	0.627*** (0.027)
Immigrant Sending Country Controls			
Ln GDP Per Capita		0.085*** (0.004)	0.070*** (0.007)
Distance from United States (1,000s of miles)			-0.043*** (8.259)
Income Inequality (Gini Ratio)			0.002 (0.001)
Ln Application volume			0.005 (0.004)
Immigrant World Region [Ref: Canada]			
Africa			-0.060 (0.070)
Asia			-0.130 (0.067)
Australia and Oceania			0.112 (0.117)
Europe			-0.257*** (0.046)
Latin America			-0.303*** (0.046)
Middle East			-0.383*** (0.058)
Occupation, Industry, App Month Fixed Effects	Yes	Yes	Yes
Constant	1.377*** (0.056)	0.805*** (0.064)	1.293*** (0.113)
Observations	663,285	660,806	636,874
Pseudo R-Square	0.07	0.07	0.07

Notes: Standard errors are in parentheses, \*\*\* p<0.001, \*\* p<0.01, \* p<0.05 (two-tailed tests). All models include controls for employer-level characteristics (industry sector and the natural log of the quantity of applications filed by a given employer in a given year), occupation-level fixed effects (Dictionary of Occupational Titles job code), and controls at the level of the government agent review process (the month and year in which an application was reviewed, whether the occupation described is a specialty occupations, whether the immigrant holds a degree in business or the liberal arts, whether the immigrant meets the educational requirements of the profession, and whether the application contained missing or empty fields).

**Table 3. Logit Models Predicting Visa Approval for Various Employment Requests**

	(Model 1: Initial Employment)	(Model 2: Continuing Employment)	(Model 3: Change of Employer)	(Model 4: Change of Job)
<b>U.S. CIS Evaluation Criteria</b>				
Ln Salary	0.112*** (0.002)	0.129*** (0.003)	0.132*** (0.008)	0.137*** (0.004)
Highest Education Field Matches Occ. Requirements	0.086*** (0.009)	0.014 (0.019)	0.058 (0.054)	0.049* (0.021)
Immigrant's Highest Degree is Non-Technical	-0.157*** (0.016)	-0.098** (0.031)	-0.009 (0.088)	-0.094** (0.035)
Employer is a "Willful Violator"	-0.435*** (0.073)	-0.808*** (0.156)	-1.889*** (0.522)	-2.124*** (0.148)
<b>Immigrant Education Level [Ref: Bachelor's]</b>				
No High School Diploma	0.140 (0.180)	0.117 (0.362)	-0.181 (1.273)	0.424 (0.744)
High School Diploma	-0.283** (0.101)	-0.171 (0.187)	0.793 (0.750)	-0.230 (0.328)
Less than One Year of College Credit, No Degree	-0.769*** (0.169)	-0.434 (0.292)	-0.713 (0.798)	-0.075 (0.613)
One or More Years of College, No Degree	-0.474*** (0.079)	-0.134 (0.133)	0.753 (0.628)	0.135 (0.271)
Associate's Degree	-0.460*** (0.078)	-0.201 (0.144)	0.960 (0.721)	0.064 (0.290)
Master's Degree	0.339*** (0.010)	0.052** (0.019)	0.144** (0.055)	0.114*** (0.021)
Professional Degree	0.471*** (0.041)	0.084 (0.071)	-0.174 (0.178)	0.255* (0.099)
Doctorate Degree	0.627*** (0.027)	0.111* (0.044)	0.091 (0.129)	0.226*** (0.061)
<b>Immigrant Sending Country Controls</b>				
Ln GDP Per Capita	0.070*** (0.007)	0.049*** (0.012)	0.010 (0.039)	0.024 (0.018)
Distance from United States (1,000s of miles)	-0.043*** (8.259)	-0.033* (13.194)	-0.017 (40.608)	-0.037 (19.500)
Income Inequality (Gini Ratio)	0.002 (0.001)	0.003 (0.002)	0.007 (0.007)	-0.003 (0.003)
Ln Application volume	0.005 (0.004)	0.053*** (0.007)	0.054* (0.021)	0.007 (0.009)
<b>Immigrant World Region [Ref: Canada]</b>				
Africa	-0.060 (0.070)	-0.069 (0.112)	-0.231 (0.353)	-0.129 (0.169)
Asia	-0.130 (0.067)	0.042 (0.105)	-0.218 (0.325)	-0.026 (0.161)
Australia and Oceania	0.112 (0.117)	0.263 (0.173)	0.071 (0.506)	0.170 (0.264)
Europe	-0.257*** (0.046)	-0.082 (0.071)	0.026 (0.219)	-0.178 (0.112)
Latin America	-0.303*** (0.046)	-0.155* (0.072)	-0.255 (0.231)	-0.240* (0.114)
Middle East	-0.383*** (0.058)	-0.362*** (0.093)	-0.505 (0.283)	-0.367** (0.140)
<b>Occupation, Industry, App Month Fixed Effects</b>				
Constant	Yes 1.293*** (0.113)	Yes 1.283*** (0.206)	Yes 0.794 (0.559)	Yes 1.715*** (0.291)
Observations	636,874	439,042	50,894	197,059
Pseudo R-Square	0.07	0.04	0.05	0.06

Notes: Standard errors are in parentheses, \*\*\* p<0.001, \*\* p<0.01, \* p<0.05 (two-tailed tests). All models include controls for employer-level characteristics (industry sector and the natural log of the quantity of applications filed by a given employer in a given year), occupation-level fixed effects (Dictionary of Occupational Titles job code), and controls at the level of the government agent review process (the month and year in which an application was reviewed, whether the occupation described is

a specialty occupations, whether the immigrant holds a degree in business or the liberal arts, whether the immigrant meets the educational requirements of the profession, and whether the application contained missing or empty fields).

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