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Abstract

This paper investigates the characteristics of educated immigrants' occupational choices using microdata from the 2000 and 2010 Japanese censuses. Considering the practices of the Japanese labor market, we assume that educated immigrants who missed the timing of "port of entry" just after graduation find it difficult to join individual firms' internal labor markets, and such people have little choice but to work in Type I (professional or technical) occupations using general skills or their country-specific skills to complement Japanese workers. In contrast, we assume that educated immigrants who have lived in Japan for relatively longer or Japan-educated immigrants can choose either Type I or Type II (managerial or clerical) occupations and commit to the Japanese employment system (JES). Using data analysis, we observe striking differences between Type I and Type II immigrants. Immigrants from developed countries are more likely to work in Type I occupations while those from East Asian countries, such as Korea and China, are more likely to work in Type II occupations. This variation can be partly explained by the industry in which they concentrate, their period of stay in Japan, and their place of education (Japan or otherwise). The different nature of embeddedness in the JES also affects the networks on which workers of each type depend when they are looking for employment in a given region. While Type I immigrants are more likely to obtain a job in an area with a greater number of Japanese workers in the same industry as compared with Type II immigrants, they are less likely to work in an area with a larger population of immigrants of the same nationality. Instead their decisions on occupational location have been more affected by a highly-skilled network regardless of nationality. Also, for Type I workers, the highly-skilled immigrants' network has contrasting effects depending on economic conditions.

Keywords: Highly skilled immigrants, Professional occupation, Japanese employment system
JEL classification: J15, J44, J61

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I. Introduction

The effect of immigration on the labor market has been intensely debated and a consensus regarding the positive effects of educated and highly skilled immigrants on productivity and innovation has begun to emerge. A recent economic analysis suggests a virtuous cycle by which educated immigrants enhance a country's prospects for innovation, which in turn makes the country attractive to other immigrants (Grogger and Hanson 2015). For instance, immigrants have been shown to contribute directly to total science and engineering (SE) employment and invention (Kerr and Lincoln 2010). The Japanese government has therefore been welcoming highly skilled immigrants, setting more generous standards for obtaining worker visas than other countries do (Tsukasaki 2008), in the expectation that these immigrants will contribute significantly to innovation and create new demand and employment in an era of a population decline. However, of the 2.12 million foreign residents (1.67% of the total population[1]) at the end of 2014, as reported by the Statistics on Foreigners Registered by the Ministry of Justice, only about 200,000 are classified as "highly skilled professional."

It is claimed that Japan lags behind other developed countries in the global competition for highly skilled workers, its policies unsuccessful in promoting either quantity or quality. One reason might be the language barrier. In this paper, however, we suggest that occupational choices for immigrant workers are also limited by hiring practices intended to induce new Japanese college graduates to join companies simultaneously once a year. These practices are a feature of the Japanese labor market, called the Japanese Employment System (JES).

Studies on the contributions of skilled immigrants, such as those by Hunt and Gauthier-Loiselle (2010), Hunt (2011), and Bosetti et al. (2015), measure the extent to which immigrants encourage innovation or productivity in the United States and Europe.[2] Hunt (2011), for example, shows that immigrants entering the US on a student/trainee or temporary working visa have greatly

[1] Among the member countries of the Organization for Economic Co-operation and Development (OECD), along with Korea and Mexico, Japan's foreign resident ratio has been quite low for decades.

[2] For related research on these issues, see Borjas and Doran (2012), Stuen et al. (2012), Paserman (2013), and Moser et al. (2014).

surpassing natives with respect to patenting and publishing. Moreover, as shown in Borjas (1998), Munshi (2003), Bayer et al. (2008), Patel and Vella (2013), and Grogger and Hanson (2015), foreign immigrants' choice of occupation can be profoundly affected by an area's labor market conditions and the number of other immigrants of the same nationality living there.[3] Most Japanese studies, including those by Murakami (2006, 2009, 2010) and Takenaka et al. (forthcoming),[4] are valuable empirical studies but, being based on one-time cross-sectional surveys, do not illuminate the overall trend of what kinds of jobs highly skilled immigrants do in Japan and how well they perform.[5] This study contributes to the literature by identifying the occupations chosen by highly skilled immigrants and by determining the network effects associated with particular occupations, using more detailed data that includes a sample of immigrants from the 2000 and 2010 Population Census and considering the nature of the Japanese labor market. Such insights are important when determining which immigration policies can increase productivity and encourage innovation.

In defining highly skilled immigrants, we need to consider how the JES draws the boundary of highly skilled occupations. In many countries, it is common to begin a career as a manager or a professional soon after university graduation, but in Japan, new graduates begin their careers, after simultaneous recruitment, as clerical or sales workers for several years. They next obtain firm-specific skills through internal job rotation, whereupon some are selected to become managers (Figure 1).

[Figure 1]

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[3] Ioannides and Loury (2004) provide a survey of the literature on the relation between job search and networks. However, their analysis is not limited to immigrants. Edin et al. (2003), Damm (2009), and Beaman (2012) indicate the importance of networks and ethnic enclaves in occupational outcomes for immigrants.

[4] Murakami (2006, 2009, 2010) examines the motivations of foreign researchers in SE. Edamura and Inui (2016) show that diversity of researchers has resulted in more patent applications in Japanese firms, although the authors do not consider ethnic diversity but only gender and educational diversity. Takenaka (forthcoming) has considered how foreign immigrants experience economic mobility and assimilate into Japan's labor market.

[5] One exception is Korekawa (2015). Conducted with a motivation similar to that of this paper, his study compares the probability of Chinese and Brazilian men getting white-collar jobs with that of Japanese men with the same characteristics, using data from the 2010 population Census.

Simultaneous recruitment and internal promotion of educated workers are distinctive characteristics of the JES. If new graduates miss the so-called "port of entry" just after graduation, it becomes difficult to join the internal labor market later. Given these practices, the number of highly skilled workers with a bachelor's degree or higher in Japan would be underestimated if only workers engaged in professional and administrative occupations were defined as highly skilled, as is the international standard. In Japan, clerical occupations should also be considered to include highly skilled, educated workers.

I classify occupations for the highly skilled into two categories, depending on their embeddedness in the JES. Type I occupations are professional and technical and are less embedded in the JES, whereas Type II occupations are managerial, official, and clerical and are more embedded in the JES. Type I occupations are mainly those that use a worker's general or country-specific skills. Type II occupations include those more closely linked to the internal labor market. We find that the distribution of immigrants' occupations and the job networks that immigrants depend on when they search for a job differ for these two types.

The analysis revealed that immigrants in Type I professional and technical occupations are more likely to be younger, stay in Japan for a shorter time, come from a higher-GDP country (the US and the UK), work in IT and service industries, and have a degree from a non-Japanese university. The implication is that they use human capital accumulated through their rich experience abroad. In contrast, immigrants in Type II managerial or clerical occupations are more likely to be older, come from Korea and China, work in the financial and public sectors, and have a Japanese degree. This implies that they use their interactive and communication skills acquired through education and work experience in Japan. For immigrants of almost any nationality and in almost any industry, the probability of working in either a Type I or Type II occupation increased between 2000 and 2010, implying that the distribution of educated immigrants' occupations in Japan shifted toward the highly skilled.

An analysis of network effects indicates that new immigrants in Type I and Type II occupations use different networks to search for a job. In 2000, immigrants in Type I occupations were more likely to choose a workplace having fewer same-nationality immigrants and more immigrant skilled workers regardless of nationality. This suggests that Type I workers, with slightly fewer ties to the Japanese labor market than Type II workers, were more likely in 2000 to

depend on networks of highly skilled immigrants than on ethnic networks when job-hunting. In the 2010 Census, however, although the negative effect of the compatriot network is still persistent, the positive effect of highly skilled immigrant networks has disappeared. It even became negative after the Great Recession.

From the seventeenth to the nineteenth century, Japan had accepted foreigners as highly paid temporary specialists, such as engineers and teachers, to provide knowledge and skills that Japanese workers lacked. At that time, they were called *oyatoi-gaikokujin*, which means "foreign, highly skilled helpers," and were not expected either to assimilate into Japanese society or to have Japanese language and culture skills. Today's Type I immigrants, who stay in Japan temporarily and provide skills in which the Japanese are deficient, can be considered contemporary *oyatoi-gaikokujin*.

II. Backgrounds of Occupations That Require Highly Skilled Immigrants and the Japanese Employment System

The occupational classification used in the Japan's Population Census is based on the Japan Standard Classification of Occupations (JSCO), which basically complies with the International Labour Organization's International Standard Classification of Occupations (ISCO-08). Occupations are classified in ISCO-08 according to skill levels which are, in turn, classified according to education levels. Thus, occupations approximately correspond to education levels.[6] Of 12 major groups in the JSCO, the category of "Professional and Engineering Workers" applies to those engaged in fields requiring advanced knowledge of science and technology and those engaged in professional fields, such as medical care, education, law, religion, and art. By definition, workers in this category are professional and highly skilled. "Administrative and Managerial Workers," who plan business strategies and manage complex organizations, are also classified as highly skilled workers according to skill and education level.

[6] For example, professionals, major group 2, are at skill level 4 required by the first or second stage of tertiary education.

However, ISCO-08 and JSCO differ in certain respects on this issue. In particular, the characteristics for inclusion as clerical workers differ, reflecting differences in the job concept and the labor market. For example, workers engaged in management, business, and financial occupations are classified as Administrative and Managerial Workers in the US, but in Japan, workers below the level of director are classified as Clerical Workers even if they engage in a job such as planning or management.

Under the JES, workers with college degrees are typically hired immediately after graduation, receive training on the job, and remain with the same employer until their retirement[7] (Hashimoto and Raisian 1985). In other words, new college graduates join companies *en masse* as management candidates on April 1, the beginning of the fiscal year.[8] Through job rotation programs early in their careers, some are selected through annual evaluations to be promoted to administrative and managerial positions. In other words, managers are usually internally grown rather than headhunted from outside. In this process, rising stars are rotated through key positions at headquarters with strong internal influence, such as planning, marketing, and human resources (HR) (Jacoby 2005, Yamashita 2008).[9] During these rotations, they are classified as clerical

[7] The JES has long been known for lifetime employment, a steep tenure-earnings profile, and enterprise unionism. Lifetime employment is better understood as a long-term commitment between workers and employers rather than as a permanent employment contract (Ono 2010). Although some observers say that the system has been eroding, numerous studies report that lifetime employment practices are resilient and stable among core workers regardless of the long-term stagnation of the Japanese economy after 1990s (Chuma 1998, Kato 2001, Ono 2010, Kambayashi and Kato 2011). Women were mostly excluded from permanent employment before the 1980s (Cole 1979). Since the 1990s, an increasing number of women have been embedded in the JES, but only those with a bachelor's degree or higher who work in the same career tracks as men.

[8] Job rotation within and between workshops was common in Japanese firms by the late 1970s (Marsden 1999).

[9] For example, Japanese managers hoping to become board members traditionally viewed a posting to the headquarters HR department, particularly at an intermediate stage in their careers, as advantageous because HR was a good place to meet and network with managers from all the departments and view the "lay of the land." The typical career pattern for senior HR managers was that of being generalists with exposure to multiple functions. Employees in HR are more likely to have been exposed to accounting, finance, and strategic planning. This stands in sharp contrast to the Anglo-American model, wherein HR managers are professionalized and specialized, but have scant exposure to other specialties and rarely become CEOs or board members (Jacoby 2005). Moreover, in Japan, employees assigned to HR are usually selected from other

workers. Thus, it might be better to regard "Clerical Workers" in Japan as manager candidates and highly skilled workers[10] and to include clerical occupations among those requiring highly skilled employees.

In fact, Figure 1 clearly illustrates a difference between college-educated workers' occupational choices the US and Japan. CPS Basic 2010 confirms that many Americans with a bachelor's degree engage immediately after graduation in professional and related occupations and/or in management, business, and financial occupations and that the share of each occupation is stable across age groups. In Japan, however, the proportion of managers and officials in their 20s and 30s is very low and gradually increases only after age 40, just as we would expect since Japanese graduates are commonly required to obtain broad experience through job rotations as clerical workers in their 20s and 30s, only being promoted to managerial positions in their 40s and 50s.

Thus, if we define only professional and technical occupations and administrative and managerial occupations as requiring highly skilled individuals and do not consider clerical occupations as requiring highly skilled individuals—in accordance with ISCO and without regard to the JES—we would seriously underestimate the number of young, educated, and highly skilled workers in Japan. In this paper, therefore, I include clerical occupations amongst highly skilled occupations and classify occupations into three categories:[11] Type I (professional and technical), Type II (administrative, managerial, *and clerical*), and others (lower-skilled). Immigrants choosing Type I or II occupations are considered to be highly skilled workers.

The principal labor economics studies on which this classification relies are Doeringer and Piore's (1971) work on internal labor markets and Williamson's (1975) discussion of job

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departments on the basis of their aptitudes in the HR department. and their role as potential managers (Yamashita 2008).

[10] It is unclear, though, how many of those clerical workers can be assumed to be highly skilled candidates.

[11] Census respondents choose one occupation from 10 categories in 2000 and from 12 categories in 2010. To enable comparisons between the two censuses, the categories of construction and mining workers and carrying, cleaning, packaging, and other such workers in 2010 are combined into production process and laborers, in accordance with the classification in 2000.

idiosyncrasy. But given that their research is mainly based on the US labor market, it is necessary to adapt it for the JES. First, in an internal labor market in which jobs are relatively idiosyncratic and firm-specific, outside access to these jobs is only allowed through specific "ports of entry." In the JES, this is the simultaneous recruiting of new graduates. For these newly hired clerical workers (future managerial candidates), internal training and promotion follow.[12] Therefore, we assume that managerial and clerical occupations are more likely to be embedded in the JES and we call people in these occupations Type II workers. It is an important characteristic of Type I occupations, however, that professional and technical personnel are usually hired for jobs at a skill and pay grade commensurate with their education and experience, with little or no opportunities for internal mobility. Since they are highly professional and fungible, they are less likely to be embedded in the internal labor market. A widespread bidding situation emerges if their degree of uncertainty is not substantial and a company can then employ the necessary workforce by market contracting.

I therefore propose two hypotheses to explain the characteristics of highly skilled immigrants by occupational type. First, immigrants who are less familiar with the JES or have human capital tied to general or portable skills are more likely to choose Type I occupations while immigrants who are more familiar with the JES or have human capital tied to a medium- or long-term stay in Japan are more likely to choose Type II occupations in order to use the skills in which they have a comparative advantage. Second, highly skilled worker in these two groups rely on different job-seeking networks. Since no detailed literature has ever analyzed highly skilled immigrants' occupational choices explicitly in relation to the JES, I explore it using data of educated immigrant workers in the 2000 and 2010 Japanese Population Census.

III. Data and Descriptive Statistics

[12] Doeringer and Piore (1971) illustrate that, in the US, a mixed system that uses both hiring and internal promotion is common for managerial and clerical workers. In the JES, characterized by the simultaneous recruiting of new graduates and working for a longer tenure, filling such posts externally is uncommon.

The main data used for empirical analyses are responses to the 2000 and 2010 Population Census from foreign respondents who were 22–64 years old, had a college education, and were working in Japan.[13] The Population Census covers the entire *de jure* population in Japan, including foreigners, as of October 1 of the census year. Its advantages include having a large sample size and information on an individual's nationality, industry, occupation, marital status, education level, place of residence, and place of residence five years previously.[14] The Population Census is conducted every five years, although some questions, such as those regarding education and migration, are only asked every 10 years.[15] The information on education and migration being vital to this study, I use the 2000 and 2010 Population Census. The sample is limited to employed respondents with a college degree or higher because the distribution of immigrant professionals indicates that almost all highly skilled workers have college education.[16] This data will help in focusing on highly skilled immigrants who stay in Japan for work rather than for education or other reasons.

Table 1 gives summary statistics on the 2000 and 2010 Population Census. Foreigners are classified into nine nationalities in decreasing order of numbers: Korea, China, the Philippines, Brazil, the US, Peru, Thailand, the UK, and others.

[Table 1]

13 Although a disadvantage of the Population Census is that it has a lower capture rate for foreigners' data than the Ministry of Justice's Statistics on Foreigners Registered in Japan (Ishikawa 2005), this is counterbalanced by the advantages of using micro data obtained from the Statistics Bureau of the Ministry of Internal Affairs and Communications.

14 The Population Census suffers some limitations. It does not include variables that indicate job quality (i.e., wages or job details), thus limiting the knowledge of where a foreign worker fits in the distribution of his or her occupation and industry. It also does not distinguish between those with undergraduate and graduate degrees.

15 There are two kinds of the Population Census: large-scale and simplified. A census with a zero as the last digit of the survey year is large-scale and one with five as the last digit of the survey year is simplified. The main difference is the number of questions. The simplified census asks about the population's basic and economic characteristics; that is, gender, age, marital status, industry, and occupation. The large-scale census also asks about the population's migration and education.

16 The self-employed, students, and those working while attending school are excluded from the sample.

We see that the average education level of immigrants rose between 2000 and 2010, with the percent with a college degree or higher rising from 25.7% to 30.3%. However, there is large variation across home countries in both censuses. Immigrants from developed countries like the UK and the US have the highest education levels—higher than that of Japanese citizens. Latin American countries, however, present a sharp contrast; only 10.4% of immigrants from Brazil had college or higher degrees in 2010. Such variation can be attributed to different average education levels in the home countries and to the selection of immigrants from either the highly educated or the undereducated populations of their native countries (Matto et al. 2008).

The proportion of immigrants who had been living abroad five years earlier declined from 2000 to 2010 for every country but Korea, for which the proportion rose. Koreans are one of the largest immigrant groups in Japan. The 2010 Population Census found that only 11.5% of Korean immigrants had lived outside Japan five years earlier. This is a reflection of their historical background: many Koreans are Japanese-born and belong to the second, third, or fourth generations of Korean immigrants due to Japan's annexation of the Korean Peninsula during 1910–1945.[17] The increase in immigrants' average age and marriage rate also supports their settlement in Japan.

Table 1 also shows the proportion of Type I and Type II immigrants, respectively, by country of origin. Even among immigrants with a college degree or higher, there is a large dispersions of the proportion of highly skilled workers across nationalities. The proportions of Type I immigrants from the US and the UK clearly stand out from those of other countries. In total, 40.9% of educated immigrants were classified as Type I and 17.9% as Type II in 2010. Considering that in 2000, these numbers had been 38.5% and 17.1%, respectively, it is clear that educated immigrant workers in Japan are now more likely to engage in occupations requiring highly skilled workers.[18]

[17] Although the Population Census cannot determine the exact number and ratio of immigrants with ties to "old-comers," the number of these "old-comers" has certainly been decreasing for decades due both to their naturalization in Japan and to natural population decline.

[18] For educated Japanese workers, these percentages were 30.0% and 32.3%, respectively, in 2010.

It is likely that substantial differences in the ratio of highly skilled immigrants across countries arise due to differences in the industries in which they work. Figure 2 illustrates the number of educated workers by nationality and industry in 2000 and 2010. To make the data from the two censuses comparable, 21 industries in the 2010 Population Census are grouped into nine categories used in the 2000 Population Census. There are substantial differences in the distribution of workers by industry between each country of origin. While people from China are broadly distributed into each industry, people from the US and the UK and those from Brazil and Peru are mainly concentrated in the service and manufacturing industries, respectively. Many of the workers from the US and the UK are language teachers. Due to the Great Recession in 2008 and the subsequent economic depression, the number of workers from Brazil and Peru in the manufacturing industry decreased by half between 2000 to 2010.[19]

[Figure 2]

IV. Empirical Analysis

A. Individual Determinants of Highly Skilled Occupations

In the first step of the analysis, individual immigrant workers' probability of engaging in highly skilled occupations is measured after controlling for their attributes. I used a multinomial logit model to estimate the probability of working in highly skilled occupations for educated immigrants separately for each census. Table1 shows that the percentage of immigrants with at least a college degree increased from 25.7% to 30.3% over the 2000s. This upward shift in educational attainment is why the multinominal logit was estimated separately for the 2000 and 2010 Population Census, thus enabling a comparison between the distributions of highly skilled occupations by country and industry between 2000 and 2010.

The model specification for occupational placement is given by

[19] Most of them were laid off immediately following reduction in labor demand because they were fixed-term contract workers.

$$prob(Y_i = j) = \frac{e^{\beta_j x_i}}{\sum_k e^{\beta_{kj} x_i}}, \quad (1)$$

where Y_i, the dependent variable, is the occupational choice for immigrant *i* and *j* is one of the three occupational categories: Type I, Type II, and other. Dummies for industry, nationality, and prefecture of residence are included as regressors in addition to demographic controls such as gender, age, and marital status. Standard errors are clustered by country of birth.

The advantage of logit models is that conditional probabilities of specific outcomes can be calculated from the estimated coefficients (Mattoo et al. 2008). As shown in Table 1, considering the wide variations in age and gender across countries of birth, a 30-year-old man is taken as a hypothetical individual to calculate the probability of being in a specific job category. Figure 3 presents the estimated probabilities from the model that incorporate individual characteristics broken down by nationality and industry. They show the probabilities of a 30-year-old man obtaining a Type I or Type II job in 2000 and 2010 separately.

It is evident from Figure 3a that probabilities of being classified in each category vary significantly across country of origin. A 30-year-old man from the US or the UK has a higher probability of engaging in professional (Type I) occupations than one from the Philippines, Brazil, or Peru. For all nationalities, the probabilities of engaging in professional occupations were higher in 2010 than in 2000. Results for Type II workers were somewhat different. Immigrants from East Asian countries such as Korea and China have relatively high probabilities of engaging in Type II jobs. A 30-year-old man from Korea or China has a 19.1% and 16.8% probability of obtaining a Type II job, respectively, while the probability is only 4.4% for a Filipino of identical age, gender, and education. Some countries show a reduction from 2000 to 2010 in the probability of working in Type II occupations.

[Figure 3]

The reasons for the observed diverse distributions in highly skilled occupations across countries can be partly understood through an analysis by industry. Figure 3b presents the probabilities of obtaining Type I and Type II jobs for a 30-year-old man by industry. Immigrants in certain industries, such as IT and service, have a relatively high probability of finding professional (Type I) jobs. For instance, the probabilities of obtaining Type I jobs in the service

industry are around 70%, in both 2000 and 2010. As illustrated in Figure 2, the service industry—followed by the IT industry—has high concentrations of educated workers from the US and the UK. Thus, the high probabilities of immigrants from these countries obtaining Type I jobs can be partly attributed to the fact that they work mainly in the service and IT industries. The low probabilities of those from Brazil and Peru obtaining Type I and Type II jobs are similarly linked to the fact that they predominantly concentrate in the manufacturing industry, where the proportions of Type I and Type II are low. Most are production-process laborers, employed as subcontract workers; they are not involved in the JES and do not accumulate the human capital needed to assume managerial and technical positions.[20] The large variation in the likelihood of obtaining skilled jobs among immigrants with similar education levels but from different countries may also suggest that nominally identical education levels from different countries translate into different human capital levels and job placements (Mattoo et al. 2008).[21] In other words, the skills of immigrants from certain countries may be underutilized or undervalued in Japan.

Another striking feature of the results in Figure 3b is a more than six-fold increase in the probability of working as a Type I worker in the IT industry, from 10.6% in 2000 to 69.1% in 2010. In contrast, the probability of working as a Type II worker in the IT industry decreased by half during the same period, although the number of workers increased. These facts are partly attributable to the active recruitment of new graduates after modifications in the immigration policies for IT engineers.[22] In fact, the number of immigrant workers with IT degrees from China, Thailand, and the Philippines increased by factors of 10.3, 4.4, and 4.2, respectively, in that decade. The increase in the labor supply of IT workers and their shift from Type I to Type II workers could have also occurred simultaneously.

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[20] Many educated Latinos face downward mobility from non-manual to manual occupations in Japan (Takenoshita 2006). Such downgrading of Latin American immigrants is also observed in the US labor market (Redstone Akresh 2006).

[21] Ferrer and Riddell (2008) find that in Canada, immigrants from the US and the UK receive returns similar to those of native-born Canadians. However, immigrants from other regions generally experience lower returns to their years of schooling.

[22] To hire a sufficiently qualified IT workforce, the Japanese government has established a mutual recognition agreement scheme with 10 Asian countries' IT engineer examinations—including those of Korea, China, the Philippines, Thailand, and India—since 2001 to relax entry visa requirements.

Considering the coefficients of other variables (tables are omitted here), the probability of unmarried and younger individuals obtaining Type I jobs is significantly higher. The fact that younger foreigners have a higher probability of being professional (Type I) workers in Japan is not consistent with studies about immigrant assimilation in other countries.

B. Two Occupational Types and the Japanese Employment System

The previous section illustrates that the probability of foreign immigrants working in highly skilled occupations varies widely according to nationality and industry even among those with the same educational attainment. This can only partly be explained by industrial distributions.

One reason for each type's different distributions across countries may be their different degree of embeddedness in the JES. According to the survey, many Japanese firms expect educated immigrant employees to fully comply with the JES; that is, to graduate from a Japanese university and work just as well as Japanese-educated workers (JILPT 2013). Since firms with JES characteristics require a much stronger commitment to the firm than Anglo-American firms do, they might attach more importance to human capital such as Japanese language skills and an understanding of Japanese corporate culture. If we conclude from our discussion of the internal labor market that Type II workers are more intimately related to the JES, foreign workers who have stayed in Japan longer have a higher probability of working in Type II occupations than in Type I occupations. Alternatively, owing to self-selection, only those who fit the JES end up staying long-term in Japan. In contrast, typical Type I jobs might require skills that Japanese or Type II immigrant workers lack. Thus, even immigrants who stay in Japan for a shorter period can find Type I jobs due to their specific skills.

To examine this hypothesis, it is necessary to know when the immigrants in our sample first entered Japan. Since the Population Census does not record entry date, I use the information it does have about place of residence five years previously, which at least tells us whether or not a foreigner lived in Japan five years earlier. The sample was divided into individuals who had been living in Japan five years before the census year and those who had lived abroad then. An immigrant who lived in Japan both at the time of the census and five years previously can be

assumed to be a middle- or long-stay immigrant and thus more familiar with the JES than other immigrants.

The result in Figure 4, which separately estimates the possibilities according to the place of residence five years earlier using the 2010 data, confirms—as expected—that educated immigrants who were abroad five years earlier have a higher probability of engaging in Type I occupations for all countries of origin. On comparing the cross-country pattern for Type II jobs between the two groups, the result is quite different. Immigrants from all countries, except Thailand, who were in Japan five years before the census year showed a higher probability of being Type II workers as compared with immigrants who were abroad five years ago. Using the 2000 data leaves the estimate patterns substantially unchanged and the same patterns are mostly observed in the analysis by industry. Therefore, immigrants who have become more involved in the Japanese labor market appear to be working in Type II occupations and are thus embedded in the JES.

[Figure 4]

However, this result might be considered less precise because knowing where an immigrant live five years ago is not the same as knowing where his or her core human-capital attributes were formed. For an immigrant who obtained his or her education mainly in Japan but was abroad five years ago, for example, we cannot identify where he or she accumulated human capital to engage in his or her current occupation in Japan. On the other hand, as shown in many previous studies, immigrants' place of schooling affects their human capital levels.[23] This would be especially true for young workers because they have not accumulated sufficient human capital levels through OJT. In short, the place of schooling could be another factor contributing to differences in occupational type. Therefore, the next analysis is restricted to a sample of the Population Census respondents who were 24–27 years old at the time of the census. Lacking direct knowledge of where immigrants obtained their degrees, I assume that those who did not live in Japan five years prior

[23] Friedberg (2007) showed this for Israel; Bratsberg and Ragan (2002) and Redstone Akresh (2006) for the US, and Ferrer and Riddell (2008) for Canada. The consistent result is that highly developed countries value schooling more than other countries. However, since no information is available on immigrant's wages in Japan, which are usually used as an index of educational returns, the likelihood of engaging in Type I and Type II occupations is compared instead.

to the census year were probably students *abroad* and acquired their job skills through their experiences in that foreign country. These individuals are considered to be "foreign educated." I assume that those who were in Japan five years prior to the census completed their university education in Japan and they are thus "Japan educated." Furthermore, if "Japan educated" immigrants obtained a job in Japan after graduation, they would be more familiar with the JES and many of them might, like native-educated workers, begin their careers with Type II jobs.[24] Table 2 presents the number and percentage of "Japan educated" and "foreign educated" immigrants by nationality. This tendency is completely consistent with Murakami (2010).[25]

The estimation result shows that the cross-country variation pattern is mostly preserved. The probability of Japan-educated immigrants working in Type I jobs is lower than that of foreign-educated immigrants across all countries. For example, in 2010, a Japan-educated immigrant from Korea had an 18.2% lower probability of being a Type I worker when compared with immigrants with foreign education; for an American, the probability was 28.2% lower. In contrast, the fraction of Japan-educated workers in Type II jobs was 3–11% higher than that of foreign-educated workers for all countries except Brazil.

These results demonstrate that immigrants who have lived in Japan for relatively shorter durations and foreign-educated immigrants have a higher probability of working in Type I jobs using human capital accumulated abroad while those who have lived in Japan longer and those who are Japan-educated have a higher probability of working in Type II jobs using human capital accumulated in Japan. Thus, it is likely that Japanese firms strategically use Type I and Type II immigrant workers differently, expecting more Type II workers to commit to the Japanese labor market and expecting Type I workers to be complementary to Japanese workers.

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[24] If human capital is imperfectly portable, the national origin of an individual's education and experience is a crucial determinant of his or her value in the labor market (Friedberg 2000).

[25] She confirms, through her original survey, that scientists and engineers from Europe and North America settle in Japan after they obtain doctoral degrees in their own countries while most of those from Asian countries come to Japan to study in Japanese graduate schools and stay in Japan after graduation for further research.

C. Prefectural-level Determinants of Highly Skilled Immigrants

Above discussion shows that workers' country of origin, industry, and period of stay in Japan have influences on occupational choices between Type I and Type II. This section will be devoted to the discussion of differences in immigrant's decisions on the place of work between both type of workers. Occupational choice is not based purely on comparative skill advantages but also on location, which can be due to a network effect (Patel and Vella 2013). For example, some regions in the US are attracting more highly skilled immigrants and producing more patents (Hunt and Gauthier-Loiselle 2010, Kerr and Lincoln 2010). Joining networks is extremely important for immigrants; for example, it can lead to better employment opportunities and higher productivity. In Japan, Nakamura et al. (2009) show that foreign laborers tend to settle in regions where the ratio of foreign laborers is already high, although the authors do not classify foreigners by skills.

To explore which regional factors affect immigrants' choice of occupation, I focus on new arrivals to a region ("movers")[26] and estimate a linear probability model of movers working in Type I occupations using a reduced-form framework closely related to that of Patel and Vella (2013):

$$Pr(I_{ijpst} = 1) = \alpha + \gamma_1 Y_{nps,t-5} + \gamma_2 Y_{jp,t-5}^{estab} + \gamma_3 H_{ps,t-5} + X_{it}\beta + \varepsilon_{ijpst},$$

where I_{ijpst} is an indicator function denoting that immigrant *i* from country *j* who engages in industry *s* in prefecture *p* chooses a Type I occupation in time period *t*. It equals 1 if an individual works in a Type I occupation and 0 if an individual works in a Type II occupation. The independent variable $Y_{nps,t-5}$ from the Population Census is the logarithm of the number of Japanese workers in industry *s* in prefecture *p* five years prior to the census for time *t*. This captures the propensity of industrial agglomerations in that area to employ workers. $Y_{jp,t-5}^{estab}$, the logarithm of the number of people from country *j* working in prefecture *p* five years prior to the census year—from the Statistics on Foreigners Registered in Japan—captures a compatriot network effect. The alternative

[26] Immigrants moving within a city might not have changed jobs. Thus, movers are limited to those who move from abroad or from another city/prefecture. The reason for relocation may be family issues as well as getting or changing a job, but the Population Census does not ask for a reason.

to a regional network of immigrants from a particular country is a network of highly skilled immigrants working in Type I and Type II occupations. The variable $H_{ps,t-5}$ is the logarithm of the number of highly skilled foreigners in prefecture p, also from the Statistics on Foreigners Registered in Japan. This variable captures networks of highly skilled foreigners regardless of their country of origin. For these three variables, I use the number of people in a prefecture rather than the proportion because the percentage of immigrant workers in Japan is very low. Several individual characteristics, such as gender, age, and marital status, are also included. The model contains indicator functions for an individual's country of origin and for the prefecture in which he or she works. The former are likely to capture any nationality preference within an occupation while the latter are included to capture unobserved demand effects. Finally, ε_{ijpst} is assumed to be a zero mean error term. To save space, the coefficients for the demographic controls, birth country, and industry dummies have not been reported. Standard errors are clustered by country of birth.

All parameters are interpreted as the effect on Type I workers as compared with Type II workers. Here, the study examines whether each network effect that affects an occupational choice affects Type I and Type II workers differently. For example, if γ_1, the coefficient of Y_{npst}, is positive and significant, it indicates that Type I workers are more likely than Type II workers to obtain a job in an area that already has many Japanese workers. In contrast, no significance for each parameter implies that Type I and Type II workers do not show different preferences in their choice of a working place. The expected signs of coefficients are ambiguous because Type I workers might depend more on their networks, being less familiar with the Japanese labor market, or because Type II workers are more likely to be well-embedded in the JES and have job-search networks based on their long-term work experience in Japan.

Table 3 presents the estimation results for 2000 and 2010 separately. Columns (1) and (4) show results for the full sample. The coefficient of the effect of the number of Japanese in an industry and prefecture are 0.012 in 2000 and 0.115 in 2010; only the 2010 result is significant. Thus, working in a Type I occupation, rather than a Type II occupation, is positively associated with regional industrial agglomeration.

[Table 3]

Next, considering the result in the second row, Type I movers are no more or less likely than Type II movers to work in a prefecture with a larger population of compatriots. The coefficients are significantly negative and similar in the two census years. A larger number of compatriots who have been living in the same prefecture for at least five years decreases the probability of employment in Type I occupations. Type I movers may thus be less dependent on their ethnic networks. While many studies, such as Munshi (2003), have shown how membership in a social network can be advantageous for immigrants' labor market outcomes, this result is not consistent with them.

Why are Type I movers less dependent on their ethnic network in Japan? One possible reason is that they depend on some other network, such as a network of foreign professionals in a particular type of job or industry. Another possible reason is that Type I movers do not need to rely on an informal ethnic network because they have easier access to the public and private formal recruitment system.[27] However, consideration of formal network types is beyond the scope of this study.

As an alternative to an ethnic network, this study develops a variable for the number of highly skilled foreigners to capture the highly-skilled-network effect in the above specification. If new Type I immigrants are following earlier highly skilled immigrants and finding jobs in the same regions, their occupational location decision might have been shaped by a highly-skilled-network effect, which is different from a compatriot-network effect. Using a highly skilled network might be especially important for skilled immigrants with few compatriots, because it could benefit them if it leads to better jobs without dependence on compatriot networks. This result is shown in the third row of the table. The biggest change between censuses involves the coefficients of the number of highly skilled immigrants, which change from positive in 2000 to negative in 2010. Thus, working in Type I occupations was more likely among immigrants in a prefecture with a larger population of foreign highly skilled workers in 2000 but not in 2010.[28]

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[27] Labor market networks based on residential proximity are more important in determining the place of employment for the less-skilled (Hellerstein et al. 2011).

[28] When this network variable is divided into professional occupations and clerical and management occupations, the result does not change.

The differences between the highly-skilled-immigrant network effects in 2000 and 2010 seem to be caused by differences in demand elasticity for Type I and Type II occupations: Type I occupations are supposed to have larger elasticity than Type II occupations. An ethnic network can help recruitment when demand for highly skilled foreign workers surpasses supply. However, once that demand is saturated in a recession, larger networks can lead to heightened competition as more individuals compete for the limited available jobs. Japan's demand for foreign laborers was relatively stable throughout the recession known as the "Lost Decade," but the Global Financial Crisis caused a steep drop between 2000 and 2010.[29] It is possible that in the 2000s, despite the recession, Type I professionals with general skills and/or foreign-specific skills were still required as Japan tried to overcome the recession by expanding foreign demand. But after the Global Financial Crisis, the decline in foreign demand might lead to suppress demand for Type I professionals.[30] Moreover, Type II jobs might be less susceptible to economic fluctuation, assuming that they are embedded in the JES, which is synonymous with the internal labor market. Thus, demand for Type I workers decreased more than demand for Type II workers during this period, which might have caused severe within-network competition among Type I workers in areas with a lot of highly skilled workers.[31]

In the above analysis, movers within Japan and from abroad are not distinguished by the place of residence five years ago. However, in reality, it is possible that movers within Japan and those from abroad conduct job searches based on information that differs in quality and quantity. Although the Population Census does not provide specific reasons for moving, a mover within Japan, having acquired a stronger job-search network during his or her stay there, might choose to move into a new area based on information not only about the job, but also about local schools and security. A mover from abroad might have fewer ties in Japan and less job-search information.

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[29] The Population Census reports that the unemployment rate for foreigners was 5.7% in 2000 and 8.4% in 2010. For the Japanese, the unemployment rate was 4.7% in 2000 and 6.4% in 2010; unemployment was more serious for foreigners in 2010.

[30] Cabinet Office, Government of Japan, "The Annual Report on the Japanese Economy and Public Finance 2009," http://www5.cao.go.jp/j-j/wp/wp-je09/pdf/09p01021.pdf.

[31] Beaman (2012) uses the term "competition effect" to explain the fact that, in the US, the employment probability of new arrivals negatively affected areas where a large same-nationality group entered at approximately the same time.

To examine the differences between movers within Japan and those from abroad, mover samples were split into two groups for the estimation below. The regression in Columns (2)–(3) and (5)–(6) in Table 3 reestimates the model reported in Columns (1) and (4) by using a limited sample. Compared to the basic model, there is hardly any change in the result of the effect of the number of Japanese in an industry and prefecture; it is significantly positive only in 2010. Considering the coefficient of the number of same-nationality immigrants, a weak negative correlation is observed between working in Type I occupations and number of compatriots in a prefecture, although it is only in 2010 that it is precisely estimated for both movers within Japan and those from abroad. The absolute value of the coefficient of the number of highly skilled immigrants is larger for movers from abroad than for those within Japan, but is still positive in 2000 and negative in 2010. Among movers from abroad, Type I workers are more likely to depend on a highly-skilled-immigrant network and thus gain and lose more of its benefits as economic circumstances alter the local pool of highly skilled immigrants.

As Beaman (2012) pointed out, systematic variations in unobserved factors that affect particular nationalities in certain prefectures might generate a spurious relation between network size and labor market outcomes. I address this concern by including nationality–prefecture fixed effects; Table 4 indicates that the results are largely robust to their inclusion. Estimates on the compatriot effect are more negative than in the specifications of the basic model at the 1% level. Nonetheless, the effect of the number of highly skilled immigrants in a prefecture is positive in 2000 and negative in 2010. Thus, some local characteristics certainly affect occupational location choices, with immigrants favoring areas with a lower density of compatriots where highly skilled immigrant networks are stronger.

[Table 4]

Overall, three local measures show varying effects—both in terms of sign and magnitude—on the probability that individuals engage in Type I occupations. First, foreign Type I workers tend to settle in areas with more Japanese workers in the same industry, especially in times of deep recession. Skill-based labor market networks are also more important for Type I workers than for Type II workers. These networks attract Type I workers when the economy is healthy and keep newcomers from entering during a severe recession. However, nationality-based networks are even more negative for Type I workers than for Type II workers. It would appear that country-based

communities, which are small in Japan due to the low ratio and number of immigrant workers, are less likely to help Type I immigrants find a job.[32] These results indicate that skill-based networks, rather than nationality-based ones, are more important and helpful for Type I movers because such networks operate more strongly across nationalities, although this effect is susceptible to economic conditions. These findings echo Murakami's (2013) case study of foreign scientists in Japan.[33]

V. Conclusions

This paper uses Japanese Population Census data to investigate the characteristics of educated immigrants' occupational choices. Under the JES, educated young workers are expected to start working in a firm immediately after their graduation and to stay with that firm for as long as possible. Some are selected internally for promotion to managerial positions after gaining experience as clerical or technical workers. Given such practices in the Japanese labor market, educated immigrants who miss the timing of the "port of entry" just after graduation find it difficult to join the internal labor market and are left with few options but to work in Type I (professional or technical) occupations using general skills or using their country-specific skills to complement Japanese workers. They are not regarded as members of the JES. In contrast, educated immigrants who have lived longer in Japan or were educated there can choose either Type I or Type II (managers, officials, and clerical and related workers) occupations, depending on their skills and commitment to the JES. They are entitled to be members of the JES if they have started their career after searching for jobs as the Japanese do. I assume that each type of highly skilled immigrant has a different role in the Japanese labor market.

Data analysis reveals striking differences between Type I and Type II immigrants from different countries. Overall, those from developed countries are more likely to become Type I workers while those from East Asian countries, such as Korea and China, are more likely to

[32] Munshi (2003) and Beaman (2012) find that when immigrants' communities were larger, members of that community were more likely to be employed.

[33] Murakami (2010) shows that foreign professionals might tend to build a network of people in the same field rather than of the same ethnic group.

become Type II workers. Immigrants from Latin America and Southeast Asia are less likely to work in highly skilled occupations in Japan, despite having university degrees. This variation can be partly explained by the attributes of the industry, the immigrants' period of stay, and whether they were educated in Japan or not.

The difference between Type I and Type II occupations with respect to their embeddedness in the JES also effects the types of network that workers depend on when they settle in a region. While Type I workers are more likely than Type II workers to obtain a job in an area with Japanese workers in the same industry, they are less likely to work in an area with a larger population of compatriots. Type I workers are less dependent than Type II workers on their ethnic networks; their occupational location decisions are more affected by a highly-skilled-immigrant network regardless of nationality. However, the highly-skilled-immigrant network has very different effects in different economic conditions: the positive impact on the probability of workers choosing Type I occupations in 2000 had disappeared and even turned negative in 2010, after the Great Recession.

This study also presents evidence that Type I and Type II workers differ in their dependence on social networks, which influence access to local labor markets for immigrants who have recently settled in Japan. Network size affects immigrants' probability of obtaining highly skilled jobs. While the literature demonstrates how a network transmits information and improves the probability of obtaining a job, my results indicate a within-network competition effect that has a sizable negative impact on the probability of Type I workers getting jobs, especially during serious recession. A given network may prove beneficial in some settings but harmful in others.

My results have implications for designing immigration policies. First, the number of highly skilled immigrants, especially Type I professionals, increased substantially from 2000 to 2010 in the IT industry, thanks to the Japanese government's relaxation of regulations on foreign IT workers' visas since 2001—called the e-Japan Priority Policy Program—to compensate for the shortage of IT engineers. The relaxation of rules providing residence status to educated or highly skilled immigrants in high-demand situations can be expected to improve productivity or innovation in Japan.

Second, this paper finds two kinds of highly skilled immigrant in Japan, with quite different roles in the Japanese labor market. These differences can be attributed to the diversity of companies

demanding educated immigrant workers. Japanese companies often expect Type I immigrants to use general skills or their country-specific skills to complement Japanese workers and therefore do not focus on these workers' Japanese language skills or prior experience in Japan. In contrast, Japanese companies tend to expect Type II workers, many of whom have graduated from Japanese universities or have stayed in Japan for a long time, to work in the same way as Japanese workers do under the JES. Even if both Type I and Type II workers have identical degrees, Japanese companies evaluate their human capital differently and use them in different ways, which, in turn, might account for the different distributions of employment probability for the two types. Therefore, it is important to analyze each type's roles and positions separately when assessing the performance of highly skilled immigrants in Japan. Furthermore, it is important to analyze not only individual decisions or outcomes but also each worker type's contributions to firms in terms of profit, productivity, and innovation. Findings and implications from these analyses can make valuable contributions to discussions on Japan's immigration policy and help determine the types and number of immigrants to whom Japan should grant entry.

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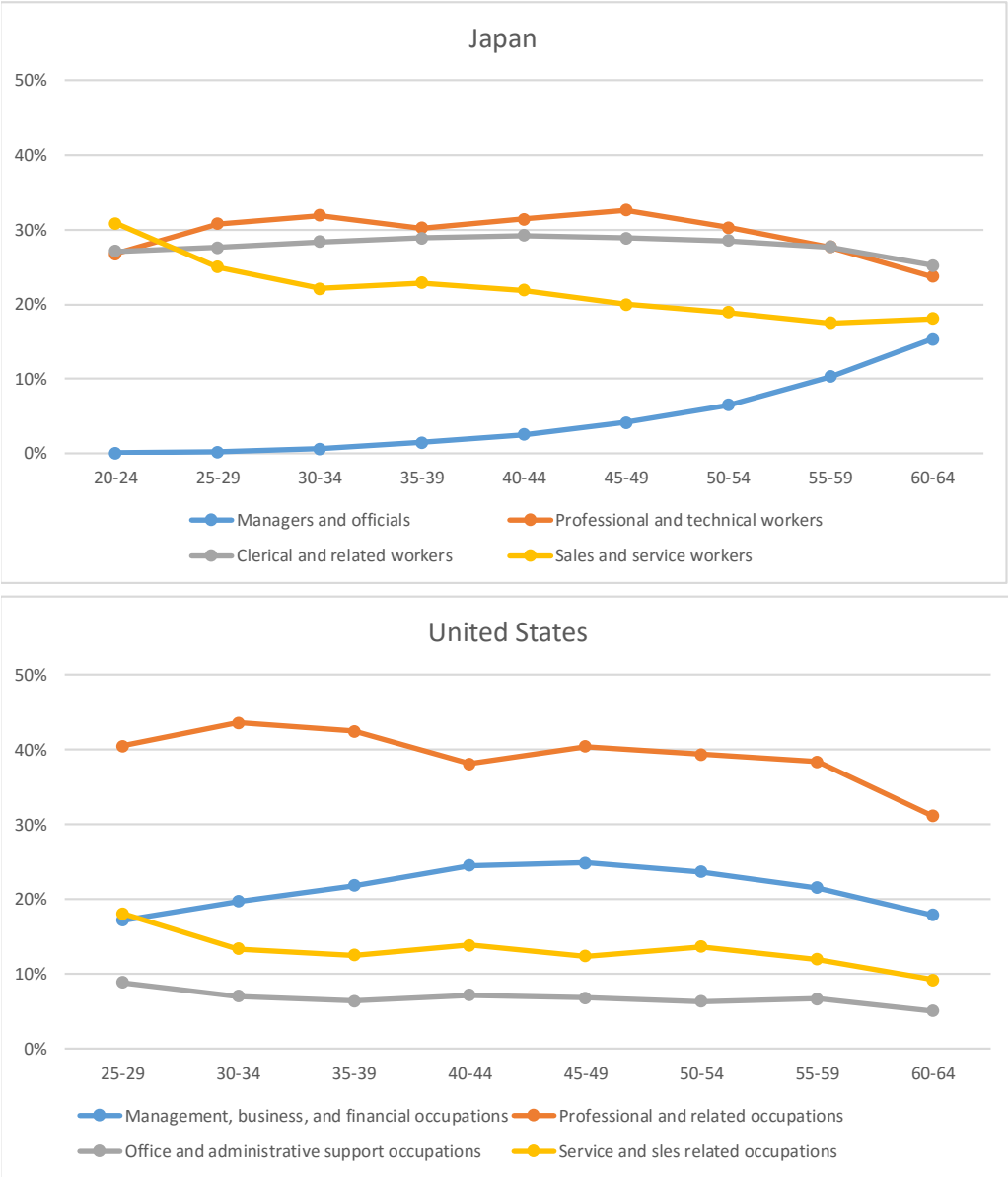

Figure 1. College-educated workers' occupational choices by age group

Source: Population Census 2010 (Japan), CPS Basic 2010 (US)

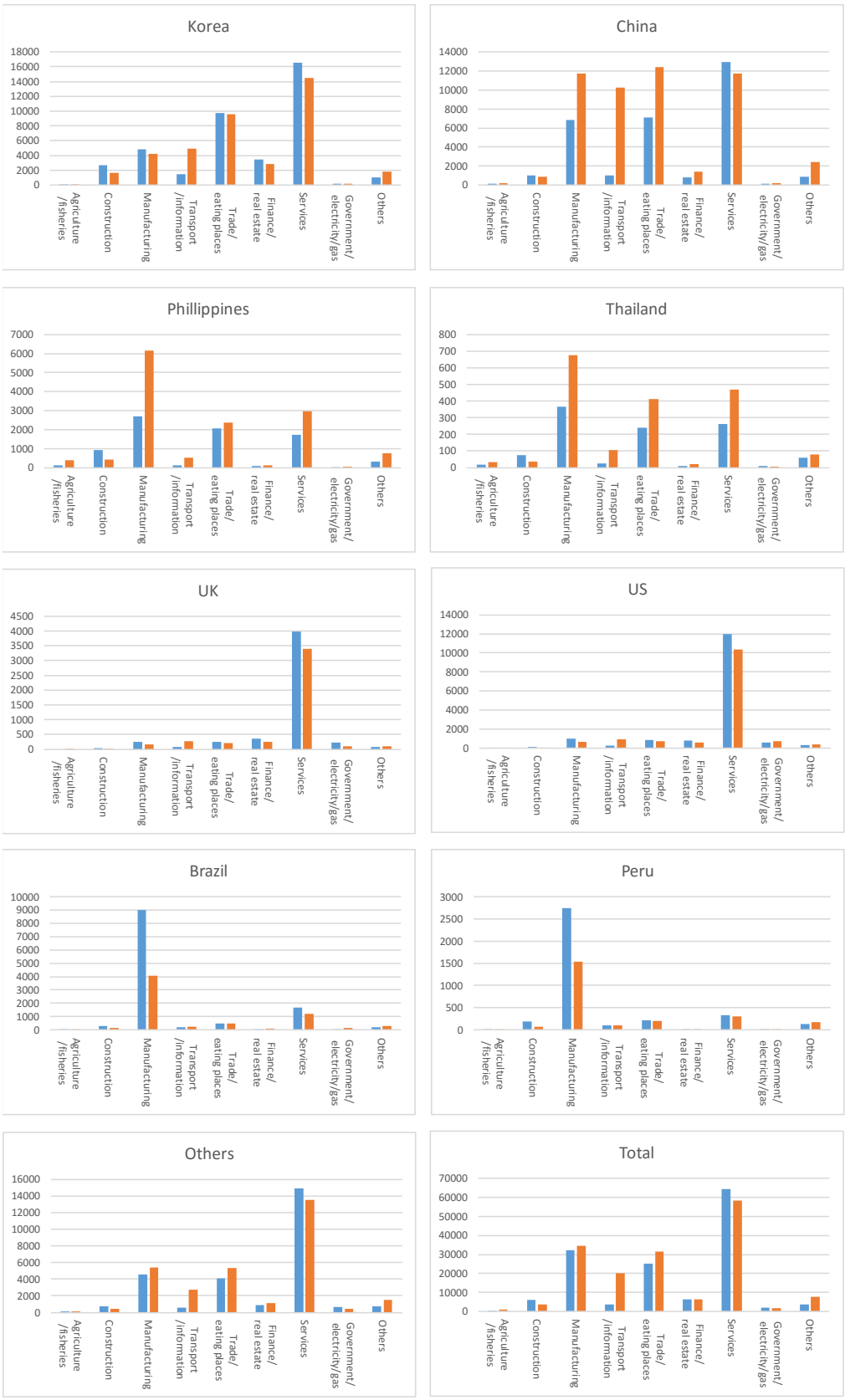

Figure 2. Number of immigrant workers by industry in 2000 and 2010

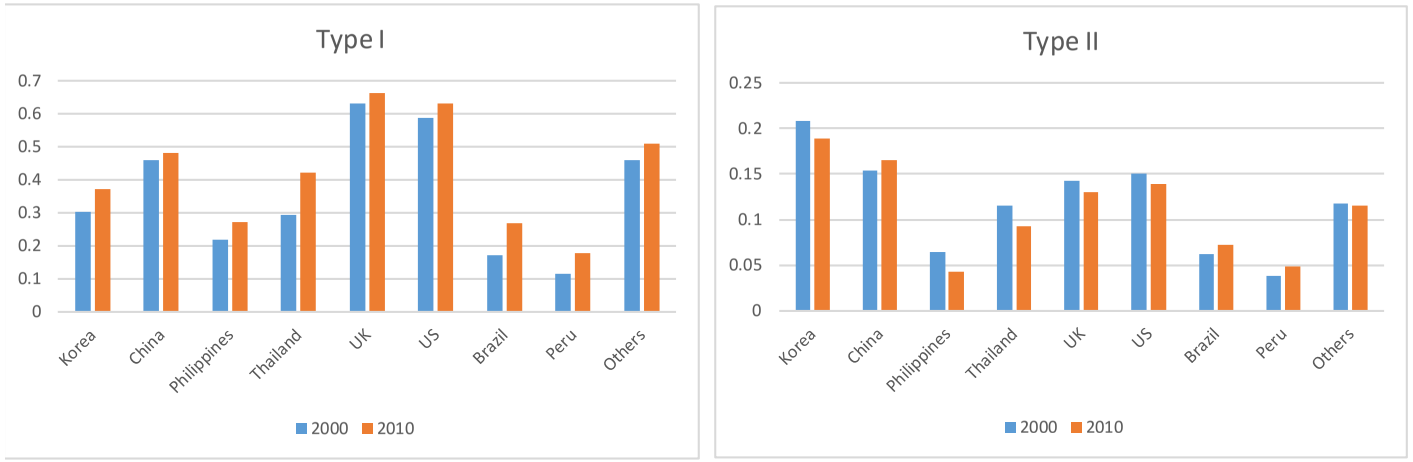

Figure 3a. Probability of obtaining a skilled job for 30 year-old male, by country of origin

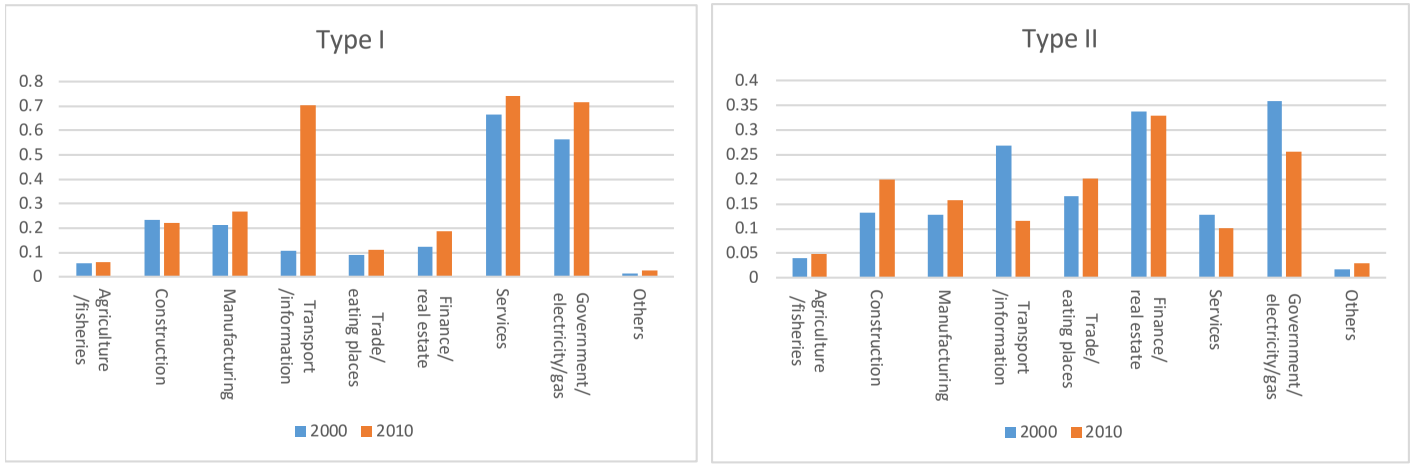

Figure 3b. Probability of obtaining a skilled job for 30 year-old male, by industry

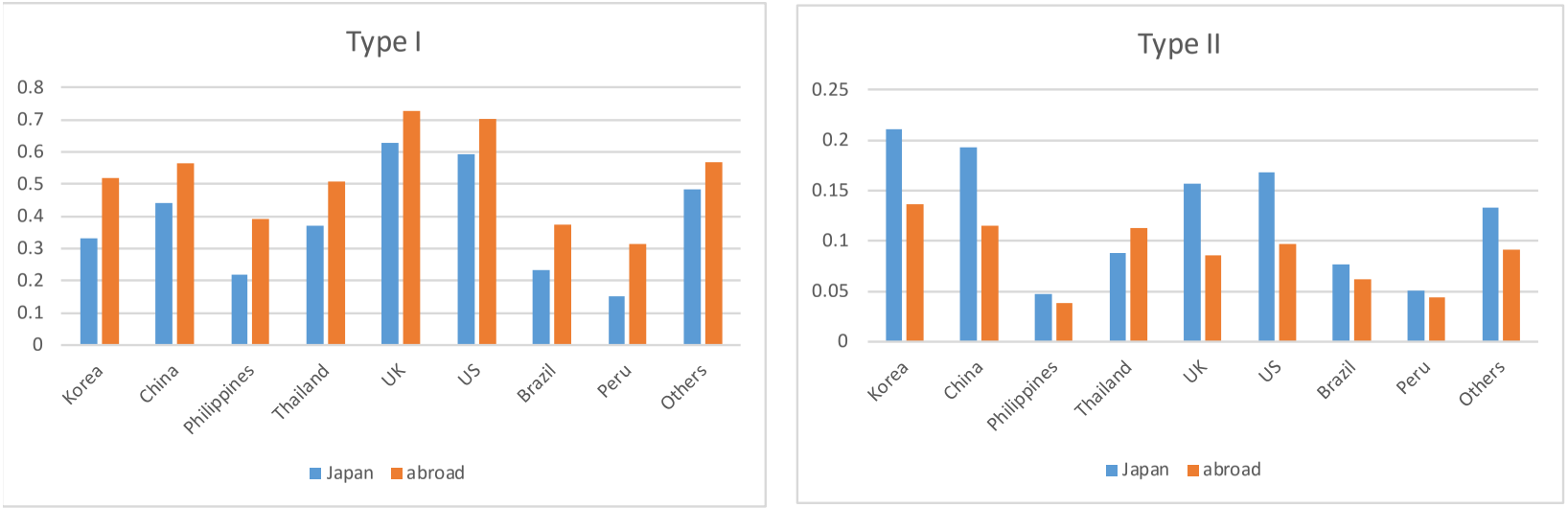

Figure 4. Probability in 2010 of obtaining a skilled job for 30 year-old male, by country of origin and place of residence 5 years ago

Table 1. Summary statistics: Educated immigrant workers across country of origin

2000	Observations		Age	Male (%)	Abroad 5 years ago (%)	Married (%)	Occupation (%)		
	n	(%)					Type I	Type II	Others
Korea	40,078	18.7	38.4	75.5	10.5	63.6	26.6	26.3	47.1
China	30,813	32.6	36.4	68.0	31.2	76.5	41.8	19.5	38.7
Philippines	8,075	22.3	35.4	37.1	37.8	68.1	11.8	6.8	81.5
Thailand	1,063	12.7	35.3	56.7	42.6	57.2	18.5	12.4	69.1
UK	5,231	83.8	34.4	74.9	61.7	46.1	78.1	13.1	8.8
USA	15,832	80.8	37.8	74.2	50.8	58.5	73.9	14.9	11.2
Brazil	12,020	11.7	37.8	58.6	46.9	70.2	7.1	4.4	88.5
Peru	3,711	22.8	37.5	67.1	29.0	75.3	3.4	2.3	94.3
Others	27,252	44.5	35.2	75.0	56.1	57.5	51.7	13.6	34.8
Total	144,075	25.7	36.9	69.7	35.1	65.1	38.5	17.1	44.4

2010	Observations		Age	Male (%)	Abroad 5 years ago (%)	Married (%)	Occupation (%)		
	n	(%)					Type I	Type II	Others
Korea	39,823	28.2	40.4	66.9	11.5	61.7	32.1	25.6	42.3
China	51,188	30.9	35.8	55.9	24.4	73.3	39.7	22.3	38.0
Philippines	13,760	24.5	38.5	31.1	28.7	71.4	13.3	4.8	81.9
Thailand	1,838	17.9	36.3	41.6	42.2	58.6	28.4	12.4	59.3
UK	4,544	82.1	39.2	83.5	34.7	67.2	80.5	11.1	8.4
USA	14,322	82.9	39.6	75.7	41.8	62.9	77.9	12.3	9.8
Brazil	6,753	10.4	43.9	53.1	17.1	72.3	12.9	7.6	79.5
Peru	2,432	17.4	43.7	58.4	8.5	78.0	6.5	4.2	89.4
Others	30,585	43.5	37.3	74.7	39.0	69.2	51.4	13.9	34.7
Total	165,245	30.3	38.3	62.2	25.8	68.4	40.5	17.9	41.5

Notes: Observations (%) is the proportion of educated workers to all workers

Table 2. Number and proportion of Japan-educated and foreign-educated immigrant workers

	Korea	China	Philippines	Thailand	UK	US	Brazil	Peru	Others	Total
Abroad	1,147	6,139	1,798	353	1,310	3,958	1,008	170	6,758	22,641
	(12.65)	(59.41)	(76.25)	(78.97)	(91.42)	(90.78)	(69.95)	(48.99)	(82.58)	(59.63)
Domestic	7,921	4,195	560	94	123	402	433	177	1,426	15,331
	(87.35)	(40.59)	(23.75)	(21.03)	(8.58)	(9.22)	(30.05)	(51.01)	(17.42)	(40.37)
Total	9,068	10,334	2,358	447	1,433	4,360	1,441	347	8,184	37,972

Table 3. Regression results

	[2000]			[2010]		
	All sample	Movers within Japan	Movers from abroad	All sample	Movers within Japan	Movers from abroad
	(1)	(2)	(3)	(4)	(5)	(6)
Log of the number of Japanese in industry	0.012	0.030	-0.005	0.115 ***	0.104 ***	0.117 ***
	(0.017)	(0.018)	(0.023)	(0.019)	(0.026)	(0.016)
Log of the number of compatriots	-0.021 **	-0.020	-0.012	-0.024 **	-0.027 **	-0.017 *
	(0.007)	(0.011)	(0.017)	(0.008)	(0.011)	(0.009)
Log of the number of professional immigratns	0.295	0.018	0.408 **	-0.117 **	-0.110	-0.125 ***
	(0.165)	(0.063)	(0.173)	(0.047)	(0.076)	(0.029)
R-square	0.278	0.244	0.306	0.256	0.245	0.260
Overvations	45109	15022	30087	47025	20265	26760

NOTE.—Dependent variable = 1 if Type I, 0 if Type II. In addition to the variables shown, all regressions include dummies for industry, country, sex, age, marital status and prefecture. Standard errors, clustered by birth country, are in parentheses. *** denotes significance at the 1% level; ** denotes significance at the 5% level; * denotes significance at the 10% level.

Table 4. Regression results with nationality-prefecture fixed effect

	[2000]			[2010]		
	All sample	Movers within Japan	Movers from abroad	All sample	Movers within Japan	Movers from abroad
	(1)	(2)	(3)	(4)	(5)	(6)
Log of the number of Japanese in industry	0.029	0.027	0.019	0.108 ***	0.105 ***	0.096 ***
	(0.015)	(0.019)	(0.020)	(0.019)	(0.027)	(0.015)
Log of the number of compatriots	-0.327 ***	-0.088 ***	-0.242 ***	-0.070 ***	-0.016 ***	-0.090 ***
	(0.003)	(0.006)	(0.007)	(0.008)	(0.003)	(0.010)
Log of the number of professional immigratns	0.954 ***	0.130 **	0.914 ***	-0.104 ***	-0.220 ***	-0.034
	(0.024)	(0.046)	(0.031)	(0.024)	(0.045)	(0.028)
R-square	0.294	0.257	0.329	0.263	0.254	0.274
Overvations	45109	15022	30087	47025	20265	26760

NOTE.—Dependent variable = 1 if Type I, 0 if Type II. In addition to the variables shown, all regressions include dummies for industry, country, sex, age, marital status and prefecture. Standard errors, clustered by birth country, are in parentheses. *** denotes significance at the 1% level; ** denotes significance at the 5% level; * denotes significance at the 10% level.