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**Unemployment Gap between Long-term Immigrants and Natives in
Japan: Considering Heterogeneity Among Immigrants from Asia, the US
and UK, and South America
(Revised)**

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Unemployment gap between long-term immigrants and natives in Japan:
considering heterogeneity among immigrants from Asia, the US and UK, and South America^{*}

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Abstract

This study provides some of the first evidence for unemployment of long-term immigrants in Japan, considering heterogeneity among three immigrant groups from Asia, US and UK, and South America. This study uses large-scale population census data from Japan, conducted in 2010, which is the most updated census data including education and other detailed individual information in the country. First, compared to the natives, the unemployment rate is generally lower for US and UK immigrants, while it is higher for immigrants from Asian and South American countries. However, controlling for human capital, individual and household characteristics, and residential regions, the study finds that immigrants from all the sample countries have higher unemployment probabilities compared to natives. Further, the gaps of permanent employment still exist after controlling for observed factors including industries and occupations, except for women from the US and UK. Moreover, the non-linear decomposition analysis result indicates the different contributions of observed factors among immigrant groups. The results suggest that immigration policies that consider the differences among immigration groups may achieve better outcomes, and that ethnic penalties should be tackled for both high-performing and low-performing immigrant groups.

Keywords: unemployment, permanent employment, immigrants, natives, education, ethnic penalty

JEL classification: J61 J64 J71

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1. Introduction

In the context of the rapidly declining labor force, the Japanese government has been accepting an increasing number of foreign laborers in recent years. It has been widely recognized that immigrants contribute to the labor force in various jobs across various industries in Japan. However, their experiences of unemployment risks after living in Japan for a long time are still unclear. Using large-scale census data, this study examines unemployment and permanent employment (*seishain* in Japanese) of long-term immigrants in Japan, paying special attention to the heterogeneity among three major immigrant groups from Asia, US and UK, and South America.

Theoretically, unemployment probability is higher for workers who have fewer job opportunities (vacancies) and match fewer jobs in the labor market. The probability is lower for workers who have higher probabilities of accepting job offers (e.g. see Mortensen & Pissarides, 1994). Hence, on the one hand, migrants may experience higher unemployment risks than natives if migrant discrimination is widespread in the host country. Lower education level also reduces their job opportunities. On the other hand, the unemployment rate may be lower for migrants if they have a higher probability of accepting job offers, especially for those who receive fewer unemployment benefits than natives.

Education has been one of the key reasons for immigrants' unemployment (e.g. see de Vries & Wolbers, 2004). Further, ethnic penalties, defined as the differences in labor market outcomes persisting after accounting for observable human capital and other characteristics (Heath & Cheung, 2007; Rafferty, 2012,) also have been observed in many countries. Immigrants suffer disadvantages that are caused by discrimination, institutional reasons, or other factors. For instance, Arai and Vilhelmsson (2004) find that in Sweden, non-European immigrants face an unemployment risk twice as high as the corresponding risk for native workers despite controlling for employee characteristics and other factors. The study suggests that labor unions and employers deviate from seniority rules established by the Swedish Security of Employment Act in favor of native workers. A Canadian study by Reitz (2001) shows that increased returns to education among native - born workers do not apply to immigrants. It considers that the declining relative value of immigrant education may be due to the location - specific nature of credential validation processes. Valtonen (2001) shows that Finnish employers discriminate against immigrant jobseekers, who consistently encounter blockage at the outer periphery of the labor market at the stage of first inquiries. (Malmberg-Heimonen & Julkunen, 2006). Rafferty (2012) examines ethnic penalties in Britain, in terms of graduate-level over-education, unemployment, and wages. It finds that despite the educational attainment, penalties persist among several minority ethnic groups. Avola and Giorgio (2020) also suggests the existence of an ethnic penalty in intra-generational occupational mobility, by confirming the fact that geographical origin is a significant factor influencing upward mobility in Italy.

However, conversely, lower unemployment probabilities also have been observed in the literature.

Laird (2015) found that in the U.S., Mexican immigrant men have lower probabilities of unemployment than native-born white men after controlling for education and occupation, both before and during the recent recession. The study finds evidence for possible reasons of eligibility for unemployment benefits and employer preferences for Mexican immigrant labor, while mixed support for possible selective out-migration. Duncan and Trejo (2012) also suggest that “After a period of adjustment during the first few years upon arrival, the overall employment rate of immigrant men quickly approaches that of US natives. Among those with the lowest education levels, immigrants exhibit substantially higher rates of employment than comparable natives.”

In Japan, the number of immigrants has increased greatly in recent years. Immigrants have been expected to contribute to the workforce in Japan, which suffers from serious problems of labor shortage in an aging society. However, the contribution to the labor force could be enhanced by addressing the issue of immigrant unemployment. Perhaps because of difficulties in obtaining sufficient data, there have been few quantitative studies examining immigrant unemployment in Japan. To our best knowledge, there is only one study by JILPT (2012) that included quantitative analysis on this topic. It reported average immigrant unemployment rates of all types of households and living periods, using aggregated public data.

Our study could be the first one that conducts econometric analysis on the determinants of immigrant unemployment in Japan, using large-scale individual census data which is highly restricted in terms of application and access. Further, note that Japanese immigration policies do not allow migrants with labor visas to keep on living in Japan if they become unemployed and cannot find full-time jobs which meet the requirements of labor visas, generally limited to particular industries, occupations, and certain skill levels within three months. To avoid measurement biases caused by this policy, this study focuses on immigrants who live with families, in which case unemployed immigrants can change their visa types and keep on living in Japan. Further, the objectives are limited to long-term immigrants, who have lived in Japan for over 5 years, to avoid information biases in the first few years of immigration.

The major findings of this study are as follows. First, compared to natives, the unemployment rate is lower for US and UK immigrants, while it is higher for immigrants from Asian and South American countries, with the exception of Indonesian men and US women. However, controlling for human capital, individual and household characteristics, and residential regions, the study finds that immigrants from all the sample countries have higher unemployment probabilities compared to natives, indicating widely-existing ethnic penalties in Japan. The study considers two reasons for the disadvantages suffered by immigrants. The first one is discrimination against immigrants, as shown in a government survey. The second one is Japanese employment practices of periodic recruitment of new graduates, *Shin-sotsu-ikkatsu-saiyo* in Japanese, which leads to much fewer changes to obtain permanent jobs for immigrants compared to natives. The result shows that the gaps of permanent employment exist for immigrants from all sample original countries, after controlling for observed

factors including industries and occupations. Finally, the non-linear decomposition analysis result indicates the different contributions of observed factors among immigration groups.

2. Stylized facts

As immigration behavior is determined by benefits from host countries compared to living in home countries and migration cost, immigrants' characteristics could differ depending on the geographic and economic situations of the home countries. Thus, the study considers the heterogeneity among immigrant groups from different original countries. First, immigrants from nearby Asian countries usually experience low migration costs for geographic reasons. Also, because Japan is more developed than their home countries, even a comparatively low income in Japan sometimes may be enough to achieve a better standard of life than living in their home countries. Therefore, the low immigration cost and high immigration return, compared to home countries, contribute to both less-educated and highly educated immigration from Asian countries. Second, in contrast, immigrants from US and UK have to pay high migration costs because of the distances from their home countries and significant differences in culture and languages; thus, their immigration behaviors should have been driven by large benefits which compensate for these costs. Third, a special case is immigrants from Brazil and Peru, almost all of whom are Japanese descendants whose ancestors migrated to the two countries for historic reasons (*Nikkei-jin* in Japanese). They are permitted to migrate back to Japan and live permanently in the country without any conditions regarding education or employment.

Using the data of this study, Table 1 reports the general situation of immigrants coming from the top ten original countries. For this study, individual samples are limited to men aged 16-64 and women who are living in Japan for more than 5 years. An additional condition is that these groups should have been living together with their families, with the exclusion of students currently at school and technical intern trainees (*ginou jishu sei* in Japanese). First, for immigrants from Asian countries, both rates of the lowest education level of primary school and the highest level of the university are higher than natives for immigrants from most of the original countries. Further, for immigrants from US and UK, the education levels of both men and women from the two countries are much higher than natives. For men, the rates of university graduates are more than twice that of the natives, and in the case of women, the rates are 3-4 times higher than that of the natives. The rates of the lowest level of primary education are less than 1/6 for men and around 1/3 for women. For immigrants from Brazil, as Table 1 shows, their average education levels are much lower than natives, and also the lowest among all the top ten original countries.

Moreover, Table 1 shows that the unemployment rates are lower for US and UK immigrants than natives, while they are higher for immigrants from Asian and South American countries, with the exceptions of Indonesian men and US women. Further, all immigrants from the top ten original countries have lower rates of permanent employment, except US and UK immigrant women whose

permanent employment rates are slightly higher than natives’.

Education level may be one of the key reasons for the differences in unemployment, since it is higher for US and UK migrants than natives, and lower for migrants from South American countries, the fact of which is consistent with the unemployment situation. However, it is still unclear as to what extent education explains the gap. Further, controlling for personal and other observable factors, it is unknown whether the remaining immigrant-native gap, referred to as ethnic penalties in literature, exists in Japan. Moreover, immigrant characteristics differ among the three original country groups of Asia, the US and UK, and South America. Hence, it is necessary to distinguish the three groups and compare the determinants among them. These issues will be tackled in this study.

(Table 1)

3. Data

This study uses large-scale Population Census data from Japan, conducted in 2010, which is the most updated census data including education and other detailed individual information in the country. As shown in Figure 1, the average unemployment rate in Japan was comparatively high in 2010, because of the lasting effect of the 2008 economic crisis which caused a fall in the job-worker ratio. The Japanese economy began to recover, and the real annual GDP growth has reverted to 4.1% 2010. The Japanese government reported that the real employed income and the real individual consumption have recovered to the level before the economic crisis. Further, it was reported that unemployment was generally caused by the low labor demand, and the rate of involuntary part-time employment was comparatively high. In addition, employment in construction and manufacturing industries continued decreasing in 2010, accompanied by a growing number of workers in medical, nursing care, and welfare industries (Cabinet Office, 2010). In the context of this economic situation, however, the number of general permanent immigrants in Japan continued to grow over the period, as shown in Figure 2 (1). The exceptions are shown in Figure 2 (2). The number of immigrants based on historical reasons decreased due to aging and death. The number of immigrants who have Japanese spouses or parents saw a decrease, most likely caused by international marriages of the Japanese, and immigrants with Japanese- descendant visas (*teijyu-sha* in Japanese). Immigrants who come to Japan as Japanese descendants are able to change their visas into green cards after five years of living in Japan. Therefore, most immigrants who still hold Japanese- descendant visas are those who live in Japan for fewer than five years. During 2008 and 2009, the Japanese government had provided subsidies to unemployed immigrants who came to Japan as Japanese descendants and helped them return to their home countries. Japanese descendants who receive this subsidy and return to their home countries could mostly be those who live in Japan for fewer than five years. If they live in Japan for more than five years, they can obtain green cards and receive livelihood subsidies, the amount of which was much higher than

the subsidy to return to their home-countries².

(Figure 1)

[Figure 2 (1) and (2)]

The questionnaire of the Population Census is in Japanese and 27 foreign languages (MIC, 2010), covering the source countries of over 90% of immigrants in Japan. The whole sample of individual immigrants comprises 1.629 million persons, which covers over 70% of the total immigrant population reported by the Immigration Bureau in the survey year. Total reported individual responses are 128.057 million in this census. As the native sample is much larger than the immigrant sample, the study uses a total sample of immigrants while 1% random sampling of natives is used for the convenience of econometric analysis which includes both immigrants and natives. Detailed data descriptions for each variable are reported in Table 2.

(Table 2)

For this study, individual samples are limited to men aged 16-64 years old and women, living together with families, with the exclusion of students currently at school. Further, immigrants who lived in Japan for fewer than five years are deleted.

The reason for focusing on long-term immigrants is to reduce information biases between natives and immigrants in the labor market. Immigrants who have been living in Japan for over five years may have been familiar with local job information. Further, this helps reduce sample biases caused by outmigration because immigrants who have lived for a long period in the host country would have to afford the high cost if they plan on going back to their home countries, especially those who have families (Laird, 2015). Moreover, the samples are limited to immigrants who live together with families. If unemployed, they can remain in the country even if they do not have green cards.

² Japanese-descendant visas are also capable of providing livelihood-subsidy applications. However, the experiences of receiving livelihood subsidies would cause many difficulties in applying for green cards in future.

4. Determinants of unemployment

4.1 Estimation strategy

Theoretically, the probability of unemployment is higher for the workers who have fewer job opportunities, which is more likely if they have a lower level of education. Further, the unemployment rate is lower for workers with a higher probability of accepting jobs. This in turn is affected by unemployment benefits and other factors. In Japan, there is no difference in unemployment insurance benefits between long-term immigrants and natives. Migrants who live in Japan for over three months share the same social insurance as natives, including unemployment insurance and health insurance, and the cost is minimal for low-income households. However, the probability of accepting jobs is also affected by marriage, having children, caring for elders, and paying loans, which may differ between natives and immigrants. For instance, men usually have a higher probability of accepting jobs if they are married, have children, or pay housing loans. Furthermore, labor market characteristics such as matching efficiency also affect unemployment. Given the lack of direct data for the measurement, the estimation introduces prefecture dummy and population dummy in detailed areas, to control the labor market and other socio-economic environmental factors. In addition, age is introduced to control potential job experiences of natives and immigrants; however, its results should be explained with caution because of remaining unobserved factors.

4.2 Estimation result

Table 3 reports the estimated average marginal effect of each factor on the unemployment likelihood for each group. As indicated by Estimations (1)-(2) and (4)-(5), for both natives and immigrants, a higher level of education could reduce the unemployment likelihood. Further, the age group of 31-40 could experience the lowest risk of unemployment than other age groups, for both native and immigrant men; however, the unemployment risk for native and immigrant women seems to become lower for a higher level of age, respectively, except for the 61-64 age group of native women. In addition, the negative estimate of control variable of having children indicates that the unemployment probability is lower for native and immigrant men who have children, however, the size of the estimate is much smaller for native women, and the estimate is even positive for immigrant women. Finally, estimates of control variables of those who are married and those owning a house are all significantly negative for both natives and immigrants. Note that the estimates of being married and having children may include both the effect that married persons or persons who have children may have larger probabilities of accepting job offers to support their families and the effect that employed persons are more likely to get married and have children. Similarly, on one hand, workers who own houses may

have higher probabilities of accepting job offers to pay back the home loans; on the other hand, employed workers are more likely to buy houses than remain unemployed. Therefore, the variables of being married, having children, and being a house owner are introduced merely as control variables and it is necessary to explain the results with caution.

(Table 3)

Estimations (3) and (6) in Table 3 examine whether the unemployment gaps remain after controlling for human capital, individual and household characteristics, local population in the residential area, and regions. First, the estimate is significantly positive for immigrants from each country in Asia and South America, indicating that given other conditions such as education level, immigrants from Asia and South America have higher probabilities of being unemployed than natives.

Furthermore, even though the average unemployment rate of US immigrants is lower than that of natives, the result shows significantly positive estimates for both US men and women. Controlling for other factors, being an immigrant from the U.S. increases the unemployment likelihood by 3.1 percentage points for men and 1.8 percentage points for women. In other words, US immigrants are about 1.4 times as likely to be unemployed as natives, as the average unemployment rate is 7.1% for native men and 5.2% for native women in the sample. It is indicated that given individual and other factors, US immigrants experienced a higher risk of unemployment than natives, and the level of their ethnic penalties are similar to immigrants from those three countries in Asia and South America.

Moreover, because the unemployment problem is usually accompanied by a low rate of permanent employment, the study further examines the gap of permanent employment between each immigrant group and natives, after controlling for observed factors. One of the benefits is that industries and job types can be controlled in this analysis, which reduces the possible effect of skill biases between immigrants and natives.

The result in Table 4 indicates that immigrant men from all the sample countries have a significantly lower probability of permanent employment. For instance, being an immigrant from China reduces the likelihood of male permanent employment likelihood by 15.2 percentage points, and the estimate is 24.2% for US immigrants and 48.3% for Brazilian immigrants. Alternately, the gap of permanent employment is smaller for immigrant women than men, for each of the sample countries. Immigrant women from US and UK could even have insignificant differences in permanent employment from native women, respectively (the reason will be examined in the deposition analysis).

The study considers three reasons for ethnic penalties, indicated by the gap remaining after controlling for observed factors. First, is discrimination against immigrants in their job search process. A government survey, Ministry of Justice (2017), has found that over 25% of immigrant job seekers have experienced rejections to job applications for the reason that they are immigrants, and 20% of

immigrant workers experienced lower wages than natives when doing the same jobs. Discrimination also exists in the workplace. In the same survey, 17.1% of immigrant workers reported the experiences of losing out on promotion opportunities because they are immigrants, and 12.8% of immigrant workers suffered from worse working conditions than natives such as longer working hours and shorter vacations.

The second reason for the ethnic penalties could be Japanese labor market practices. Different from many countries, most permanent unemployment in Japan, the employment terms of which are not fixed, are granted to new graduates. Those application periods are fixed to certain terms before April, the Japanese graduation season, which is also different from most other countries. Therefore, immigrants who graduate from other countries have much fewer chances of obtaining permanent employment compared to Japanese graduates, which contributes to their disadvantages in the Japanese labor market.

The third reason could be the language and high-context culture in Japan. The immigrant samples in this study are those who have lived in Japan for more than five years and thus, could have few problems in general Japanese language. However, different from many other countries, communication in Japanese companies includes not only the usual language communications but also “non-spoken” skills, i.e., understanding the high-context culture in Japan, which is very difficult for immigrants who even live in Japan for prolonged periods. Yoshino (2017) states that lack of “non-spoken” skills, *kuuki ga yomenai* in Japanese, is “one that often troubles Japanese companies—especially when hiring foreigners.” Therefore, invisible rules in Japanese companies, which arise from Japanese high-context culture, could cause ethnic penalties for immigrants who search for jobs in Japan.

(Table 4)

In addition, the study conducts comparison estimations, using prefecture-level labor market tightness, i.e., job-worker ratio, instead of prefecture dummies. The result is similar to the major model reported in Tables 3 and 4, and the effects of labor market tightness are similar between natives and immigrants. Because prefecture dummy controls not only the labor market but also regional industries, local economic and social environments, and other regional characteristics, it is preferred for this study.

5. Nonlinear decomposition analysis

To examine the extent to which each factor contributes to the gap, the study applies nonlinear decomposition analysis, following Fairlie (2003, 2005) and Jann (2006). As personal characteristics differ greatly among Asian-born, US and UK- born, and South-American-born immigrants in Japan, this study divides immigrants into those three groups in the decomposition analysis. It helps us identify

the contributions of education level and other factors, and understand the reasons for different gaps among immigrant groups.

5.1 Group differences

Table 5 and Figure 3 report the differences in unemployment, permanent employment, and their observed determinants between natives and each immigrant group. For both men and women, unemployment rates are significantly higher for Asian and South-American immigrants, while it is significantly lower for immigrants from US and UK, compared to natives. The rates of permanent employment are significantly lower for immigrant men from all of the three regional groups; for women, the rate of permanent employment is higher for US and UK immigrants, while lower for immigrants from Asian and South-American countries.

Among the observed factors which affect employment, first, there are no significant differences in the average education level between native and immigrant men from Asian countries, while the education level is significantly higher for US and UK men, and significantly lower for South-American men, compared to native men, respectively. For women, the average education levels are significantly lower for immigrants from Asian and South American countries, while it is higher for immigrants from US and UK, compare to natives. In terms of average ages, the group of Asian men and women are 2.5 and 2.7 years younger than native men and women, respectively. Men and women from South America are 5.2 years younger than natives on average, respectively. The average age is similar between men and women from US and UK, and native men and women, respectively. Moreover, Asian and US&UK immigrants are more likely to live in areas with larger population, while immigrants from South America usually live in areas with smaller population, comparing to natives. In addition, for all the three immigrant groups, compared to natives, more immigrants are married and raising young children, while few immigrants are living with old families and own houses, in the case of both men and women, respectively.

In addition, as shown in Figure 3, the labor proportion of industries and occupations differs between natives and each of the three groups of immigrants, respectively. However, interestingly, it is similar between males and females for each group of immigrants, while it differs between males and females for natives. In other words, industries and occupations of immigrant females differ from native females, while they share similar proportions with those of males in the same original country group.

(Table 5)

(Figure 3)

5.2 Decomposition analysis of Unemployment

As shown in Table 6, contribution of education differs among groups of Asian, US&UK, and South

America. First as expected, differences in education levels explain only a small part of the unemployment gap between Asian immigrants and natives. For US and UK immigrants, a larger proportion of graduates from four-year university or higher contributes greatly to their lower unemployment rate than natives, for both the groups of men and women. For immigrants from South America, the lower level of education explains over 1/3 of men's higher unemployment rate compared to natives $((0.001+0.002+0.007)/0.029)$, and it explains around 14.4% $((0.0002+0.005+0.002)/0.05)$ of women's higher unemployment rate than natives. In addition, variables of age and local population contribute little to the unemployment gaps.

(Table 6)

5.3 Decomposition analysis of permanent employment

Table 7 shows the result of the decomposition analysis of permanent employment. For Asian and US-UK immigrant men, differences in education level are insufficient to explain their lower rates of permanent employment compared to natives. The significantly negative estimates of the endowment effects of education level indicate that education even reduces the gaps. Also, differences in education level only explain a small part of permanent employment gaps for Asian immigrant women and South-American men and women. An exception is US-UK women, whose permanent employment rate is higher than natives, and about half of the difference is explained by their high education level.

Furthermore, for immigrant men of all three groups, the total effect of differences in observable factors fails to explain the gaps of permanent employment. However, it explains large parts of gaps for women. Moreover, interestingly, having young children contributes little to the gaps for immigrant women; in contrast, the gaps are largely affected by job types and industries.

In particular, first for women from Asia and South America, the gap is explained by fewer immigrants engaging in the medical, health care, and welfare industry (0.045/0.150 and 0.063/0.220), and more immigrants engaging in production jobs (0.055/0.150 and 0.190/0.220), while the gap is reduced by more immigrants engaging in the manufacturing industry (0.059/0.150 and 0.221/0.220).

Moreover, for US and UK women, the result shows that their higher rate in permanent employment compared to natives is mainly explained by their higher rate of employment in the education and learning support industry (0.111/0.084), which is consistent with the fact that nearly half of them take jobs in this industry as shown previously. In addition, their higher rate in permanent employment is reduced by fewer number of them engaging in the manufacturing industry (0.033/0.084) and wholesale and retail trade industry (0.028/0.084), while it is increased by their opting for fewer clerical jobs (0.016/0.084), sales jobs (0.022/0.084), service jobs (0.025/0.086), production jobs (0.027/0.086), and protective service jobs (0.016/0.086) (Note that those lower rates of jobs for US and UK women are consistent with the fact that 60.2% of them take professional and technical jobs in Japan, which is

much higher than the rate of natives at 16.5%).

Finally, the large unexplained part indicates that ethnic penalties in obtaining permanent employment are widespread among immigrants especially males, except for US and UK women. The unexplained part of the permanent employment gap compared to natives is 12.26% (13.1%-0.84%) and 19.47% (14.1%+5.37%) for Asian and US and UK men, respectively, while it is as high as 51.85% (50.5%-0.68%) for South American men. This result is consistent with the fact that most South American immigrants do not have the experiences of local education in Japan, differing from immigrants from Asia and the US and the UK, a larger part of whom come to Japan for overseas studies and find jobs after that. In Japan, most permanent workers are hired from new graduates. Most South American immigrants do not have these experiences and thus, have to engage in non-permanent jobs. Further, in Japanese employment practices, it is difficult for workers to change their non-permanent jobs into permanent ones. Thus, immigrants whose first jobs are temporary have few chances to transition into permanent employment even if they live in Japan for a long time. In addition, there is an exception that US and UK women have a higher rate of permanent employment than native women. The reason could be a smaller gender gap for US and UK immigrants over the Japanese.

(Table 7)

6. Concluding remarks

In the context of shortage of labor and increasing immigration, the employment issues of immigrants have received much policy and social attention in Japan. This study focuses on immigrants who live permanently in Japan, coming from Asia, US and UK, and South American countries. First, compared to natives, the unemployment rate is generally lower for US and UK immigrants, while it is higher for immigrants from Asian and South American countries. However, controlling for human capital, individual and household characteristics, and residential regions, the study finds higher unemployment probabilities for immigrants from all the sample countries compared to natives. Furthermore, even adding control variables of occupations and industries, lower probabilities of permanent employment are still found for almost all the immigrant groups.

Second, the nonlinear decomposition result on unemployment indicates different explanations of the unemployment gap among immigrant groups: the size of unemployment gaps compared to natives are similar between Asian and South American immigrants, while the former could be mainly caused by their ethnic penalties but the latter is generally explained by their low education level. The US and UK immigrants' lower employment rate than natives is fueled by their high education level, while their ethnic penalties are also confirmed by the result.

Finally, the study found gender differences in explaining native-immigrant gaps of permanent

employment for all the sample countries of origin. Compared to natives, more immigrant women are married and live with young children. Indeed, because overtime work often exists among permanent employment in Japan, it is widely considered that men usually prefer permanent employment for economic reasons and supporting families, while women sometimes voluntarily chose contract or temporary employment to take care of young children. However, the study found only a small part of female gaps in permanent employment that is explained by marriage or child care. Instead, large parts of the female gaps are explained by industries and occupations of their jobs, for each of the immigration groups. Immigrant women turn to take similar jobs as immigrant men, differing from native women, a larger proportion of whom are engaged in medical, health care, and welfare industry, which provide more permanent employment. In addition, women's remaining unexplained part of permanent employment gaps could be caused by ethnic penalties, which are also the major caution of immigrant men's permanent employment gaps compared to natives.

The Japanese government has made a significant effort to attract foreign laborers that contribute to the Japanese labor market and has allowed a large number of Japanese descendants to live in Japan permanently. However, the unemployment problems faced by foreigners who live in Japan for a long time may reduce the country's attractiveness. The study indicates that issues of ethnic penalties which caused immigrants' unemployment should be tackled for both high-performing and low-performing immigrant groups. Further, immigration policies that consider the differences among immigration groups may achieve better outcomes. For instance, increasing the education level of South American immigrants may significantly reduce their unemployment gap, while additional efforts on overcoming ethnic disadvantages are needed for Asian immigrants.

The limitation of the study is that it ignores the migrant status of visas because the information is excluded from the data. However, this may not be a serious disadvantage for this Japanese study because, in Japan, migrant status does not correctly reflect the characteristics of immigrants in many cases; also, immigrants receive very few restrictions of work from their status of visas, especially for long-term immigrants in Japan. For instance, a labor migrant often prefers a spouse visa to a labor visa because the former does not limit occupation if the migrant's spouse has a green card or Japanese nationality, while a labor visa does. Further as shown in Figure 4, in the sample year of this study, 81% of permanent immigrants, including immigrants who have green cards, their spouses, immigrants who are Japanese descendants, immigrants for historical reasons, and immigrants who have Japanese spouses or parents, do not receive any restrictions of work from their statuses of visas. The other 7% of permanent immigrants, who represent the families of immigrants, do not receive limitations on job types and are allowed to work under 28 hours a week. The remaining 12% of immigrants, who have work permits and fixed-term but unlimitedly renewable visas, do not have limitations on working hours. They are not allowed to perform low-skilled jobs; however, in fact, as all the individual samples in this study live with families, they can engage in low-skilled jobs if they change their visas into

family status. They are also able to change the fields of their occupations, for instance, an immigrant with a technology visa can easily change it to a humanity one if she/he finds a permanent job in this field. As a result, the limitation of the lack of migrant status data does not affect the result of this study.

Further, the study may be conducted on immigrants' wages by obtaining sufficient data, to understand more about labor market outcomes of immigrants in Japan. Moreover, this research controls differences in industries and local labor markets among regions by introducing prefecture dummies. Future work focusing on particular regions in Japan may provide a closer look into the work and lives of immigrants who share the same economic and social environment.

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Table 1. Education, unemployment, and permanent employment of immigrants and natives

Male						
Nationality	Education				Unemployment	Permanent
	Primary school or junior high school	Senior high school	Two-year college or technical college	Four-year univerrisity and higher	rate	employment rate
Japan	9.71%	47.42%	10.49%	32.38%	7.14%	87.15%
Asia						
Korea	13.43%	49.56%	7.36%	29.65%	11.61%	78.02%
China	12.58%	27.71%	10.19%	49.52%	10.82%	77.79%
Philippines	18.54%	45.40%	8.40%	27.66%	11.34%	39.77%
Thailand	26.77%	40.72%	11.49%	21.02%	11.51%	60.49%
Indonesia	7.69%	52.11%	11.62%	28.58%	5.66%	63.29%
Vietnam	30.96%	44.62%	6.79%	17.63%	13.66%	56.51%
US&UK						
UK	1.34%	9.98%	10.25%	78.42%	3.90%	70.78%
US	1.38%	17.54%	6.66%	74.43%	5.78%	73.89%
South America						
Brazil	32.60%	55.30%	4.35%	7.74%	9.42%	36.56%
Peru	26.33%	44.26%	13.52%	15.89%	12.55%	36.87%
Female						
Nationality	Education				Unemployment	Permanent
	Primary school or junior high school	Senior high school	Two-year college or technical college	Four-year univerrisity and higher	rate	employment rate
Japan	8.04%	49.24%	27.77%	14.95%	5.18%	45.04%
Asia						
Korea	11.63%	54.44%	16.78%	17.16%	8.84%	38.03%
China	14.69%	38.49%	15.06%	31.76%	9.69%	35.79%
Philippines	16.46%	56.16%	8.89%	18.48%	8.81%	16.21%
Thailand	42.23%	40.69%	5.70%	11.38%	9.97%	15.28%
Indonesia	11.67%	52.09%	12.10%	24.15%	6.33%	19.40%
Vietnam	30.63%	49.60%	6.75%	13.01%	9.64%	21.95%
US&UK						
UK	2.74%	20.50%	16.06%	60.70%	4.09%	53.89%
US	2.88%	21.22%	11.27%	64.63%	5.40%	53.36%
South America						
Brazil	30.48%	55.27%	4.11%	10.14%	9.76%	23.19%
Peru	26.74%	43.45%	14.92%	14.89%	11.91%	22.62%

Table 2. Data descriptions for each variable

Variables	Details
Unemployment	Unemployed = 1, employed = 0
Permanent employment	Permanent employment = 1, Fixed-term employment, temporary employment, or part-time employment = 0 (self-employment, family employment, and employment of piecework done at home are excluded)
Education level	Primary school or junior high school = 1, senior high school = 2, Two-year college or technical college = 3, four-year university and higher = 4
Married	Married = 1, unmarried = 0
House owner	House owner = 1, otherwise = 0
Kids under the age of six	Living with kids who are under the age of six = 1, otherwise = 0
Families aged 85 and older	Living with families aged 85 and older = 1, otherwise = 0
Local population	Ranking from the largest population of residential area
Male	Male = 1, Female = 0

Table 3. Determinants of unemployment

	Male			Female		
	Natives	Immigrants	Total	Natives	Immigrants	Total
	(1)	(2)	(3)	(4)	(5)	(6)
Education (reference: primary school or junior high school)						
senior high school	-0.0134*** (0.001)	0.00350** (0.001)	-0.00636*** (0.001)	-0.00593*** (0.001)	0.00452*** (0.001)	-0.00009 (0.001)
two-year college or technical college	-0.0249*** (0.001)	-0.0139*** (0.002)	-0.0226*** (0.001)	-0.0204*** (0.001)	-0.0120*** (0.002)	-0.0174*** (0.001)
four-year university or higher	-0.0327*** (0.001)	-0.0360*** (0.001)	-0.0357*** (0.001)	-0.0241*** (0.001)	-0.0131*** (0.002)	-0.0197*** (0.001)
Age (reference: age 15-22)						
age 23-30	-0.00995*** (0.002)	-0.0305*** (0.002)	-0.0157*** (0.001)	-0.0134*** (0.001)	-0.0318*** (0.002)	-0.0217*** (0.001)
age 31-40	-0.0149*** (0.002)	-0.0402*** (0.003)	-0.0211*** (0.002)	-0.0177*** (0.001)	-0.0444*** (0.002)	-0.0303*** (0.001)
age 41-50	-0.0125*** (0.002)	-0.0301*** (0.003)	-0.0151*** (0.002)	-0.0246*** (0.001)	-0.0489*** (0.002)	-0.0364*** (0.001)
age 51-60	0.00720*** (0.002)	-0.0107*** (0.003)	0.00371** (0.002)	-0.0316*** (0.001)	-0.0490*** (0.002)	-0.0401*** (0.001)
age 61-64	0.0424*** (0.003)	0.005 (0.004)	0.0336*** (0.003)	-0.0296*** (0.001)	-0.0522*** (0.002)	-0.0399*** (0.001)
House owner	-0.0181*** (0.001)	-0.0387*** (0.001)	-0.0280*** (0.001)	-0.0150*** (0.001)	-0.0352*** (0.001)	-0.0253*** (0.001)
Married	-0.137*** (0.002)	-0.112*** (0.002)	-0.135*** (0.002)	-0.0578*** (0.001)	-0.0708*** (0.002)	-0.0679*** (0.001)
Kids under the age of six	-0.0126*** (0.001)	-0.0101*** (0.001)	-0.0109*** (0.001)	-0.00379*** (0.001)	0.00623*** (0.001)	0.001 (0.001)
Families aged 85 and older	0.001 (0.001)	0.0184*** (0.002)	0.00582*** (0.001)	-0.001 (0.001)	0.00768*** (0.002)	0.00168* (0.001)
Local population	-0.000209* (0.000)	0.00014 (0.000)	-0.000212** (0.000)	0.00016 (0.000)	-0.00002 (0.000)	0.00009 (0.000)
Korea			0.0342*** (0.001)			0.0309*** (0.001)
China			0.0793*** (0.002)			0.0632*** (0.002)
Philippines			0.0450*** (0.004)			0.0405*** (0.002)
Thailand			0.0541*** (0.009)			0.0623*** (0.004)
Indonesia			0.0260*** (0.008)			0.0257*** (0.009)
Vietnam			0.0737*** (0.007)			0.0328*** (0.006)
UK			0.0129** (0.006)			0.005 (0.013)
US			0.0312*** (0.004)			0.0180*** (0.007)
Brazil			0.0208*** (0.002)			0.0332*** (0.002)
Peru			0.0616*** (0.004)			0.0571*** (0.004)
Other countries of origin			0.0440*** (0.002)			0.0350*** (0.003)
Residential prefecture dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	281566	234118	515684	216480	236204	452684
Pseudo R2	0.117	0.061	0.091	0.078	0.041	0.065
Log likelihood	-63961	-72502	-136712	-40704	-68432	-109158

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4. Determinants of permanent employment

	Male		Female		Total	
	Model	Compar.	Model	Compar.	Model	Compar.
Korea	-0.0766*** (0.003)	-0.0916*** (0.003)	-0.0171*** (0.003)	-0.0132*** (0.003)	-0.0586*** (0.002)	-0.0653*** (0.002)
China	-0.152*** (0.004)	-0.133*** (0.003)	0.000 (0.003)	-0.0421*** (0.003)	-0.0878*** (0.003)	-0.107*** (0.003)
Philippines	-0.479*** (0.007)	-0.480*** (0.006)	-0.133*** (0.003)	-0.159*** (0.003)	-0.290*** (0.003)	-0.311*** (0.003)
Thailand	-0.278*** (0.017)	-0.260*** (0.017)	-0.129*** (0.007)	-0.154*** (0.007)	-0.242*** (0.008)	-0.259*** (0.008)
Indonesia	-0.327*** (0.014)	-0.290*** (0.013)	-0.120*** (0.015)	-0.162*** (0.013)	-0.239*** (0.010)	-0.261*** (0.010)
Vietnam	-0.300*** (0.012)	-0.283*** (0.012)	-0.0845*** (0.011)	-0.127*** (0.010)	-0.217*** (0.009)	-0.239*** (0.008)
UK	-0.297*** (0.012)	-0.277*** (0.012)	0.031 (0.027)	-0.0004 (0.027)	-0.259*** (0.011)	-0.273*** (0.010)
US	-0.242*** (0.008)	-0.227*** (0.008)	0.009 (0.013)	-0.017 (0.013)	-0.194*** (0.007)	-0.210*** (0.007)
Brazil	-0.483*** (0.004)	-0.489*** (0.004)	-0.0719*** (0.004)	-0.109*** (0.004)	-0.333*** (0.003)	-0.361*** (0.003)
Peru	-0.504*** (0.006)	-0.504*** (0.006)	-0.0588*** (0.007)	-0.0927*** (0.007)	-0.328*** (0.005)	-0.352*** (0.004)
Other countries of origin	-0.302*** (0.005)	-0.286*** (0.004)	-0.0588*** (0.006)	-0.0922*** (0.005)	-0.216*** (0.004)	-0.236*** (0.004)
Education (reference: primary school or junior high school)						
senior high school	0.0208*** (0.002)	0.0253*** (0.002)	-0.00803*** (0.003)	-0.00976*** (0.003)	0.0111*** (0.002)	0.0140*** (0.002)
two-year college or technical college	0.0443*** (0.002)	0.0514*** (0.002)	0.0221*** (0.003)	0.0222*** (0.003)	0.0382*** (0.002)	0.0425*** (0.002)
four-year university or higher	0.0743*** (0.002)	0.0828*** (0.002)	0.129*** (0.003)	0.126*** (0.003)	0.135*** (0.002)	0.138*** (0.002)
Age (reference: age 15-22)						
age 23-30	0.0240*** (0.003)	0.0605*** (0.003)	0.004 (0.005)	-0.0413*** (0.005)	0.0342*** (0.004)	0.0296*** (0.004)
age 31-40	0.0602*** (0.003)	0.129*** (0.003)	-0.0616*** (0.005)	-0.142*** (0.004)	0.0296*** (0.004)	0.0225*** (0.004)
age 41-50	0.0653*** (0.003)	0.138*** (0.003)	-0.102*** (0.005)	-0.182*** (0.004)	0.0117*** (0.004)	0.002 (0.004)
age 51-60	0.0123*** (0.004)	0.100*** (0.003)	-0.0851*** (0.005)	-0.166*** (0.004)	-0.0112*** (0.004)	-0.0202*** (0.004)
age 61-64	-0.273*** (0.007)	-0.108*** (0.005)	-0.142*** (0.005)	-0.211*** (0.004)	-0.227*** (0.005)	-0.236*** (0.004)
Local population	0.000389* (0.000)	0.000 (0.000)	-0.00333*** (0.000)	-0.00372*** (0.000)	-0.00130*** (0.000)	-0.00190*** (0.000)

Table 4. (continued)

	Male		Female		Total	
	Model	Compar.	Model	Compar.	Model	Compar.
Industry (reference: other industries)						
Agriculture	0.0990*** (0.009)	0.104*** (0.009)	0.360*** (0.020)	0.346*** (0.020)	0.225*** (0.011)	0.229*** (0.011)
Forestry	0.0954*** (0.012)	0.106*** (0.012)	0.392*** (0.052)	0.370*** (0.053)	0.233*** (0.017)	0.236*** (0.017)
Fisheries	0.141*** (0.006)	0.150*** (0.006)	0.454*** (0.035)	0.432*** (0.037)	0.308*** (0.011)	0.309*** (0.011)
Mining and Quarrying of store and gravel	0.151*** (0.006)	0.158*** (0.006)	0.500*** (0.061)	0.480*** (0.065)	0.328*** (0.015)	0.330*** (0.015)
Construction	0.156*** (0.004)	0.165*** (0.004)	0.460*** (0.012)	0.444*** (0.012)	0.318*** (0.006)	0.319*** (0.006)
Manufacturing	0.157*** (0.008)	0.170*** (0.008)	0.417*** (0.014)	0.402*** (0.014)	0.311*** (0.008)	0.312*** (0.008)
Electricity, gas, heat supply and water	0.147*** (0.004)	0.157*** (0.003)	0.326*** (0.027)	0.308*** (0.027)	0.305*** (0.007)	0.306*** (0.007)
Information and communications	0.123*** (0.005)	0.131*** (0.005)	0.347*** (0.015)	0.337*** (0.015)	0.251*** (0.007)	0.252*** (0.007)
Transport and postal services	0.144*** (0.005)	0.152*** (0.005)	0.270*** (0.016)	0.257*** (0.016)	0.265*** (0.007)	0.266*** (0.007)
Wholesale and retail trade industry	0.117*** (0.007)	0.125*** (0.007)	0.208*** (0.015)	0.193*** (0.015)	0.184*** (0.009)	0.185*** (0.009)
Finance and insurance	0.152*** (0.003)	0.161*** (0.003)	0.460*** (0.012)	0.446*** (0.012)	0.316*** (0.005)	0.317*** (0.005)
Real estate and goods rental and leasing	0.117*** (0.005)	0.126*** (0.005)	0.388*** (0.014)	0.375*** (0.015)	0.266*** (0.007)	0.267*** (0.007)
Scientific research, professional and technical services	0.122*** (0.005)	0.130*** (0.005)	0.354*** (0.015)	0.342*** (0.015)	0.256*** (0.007)	0.257*** (0.007)
Accommodations, eating and drinking services	0.0889*** (0.007)	0.0959*** (0.007)	0.0584*** (0.016)	0.0400*** (0.015)	0.0948*** (0.011)	0.0936*** (0.011)
Living-related and personal services and amusement services	0.0865*** (0.007)	0.0939*** (0.007)	0.250*** (0.016)	0.238*** (0.016)	0.191*** (0.009)	0.193*** (0.009)
Education and learning support industry	0.0411*** (0.010)	0.0525*** (0.009)	0.199*** (0.016)	0.182*** (0.016)	0.126*** (0.010)	0.130*** (0.010)
Medical, health care and welfare industry	0.109*** (0.006)	0.117*** (0.006)	0.355*** (0.014)	0.338*** (0.015)	0.269*** (0.007)	0.271*** (0.007)
Compound services	0.124*** (0.006)	0.134*** (0.006)	0.307*** (0.018)	0.289*** (0.019)	0.241*** (0.009)	0.245*** (0.009)
Services, N.E.C.	0.128*** (0.005)	0.135*** (0.005)	0.271*** (0.015)	0.256*** (0.015)	0.234*** (0.008)	0.234*** (0.008)
Government, except elsewhere classified	0.145*** (0.004)	0.158*** (0.003)	0.259*** (0.016)	0.232*** (0.017)	0.256*** (0.007)	0.257*** (0.007)

Table 4. (continued)

	Male		Female		Total	
	Model	Compar.	Model	Compar.	Model	Compar.
Occupations (reference: other occupations)						
Administrative and managerial jobs	0.143*** (0.005)	0.151*** (0.005)	0.497*** (0.027)	0.503*** (0.026)	0.307*** (0.010)	0.308*** (0.010)
Professional and technical jobs	0.0350*** (0.010)	0.0451*** (0.010)	0.0899*** (0.016)	0.0953*** (0.016)	0.0782*** (0.011)	0.0776*** (0.011)
Clerical jobs	0.017 (0.011)	0.0257** (0.011)	(0.012) (0.015)	0.005 (0.015)	0.013 (0.011)	0.014 (0.011)
Sales jobs	0.007 (0.011)	0.015 (0.011)	-0.132*** (0.013)	-0.120*** (0.013)	-0.0587*** (0.012)	-0.0597*** (0.012)
Service jobs	-0.0792*** (0.014)	-0.0827*** (0.015)	-0.145*** (0.013)	-0.133*** (0.013)	-0.127*** (0.012)	-0.129*** (0.012)
Protective service jobs	-0.0809*** (0.015)	-0.0811*** (0.015)	0.129*** (0.028)	0.133*** (0.028)	-0.0428*** (0.014)	-0.0454*** (0.014)
Agriculture, forestry and fishery jobs	-0.0888*** (0.020)	-0.0856*** (0.020)	-0.249*** (0.012)	-0.245*** (0.012)	-0.213*** (0.017)	-0.214*** (0.017)
Production jobs	-0.0750*** (0.013)	-0.0739*** (0.013)	-0.277*** (0.011)	-0.271*** (0.011)	-0.201*** (0.012)	-0.202*** (0.012)
Transport and machine operation jobs	-0.0411*** (0.013)	-0.0369*** (0.013)	(0.016) (0.022)	0.007 (0.022)	-0.0573*** (0.012)	-0.0583*** (0.012)
Construction and mining jobs	-0.0496*** (0.014)	-0.0469*** (0.014)	-0.0480** (0.024)	(0.034) (0.024)	-0.122*** (0.013)	-0.124*** (0.013)
Carrying, cleaning, packaging, and related jobs	-0.266*** (0.017)	-0.272*** (0.017)	-0.302*** (0.007)	-0.298*** (0.007)	-0.351*** (0.010)	-0.351*** (0.010)
House owner	0.0638*** (0.002)		0.0369*** (0.002)		0.0545*** (0.002)	
Married	0.138*** (0.002)		-0.135*** (0.002)		-0.0180*** (0.002)	
Kids under the age of six	0.0174*** (0.001)		-0.0110*** (0.002)		0.0241*** (0.001)	
Families aged 85 and older	-0.00504*** (0.002)		0.0450*** (0.002)		0.0183*** (0.002)	
Male					0.413*** (0.001)	0.412*** (0.001)
Residential prefecture dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	351541	351541	336733	336733	688274	688274
Pseudo R2	0.227	0.209	0.172	0.161	0.263	0.262
Log likelihood	-143842	-147148	-184543	-187150	-344610	-345536

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5. Immigrant-native differences:
original countries in Asia, US and UK, and South America

(1) Differences between Asian immigrants and natives

	Japan	Asia	Difference	Pr(T > t), Ho: diff = 0, Ha: diff != 0
Male				
Unemployment	0.0714	0.1131	-0.0417	0.0000
Permanent employment	0.8715	0.7404	0.1310	0.0000
Education level	2.6555	2.6532	0.0023	0.5112
Age	44.1269	41.5879	2.5390	0.0000
Local population	10.8470	12.2057	-1.3588	0.0000
Married	0.7070	0.7262	-0.0191	0.0000
House owner	0.7559	0.4718	0.2841	0.0000
Kids under the age of six	0.2150	0.2524	-0.0374	0.0000
Families aged 85 and older	0.2048	0.0643	0.1405	0.0000
Female				
Unemployment	0.0518	0.0912	-0.0393	0.0000
Permanent employment	0.4504	0.3004	0.1500	0.0000
Education level	2.4962	2.4150	0.0812	0.0000
Age	44.0857	41.3901	2.6956	0.0000
Local population	10.9130	11.8498	-0.9368	0.0000
Married	0.7209	0.7771	-0.0562	0.0000
House owner	0.7428	0.4877	0.2551	0.0000
Kids under the age of six	0.2149	0.2553	-0.0404	0.0000
Families aged 85 and older	0.1722	0.0889	0.0832	0.0000

(2) Differences between US and UK immigrants and natives

	Japan	US&UK	Difference	Pr(T > t), Ho: diff = 0, Ha: diff != 0
Male				
Unemployment	0.0714	0.0528	0.0186	0.0000
Permanent employment	0.8715	0.7305	0.1410	0.0000
Education level	2.6555	3.5718	-0.9163	0.0000
Age	44.1269	43.8582	0.2687	0.0140
Local population	10.8470	12.0304	-1.1834	0.0000
Married	0.7070	0.9024	-0.1954	0.0000
House owner	0.7559	0.4900	0.2659	0.0000
Kids under the age of six	0.2150	0.3766	-0.1615	0.0000
Families aged 85 and older	0.2048	0.0431	0.1617	0.0000
Female				
Unemployment	0.0518	0.0515	0.0003	0.9375
Permanent employment	0.4504	0.5346	-0.0842	0.0000
Education level	2.4962	3.3708	-0.8746	0.0000
Age	44.0857	44.3955	-0.3097	0.0815
Local population	10.9130	11.8861	-0.9731	0.0000
Married	0.7209	0.8154	-0.0945	0.0000
House owner	0.7428	0.5484	0.1943	0.0000
Kids under the age of six	0.2149	0.2528	-0.0379	0.0000
Families aged 85 and older	0.1722	0.0855	0.0867	0.0000

(3) Differences between South American immigrants and natives

	Japan	South America	Difference	Pr(T > t), Ho: diff = 0, Ha: diff != 0
Male				
Unemployment	0.0714	0.1008	-0.0294	0.0000
Permanent employment	0.8715	0.3663	0.5052	0.0000
Education level	2.6555	1.9387	0.7168	0.0000
Age	44.1269	38.9539	5.1730	0.0000
Local population	10.8470	10.2911	0.5559	0.0000
Married	0.7070	0.7547	-0.0477	0.0000
House owner	0.7559	0.1831	0.5728	0.0000
Kids under the age of six	0.2150	0.3133	-0.0983	0.0000
Families aged 85 and older	0.2048	0.0145	0.1903	0.0000
Female				
Unemployment	0.0518	0.1021	-0.0502	0.0000
Permanent employment	0.4504	0.2307	0.2197	0.0000
Education level	2.4962	1.9900	0.5062	0.0000
Age	44.0857	39.0101	5.0756	0.0000
Local population	10.9130	10.3117	0.6014	0.0000
Married	0.7209	0.7523	-0.0313	0.0000
House owner	0.7428	0.2022	0.5405	0.0000
Kids under the age of six	0.2149	0.3105	-0.0955	0.0000
Families aged 85 and older	0.1722	0.0225	0.1497	0.0000

Table 6. Decomposition result of unemployment

	Asia		US&UK		South America	
	Male	Female	Male	Female	Male	Female
Pr(Y!=0 G=native)	0.0714	0.0518	0.0714	0.0518	0.0714	0.0518
Pr(Y!=0 G=immigrant)	0.1130	0.0912	0.0528	0.0515	0.1010	0.1020
Difference	-0.0417	-0.0393	0.0186	0.0003	-0.0294	-0.0502
Total explained	0.0031	-0.0013	0.0368	0.0146	0.0031	-0.0076
Detailed explained						
Education (reference: primary school or junior high school)						
senior high school	-0.00119*** (0.0001)	-0.000386*** (0.0001)	-0.00352*** (0.0003)	-0.00153*** (0.0003)	-0.000985*** (0.0001)	-0.000193*** (0.0001)
two-year college or technical college	-0.000952*** (0.0001)	-0.00343*** (0.0002)	-0.000380*** (0.0001)	-0.00287*** (0.0002)	-0.00174*** (0.0001)	-0.00537*** (0.0004)
four-year university or higher	-0.000628*** (0.0001)	0.000792*** (0.0001)	0.0122*** (0.0004)	0.0106*** (0.0006)	-0.00708*** (0.0003)	-0.00211*** (0.0001)
Age (reference: age 15-22)						
age 23-30	0.0001 (0.0001)	-0.000707*** (0.0001)	-0.000871*** (0.0002)	-0.000886*** (0.0001)	0.000344*** (0.0001)	0.0001 (0.0001)
age 31-40	0.0001 (0.0001)	0.00121*** (0.0002)	0.000268** (0.0001)	0.0002 (0.0002)	(0.0000) (0.0001)	0.000934*** (0.0002)
age 41-50	0.000177** (0.0001)	0.00269*** (0.0003)	0.00112*** (0.0002)	0.00203*** (0.0002)	0.000237*** (0.0001)	0.000655*** (0.0002)
age 51-60	0.0001 (0.0001)	-0.00170*** (0.0002)	-0.000338** (0.0002)	0.00131*** (0.0002)	0.000380** (0.0001)	-0.00310*** (0.0003)
age 61-64	0.000486*** (0.0001)	-0.00101*** (0.0001)	0.000617*** (0.0001)	-0.000693*** (0.0001)	0.00252*** (0.0002)	-0.00193*** (0.0001)
House owner	-0.00467*** (0.0003)	-0.00432*** (0.0003)	-0.00494*** (0.0003)	-0.00328*** (0.0003)	-0.0120*** (0.0007)	-0.00949*** (0.0007)
Married	0.00770*** (0.0002)	0.00504*** (0.0001)	0.0316*** (0.0005)	0.0101*** (0.0003)	0.0125*** (0.0002)	0.00704*** (0.0002)
Kids under the age of six	0.000447*** (0.0000)	0.000216*** (0.0001)	0.00127*** (0.0001)	0.000272*** (0.0001)	0.00132*** (0.0001)	0.000504*** (0.0001)
Families aged 85 and older	0.0002 (0.0002)	-0.0001 (0.0001)	0.0002 (0.0002)	0.0000 (0.0001)	0.0003 (0.0002)	-0.0001 (0.0002)
Local population	0.000299* (0.0002)	-0.0002 (0.0001)	0.000208* (0.0001)	-0.0001 (0.0001)	-0.000112* (0.0001)	0.0001 (0.0001)
Residential prefecture dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of obs	423481	393963	292921	219140	323338	248375
N of obs G=native	281566	216480	281566	216480	281566	216480
N of obs G=immigrant	141915	177483	11355	2660	41772	31895

Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7. Decomposition result of permanent employment

	Asia		US&UK		South America	
	Male	Female	Male	Female	Male	Female
Pr(Y!=0 G=native)	0.8710	0.4500	0.8710	0.4500	0.8710	0.4500
Pr(Y!=0 G=immigrant)	0.7400	0.3000	0.7300	0.5350	0.3660	0.2310
Difference	0.1310	0.1500	0.1410	-0.0842	0.5050	0.2200
Total explained	0.0084	0.1010	-0.0537	-0.0997	-0.0068	0.1130
Detailed explained						
Education (reference: primary school or junior high school)						
senior high school	0.00227*** (0.0002)	-0.0001 (0.0001)	0.00842*** (0.0007)	-0.0007 (0.0011)	0.000350** (0.0002)	0.0001 (0.0002)
two-year college or technical college	0.000937*** (0.0001)	0.00212*** (0.0005)	0.00134*** (0.0001)	0.00275*** (0.0007)	0.00282*** (0.0002)	0.00305*** (0.0008)
four-year university or higher	0.0001 (0.0003)	-0.00588*** (0.0003)	-0.0260*** (0.0013)	-0.0574*** (0.0025)	0.0130*** (0.0007)	0.00492*** (0.0002)
Age (reference: age 15-22)						
age 23-30	-0.00108*** (0.0002)	-0.0001 (0.0001)	0.00239*** (0.0003)	-0.0003 (0.0003)	-0.00101*** (0.0002)	0.00003 (0.0000)
age 31-40	-0.00296*** (0.0003)	0.00390*** (0.0004)	-0.00328*** (0.0004)	-0.00115*** (0.0002)	-0.00137*** (0.0003)	0.00214*** (0.0002)
age 41-50	-0.00165*** (0.0003)	0.00585*** (0.0004)	-0.00605*** (0.0005)	0.00366*** (0.0002)	-0.00238*** (0.0003)	0.00457*** (0.0003)
age 51-60	0.000555*** (0.0002)	-0.00536*** (0.0004)	-0.000331* (0.0002)	0.00461*** (0.0003)	0.000483** (0.0002)	-0.00539*** (0.0004)
age 61-64	-0.00823*** (0.0003)	-0.00316*** (0.0002)	-0.00723*** (0.0003)	0.000192* (0.0001)	-0.0139*** (0.0004)	-0.00489*** (0.0002)
House owner	0.00774*** (0.0005)	0.00617*** (0.0006)	0.00762*** (0.0005)	0.00603*** (0.0005)	0.0157*** (0.0010)	0.0138*** (0.0013)
Married	-0.00465*** (0.0003)	0.0113*** (0.0003)	-0.0307*** (0.0008)	0.0237*** (0.0007)	-0.00908*** (0.0003)	0.0160*** (0.0005)
Kids under the age of six	-0.000913*** (0.0001)	-0.000580*** (0.0001)	-0.00219*** (0.0002)	-0.000783*** (0.0001)	-0.00175*** (0.0002)	-0.000846*** (0.0002)
Families aged 85 and older	0.000395* (0.0002)	0.00336*** (0.0002)	0.000408* (0.0002)	0.00407*** (0.0002)	0.000518* (0.0003)	0.00607*** (0.0004)
Local population	-0.0004 (0.0002)	0.00190*** (0.0002)	-0.0003 (0.0002)	0.00265*** (0.0003)	0.0002 (0.0001)	-0.00160*** (0.0002)

Table 7. (continued)

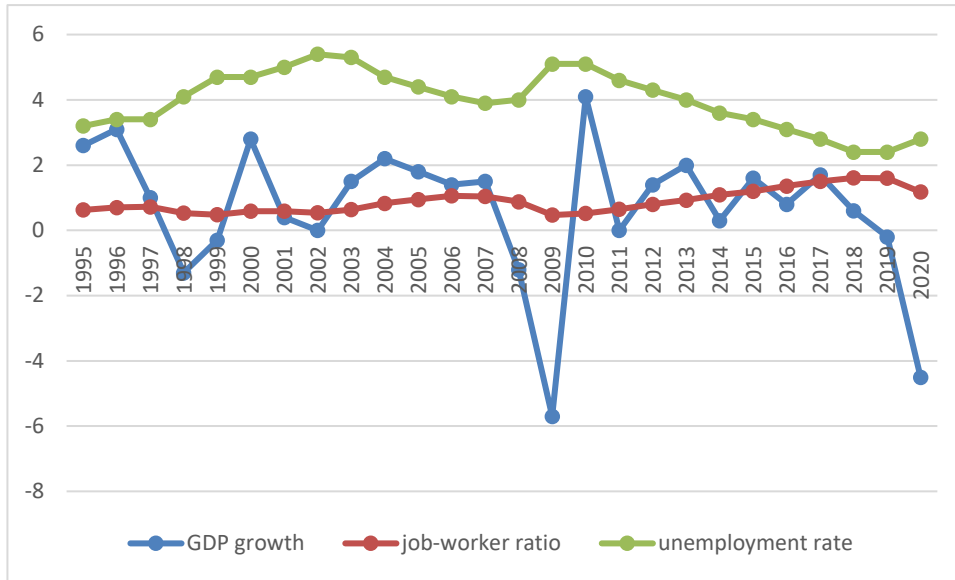
	Asia		US&UK		South America	
	Male	Female	Male	Female	Male	Female
Industry (reference: other industries)						
Agriculture	0.000278*** (0.0001)	-0.000696*** (0.0001)	0.000659*** (0.0001)	0.00121*** (0.0001)	0.0001 (0.0001)	0.000673*** (0.0001)
Forestry	0.000269*** (0.0000)	9.53e-05*** (0.0000)	0.000257*** (0.0000)	0.000134*** (0.0000)	0.000214*** (0.0000)	9.70e-05*** (0.0000)
Fisheries	0.000370*** (0.0000)	3.45e-05*** (0.0000)	0.000392*** (0.0000)	0.000177*** (0.0000)	0.000392*** (0.0000)	0.000143*** (0.0000)
Mining and Quarrying of store and gravel	9.77e-05*** (0.0000)	3.45e-05*** (0.0000)	0.000130*** (0.0000)	4.13e-05** (0.0000)	0.000112*** (0.0000)	3.63e-05*** (0.0000)
Construction	0.0003 (0.0016)	0.00303*** (0.0002)	0.0140*** (0.0016)	0.00667*** (0.0003)	0.0109*** (0.0016)	0.00681*** (0.0002)
Manufacturing	-0.0016 (0.0030)	-0.0590*** (0.0017)	0.0304*** (0.0037)	0.0333*** (0.0010)	-0.0894*** (0.0096)	-0.221*** (0.0062)
Electricity, gas, heat supply and water	0.00130*** (0.0001)	0.000587*** (0.0000)	0.00119*** (0.0001)	0.000668*** (0.0001)	0.00143*** (0.0002)	0.000648*** (0.0000)
Information and communications	-0.00111* (0.0007)	(0.0001)	-0.00284*** (0.0007)	-0.00254*** (0.0002)	0.00469*** (0.0007)	0.00433*** (0.0003)
Transport and postal services	0.00483*** (0.0013)	0.00107*** (0.0002)	0.0151*** (0.0015)	0.00331*** (0.0003)	0.0121*** (0.0015)	0.00261*** (0.0003)
Wholesale and retail trade industry	0.00505*** (0.0015)	0.00587*** (0.0011)	0.0126*** (0.0019)	0.0283*** (0.0023)	0.0168*** (0.0022)	0.0325*** (0.0028)
Finance and insurance	0.000701** (0.0003)	0.00929*** (0.0004)	-0.00177*** (0.0005)	0.00744*** (0.0004)	0.00307*** (0.0004)	0.0156*** (0.0005)
Real estate and goods rental and leasing	-0.000384* (0.0002)	0.000716*** (0.0001)	0.00151*** (0.0002)	0.000988*** (0.0001)	0.00232*** (0.0003)	0.00340*** (0.0002)
Scientific research, professional and technical services	0.000815** (0.0004)	0.00211*** (0.0001)	-0.00185*** (0.0005)	-0.00546*** (0.0004)	0.00402*** (0.0006)	0.00516*** (0.0003)
Accommodations, eating and drinking services	-0.00840*** (0.0014)	-0.00354*** (0.0012)	0.00132*** (0.0003)	0.00208*** (0.0007)	0.00282*** (0.0005)	0.00205*** (0.0007)
Living-related and personal services and amusement services	-0.00173*** (0.0003)	-0.00152*** (0.0003)	0.000923*** (0.0002)	0.00645*** (0.0005)	0.00216*** (0.0003)	0.00509*** (0.0005)
Education and learning support industry	0.00119*** (0.0005)	0.00716*** (0.0005)	-0.0485*** (0.0074)	-0.111*** (0.0077)	0.00396*** (0.0007)	0.0113*** (0.0009)
Medical, health care and welfare industry	0.00280*** (0.0005)	0.0449*** (0.0022)	0.00475*** (0.0006)	0.0578*** (0.0028)	0.00644*** (0.0008)	0.0629*** (0.0032)
Compound services	0.00122*** (0.0001)	0.00250*** (0.0001)	0.00115*** (0.0001)	0.00276*** (0.0002)	0.00142*** (0.0002)	0.00276*** (0.0002)
Services, N.E.C.	0.00179** (0.0007)	-0.00005 (0.0003)	-0.00477*** (0.0011)	-0.0158*** (0.0011)	0.00614*** (0.0008)	0.00317*** (0.0004)
Government, except elsewhere classified	0.00909*** (0.0010)	0.00689*** (0.0004)	0.00708*** (0.0009)	0.00260*** (0.0002)	0.00789*** (0.0010)	0.00485*** (0.0003)

Table 7. (continued)

	Asia		US&UK		South America	
	Male	Female	Male	Female	Male	Female
Occupations (reference: other occupations)						
Administrative and managerial jobs	0.000147*** (0.0000)	-0.00001 (0.0000)	0.000004 (0.0000)	-0.000204*** (0.0000)	0.000328*** (0.0001)	0.000159*** (0.0000)
Professional and technical jobs	0.0002 (0.0007)	0.0007 (0.0019)	0.0109 (0.0079)	-0.0036 (0.0100)	-0.0020 (0.0016)	0.0010 (0.0030)
Clerical jobs	-0.00316*** (0.0011)	-0.0152*** (0.0026)	-0.0013 (0.0008)	-0.0157*** (0.0029)	-0.00626*** (0.0020)	-0.0287*** (0.0049)
Sales jobs	-0.0013 (0.0009)	-0.00339*** (0.0008)	-0.00367*** (0.0013)	-0.0222*** (0.0019)	-0.00578*** (0.0020)	-0.0234*** (0.0021)
Service jobs	0.00854*** (0.0014)	0.00555*** (0.0012)	-0.00337*** (0.0006)	-0.0244*** (0.0023)	-0.00648*** (0.0009)	-0.0199*** (0.0020)
Protective service jobs	-0.00257*** (0.0005)	0.00004 (0.0000)	-0.00254*** (0.0005)	0.00002 (0.0000)	-0.00290*** (0.0006)	0.00004 (0.0001)
Agriculture, forestry and fishery jobs	-0.000763*** (0.0001)	0.000620*** (0.0001)	-0.00106*** (0.0002)	-0.00131*** (0.0001)	-0.000561*** (0.0001)	-0.000653*** (0.0001)
Production jobs	-0.0001 (0.0019)	0.0546*** (0.0025)	-0.0106*** (0.0026)	-0.0271*** (0.0014)	0.0321*** (0.0078)	0.190*** (0.0089)
Transport and machine operation jobs	-0.0007 (0.0007)	-5.51e-05*** (0.0000)	-0.00512*** (0.0011)	-0.000108** (0.0001)	-0.00322*** (0.0009)	9.34e-05*** (0.0000)
Construction and mining jobs	-0.0001 (0.0009)	0.000124*** (0.0000)	-0.00393*** (0.0010)	-0.000127*** (0.0000)	-0.00299*** (0.0010)	0.000155*** (0.0000)
Carrying, cleaning, packaging, and related jobs	-0.000999** (0.0004)	0.0117*** (0.0009)	-0.0150*** (0.0010)	-0.0164*** (0.0008)	-0.0002 (0.0006)	0.00503*** (0.0006)
Residential prefecture dummies	Yes	Yes	Yes	Yes	Yes	Yes
Number of obs	291826	300049	216184	177918	241810	201746
N of obs G=native	208426	176169	208426	176169	208426	176169
N of obs G=immigrant	83400	123880	7758	1749	33384	25577

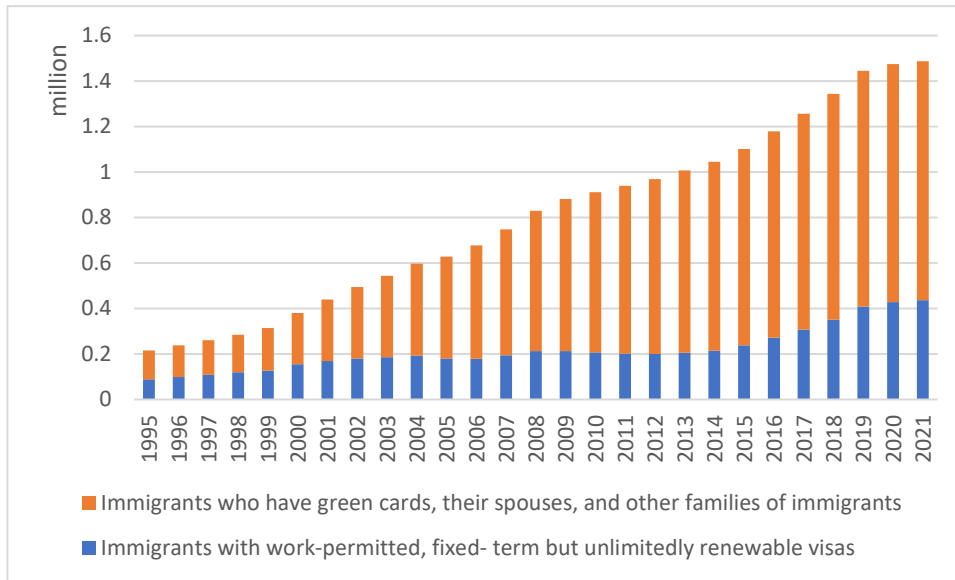
Notes: Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Figure 1. Trend of economic situation and labor market



Data source: Cabinet office and Ministry of Health, Labor and Welfare

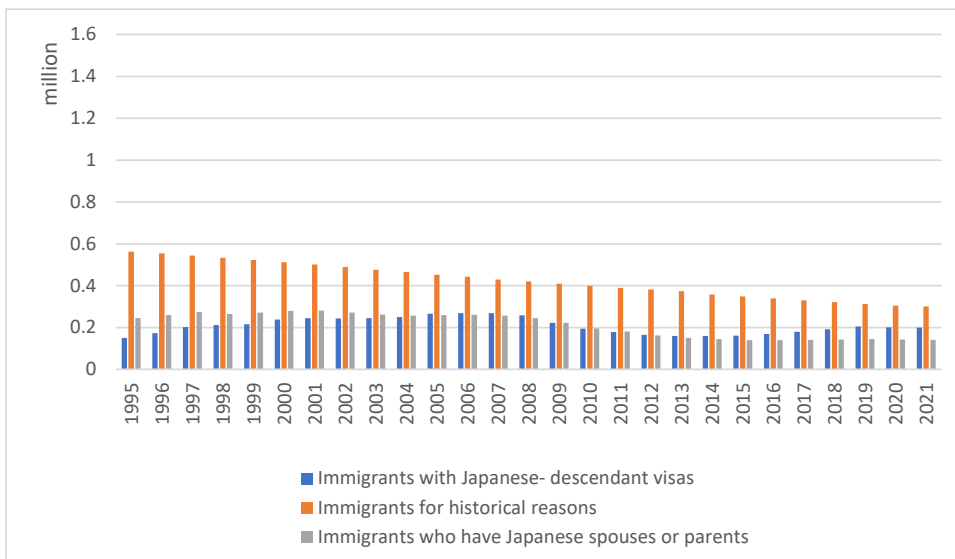
Figure 2. Annual number of permanent immigrants in Japan
 (1) General permanent immigrants in Japan



Data source: Immigration Services Agency of Japan, Ministry of Justice.

Note: Immigrant number at the end of each year, except 2021 which is the number in the end of June.

(2) Other permanent immigrants in Japan

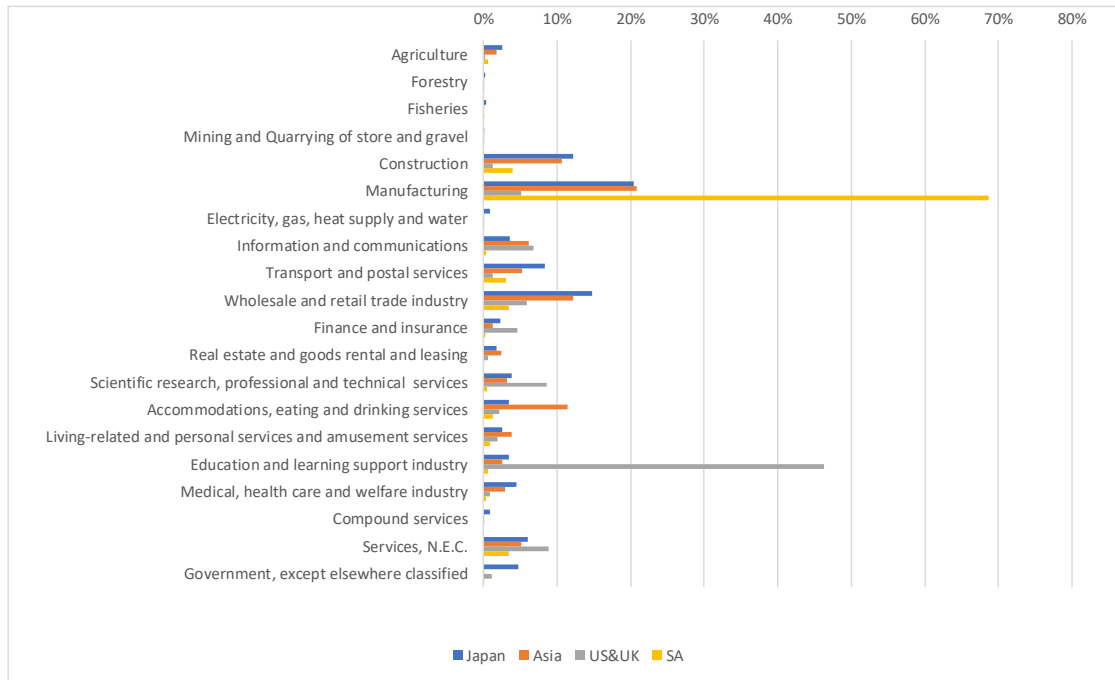


Data source: Immigration Services Agency of Japan, Ministry of Justice.

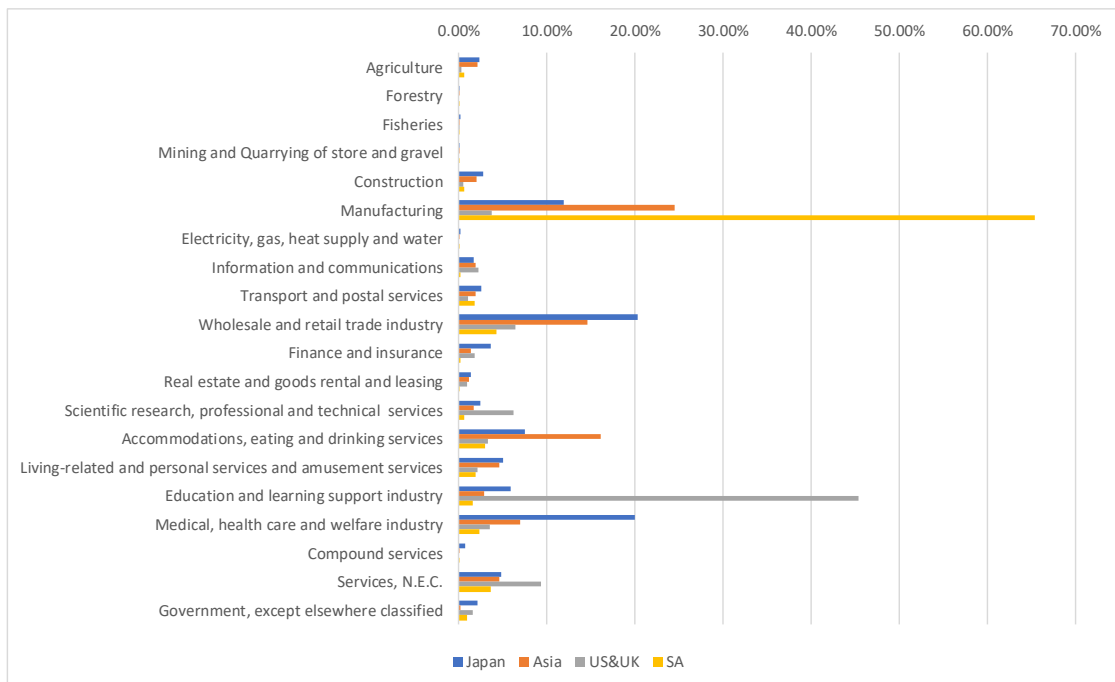
Note: Immigrant number at the end of each year, except 2021 which is the number in the end of June.

Figure 3. Immigrant-native differences in industries and occupations:
original countries in Asia, US& UK, and South America

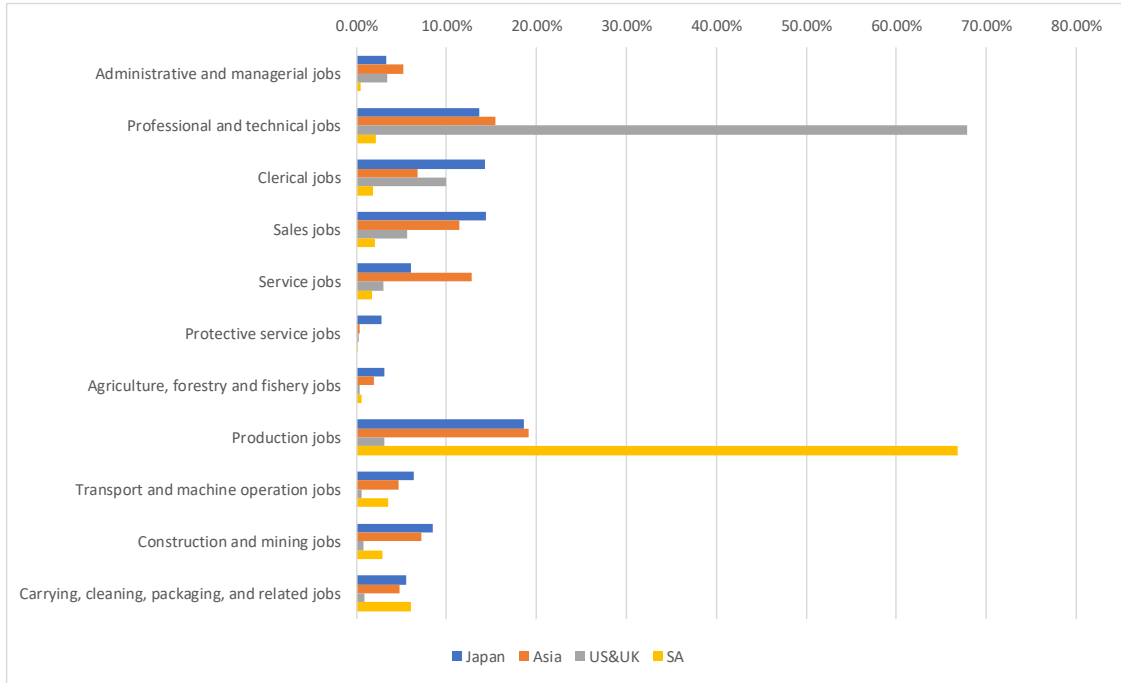
(1) Industry differences: males



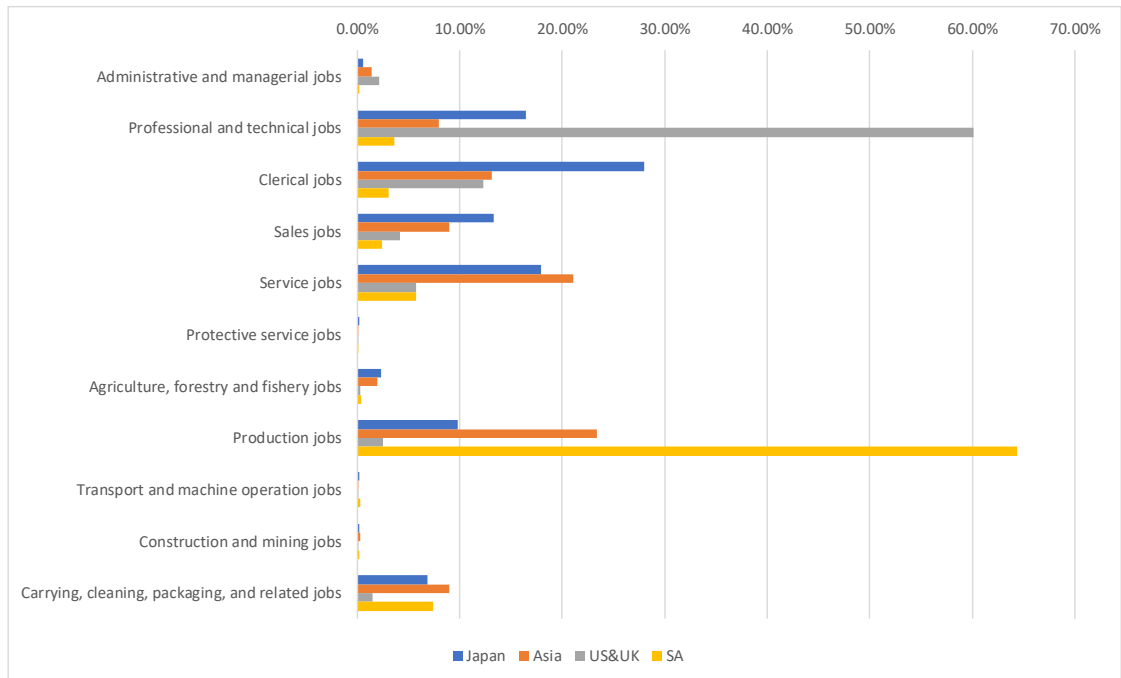
(2) Industry differences: females



(3) Occupation differences: males

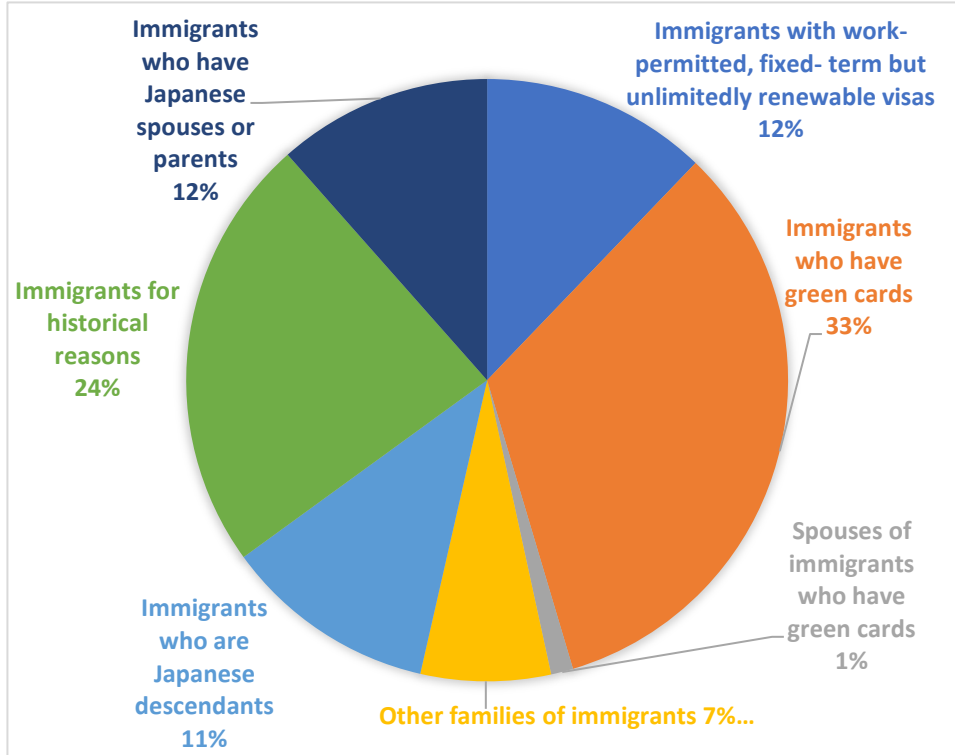


(4) Occupation differences: females



Data source: 2010 Population Census, Ministry of Internal Affairs and Communications (MIC)

Figure 4. Categories of immigrants in 2010



Data source: 2010 Population Census, Ministry of Internal Affairs and Communications (MIC)