The Popularity of Japanese Universities to International Students and Its Potential Implications

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Abstract—**This study analyzes the popularity of Japanese universities to international students. Given the background that both the Kanto region and the Kansai region have prestigious universities, coefficient of variance is estimated for each region over the period 1998-2014. It has been found that universities among prefectures are not equally popular in Japan. Estimated CV (coefficient of variance) values have been found to be always higher in the Kanto region than the Kansai region over the analysis period, reflecting a fact that disparities are more significant in the Kanto region. Though relaxed immigration rules and visa requirements after 2000 have been effective in increasing the total number of international graduate students in Japan, many of those students seem to prefer to study in leading universities in the metropolitan area or in big cities, further enlarging the disparities between the big cities and the local areas. Policy reforms that attract more international students to the local areas should be beneficial to the local economic development. More research should be done and more practical policies that mitigate disparity issues should be considered.**

Index Terms—**Popularity, Japanese universities, coefficient of variance, disparities, policy reforms.**

I. Introduction

Education has been and will continue to be the key to the sustainable development of each country. It helps people gain knowledge and skills which will be useful in problem-solving and new knowledge creation. It also increases opportunities in various scenarios over the lifetimes of people. While education promotes innovation and enlarges the freedom of choice of people, it also brings us issues and challenges such as disparities in education [1]-[3].

With the accelerated socio-economic development and globalization, demand for laborers with higher education backgrounds and skills has increased significantly. Moreover, new technologies and strategies in many cases change the comparative advantages of a company, or even a country. Universities that train people and fulfil the demand of our society are becoming more important than ever.

Among a variety of educational issues, disparities in higher education have been discussed a lot over the past years, emphasizing the realistic issues and challenges of many universities to catch up with the global trend [4]-[9]. Nowadays, regardless of cultural and language differences, most universities in the world apply the western academic models to practice [4]. When we examine major academic journal database at the global scale, it is not difficult to notice that many frontier academic journals in the world use English. It is English that is utilized and accepted as a common academic language. Moreover, many top universities in the world also use English as the main language, putting more pressure to those countries whose native languages are not English.

To catch up with the global trend, more universities in non-English speaking countries like Japan, China and Korea are starting to offer English programs and courses taught in English. At the same time, more and more undergraduate students from the leading universities in the non-English speaking countries choose universities in America or the United Kingdom to be their priority destinations to learn knowledge and gain graduate degrees. In Japan, though some leading universities have been ranked in the top 100 or 200 in the world, a similar tendency can be observed [10]. Furthermore, the ratio of Japanese students from the top high schools who choose America universities to study has also increased over the past years [10].

Given the fact that human resources are key to the sustainable development of our society and innovation, excellent human resources have been highly evaluated in almost all the countries in the world. Often, it is not difficult to find that people with study experiences in more than one country are easily to think things from a broader viewpoint. Furthermore, those people with different education backgrounds often play key roles in promoting the relationships between their home countries and countries they had their educations. The closer relationships in turn improve business relationships and the socioeconomic development of these countries. Moreover, like other sectors, higher education is a big industry which creates revenues and boosts the local economy.

Thus, the implications of universities are beyond the scope of teaching and training people. They are indeed strategic places of a nation to attract excellent human resources. Keeping the popularity of universities in a nation and attracting more international students are very meaningful.

Despite the importance of higher education to both the society and people, not all universities offer the same levels of education quality. Over the past years, disparities in education between the developing countries and developed countries have been discussed a lot [4]- [9]. Negative impacts of disparities on developing countries have been debated among scholars [4]- [9]. Furthermore, it is also critically important to recognize a fact that education disparities also exist in the developed countries.

In this study, the focal point is on the universities in Japan. International students at the graduate schools of Japanese universities are focused (Table I). Given the fact that both the Kanto region and the Kansai region have prestigious

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universities, whether the universities in both regions are equally popular among international students are analyzed in this study. For each region, 7 prefectures are chosen for analysis (Table I).

TABLE I: ANALYSIS FOCUS OF THIS STUDY: KANTO REGION AND KANSAI REGION

Kanto region	Kansai region
Ibaraki	Mie
Tochigi	Shiga
Gunma	Kyoto
Saitama	Osaka
Chiba	Hyogo
Tokyo	Nara
Kanagawa	Wakayama

Through analysis, it becomes possible to understand what is happening in Japan. The estimated outcomes could help the government and universities design useful practical policies that mitigate various educational disparities within the country.

In the research area of disparities in education, many articles so far have put their focal points on globalization and disparities [4]-[8]. At the global level, for example, Altbach (2004) emphasized the negative impacts of globalization on the developing countries [7]. The author indicated that the differences in opportunities, salaries and the working conditions among universities make some universities more attractive than the other. In many cases, academic migration is not an uncommon phenomenon in the context of globalization.

Many excellent international students are also found to take jobs abroad from home after they graduate from foreign universities [4]-[8]. Disparities between the universities in the developed countries and the developing countries are then further enlarged. In general, brain drain is a global phenomenon. Brain drain from the developing countries directly impacts the quality and the development of academic institutions in the developing countries [4]-[8].

At the national level, it has been found that students in the developing countries prefer to go to the developed countries to continue their studies [4]-[8]. Ishikawa (2009) found that Japan is not the priority destination for Asia's best students any more [6]. More applicants from the top universities in China have been found to choose to go to the United States, Britain or Canada instead of Japan. These facts reflect the diminishing attractiveness of non-English speaking countries like Japan to excellent international students.

Furthermore, it has been noticed that many leading universities are more competitive in the market of the education sector. In many cases, those leading universities with higher reputation usually have more funding resources, outstanding educators, and are strong in research and innovation [6]. Their dominant academic positions usually recycle their academic positions, keeping their influences and popularity high [6]. Consequently, leading universities are more popular and are easier to attract excellent human resources.

In general, universities in a country are indeed strategic places that benefit students, universities, and the society. Human resources are also key to the social development. Thus, universities should make more efforts to attract excellent human resources and meet the demand of our society.

II. MATERIALS AND METHODOLOGY

In this study, Kanto region and Kansai region are focused and the disparities of university popularity in the two regions are compared and analyzed. Based on information provided by Japan Student Services Organization, Kanto region is considered to include Tokyo metropolis, Ibaraki, Tochigi, Gunma, Saitama, Chiba, and Kanagawa (Table 1). The Kansai region, on the other hand, is considered to include Mie, Shiga, Kyoto, Osaka, Hyogo, Nara, and Wakayama (Table 1).

Given the background that data on the number of international graduate students in each prefecture is not offered, other types of available data are collected instead to calculate the approximate number of international graduate students in each prefecture.

It has been found that Japan Student Services Organization offers the following types of data: the total number of international graduate students in Japan, the total number of international students in the nation, and the total number of international students in each prefecture. Thus, formula (1) is used to estimate the number of international graduate students in each prefecture over the period 1998-2014.

$$Pig = Pti \cdot \frac{Tig}{Ti} \tag{1}$$

where *Pig* indicates the number of international graduate students in each prefecture, *Pti* is the total number of international students in each prefecture, *Tig* is the total number of international graduate students in Japan, and *Ti* indicate the total number of international students in Japan.

In the formula, the ratio of international graduate students at the national level is first estimated where *Tig* is divided by *Ti*. Then, the estimated result is multiplied by the total number of international students in each prefecture *Pti* to estimate the number of international graduate students in each prefecture (*Pig*).

With the processed data, coefficient of variance (*CV*) in the Kanto region and the Kansai region are estimated. The following formula is used.

$$CV = \frac{\sigma}{\mu} \tag{2}$$

where *CV* indicates coefficient of variance, σ indicates standard deviation and μ implies mean. For the denominator μ, mean of international graduate students in each region in each year is estimated. For numerator, standard deviation σ in each region in each year is also estimated. Then, coefficient of variance *CV in* each region in each year can be estimated where standard deviation σ *is* divided by mean μ.

Though standard deviation is also useful in providing information on data spread in the two regions, different international graduate student sizes in the two regions could lead to overestimations. Thus, to avoid such an issue, coefficient of variance is used in this study. With the

estimated results, comparison of university popularity between the Kanto region and the Kansai region becomes possible.

III. Results

With the estimated coefficient of variance (CV), data spread in the Kanto region and the Kansai region are analyzed (see Fig.1.). For the CV, its value is usually above 0. When the value is larger, disparity is more significant among prefectures in a region.

For the two regions, it has been found that the CV values in the Kanto region are always higher than the Kansai region over the analysis period (Fig.1.). In 1998, for example, while the CV value in the Kansai region was 1.16, it was 1.76 in the Kanto region. Though there was the smallest difference between the two regions in 2004, CV values in the Kanto region was still larger and the gap existed. In that year, CV value is found to be 1.54 in the Kanto region and 1.2 in the Kansai region. As time passes, the difference between the two regions slightly increases. In 2014, the CV value in the Kanto region increased to 1.79, close to the level found in 1998. CV value (1.17) that year in the Kansai region is found to be unchanged from the past years (see Fig.1.). These higher CV values in the Kanto region indicate that larger disparities exist among prefectures in this region than the Kansai region.

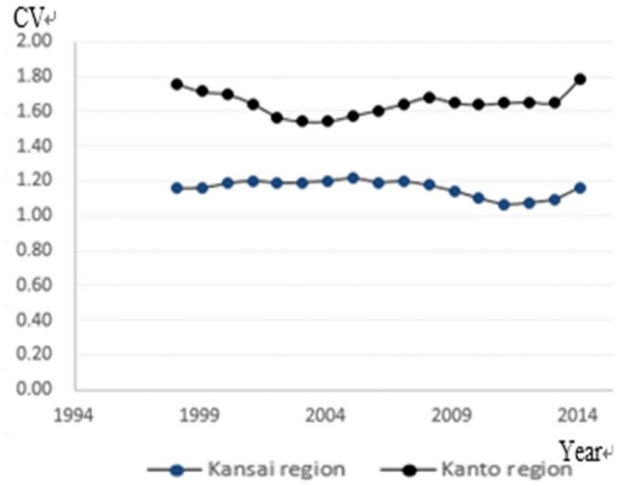

Fig. 1. Estimated coefficient of variance in the Kansai region and the Kanto region.

In the Kanto region, the ratio of international graduate student number in Tokyo has been found to be the highest in the region. In 1998, the ratio was 71.06% (number: 8765) (see Fig.2.). Along with time, the total number of international graduate students increased to 12782 in 2004 in Tokyo. However, its ratio within the region decreased slightly and became 63.84% then. The decreased ratio in Tokyo in 2004 implies that there were increased ratios of international graduate students in other prefectures of the region. In 2014, international graduate student number in Tokyo increased again and became 15176. Its ratio became 72.02%.

In comparison with Tokyo, the sizes of international graduate students are much smaller in other prefectures. Next to Tokyo, Saitama, Chiba and Kanagawa have the second largest number of international graduate students in the region (see Fig.2.). In 1998, the ratios of international graduate student number in Saitama, Chiba and Kanagawa were 8.47% (number: 1045), 6.69% (number: 825) and 5.74% (number: 708) separately. In 2004, their ratios increased (Saitama: 8.99% (student number: 1799); Chiba: 9.78% (student number: 1958); Kanagawa: 7.78% (student number: 1557)). These increased ratios are in line with the decreased ratio found in Tokyo that year. While the changes in ratios are not significantly large in other prefectures, larger ratios in Saitama, Chiba, and Kanagawa may indicate that universities in these three prefectures could also be attractive to international students. In 2014, the ratios of international graduate students in Saitama, Chiba and Kanagawa decreased and became 6.94% (student number: 1462), 7.47% (student number: 1575) and 6.41% (student number: 1351) separately. These results in 2014 again are in line with the increased ratio found in Tokyo. Higher CV values in the Kanto region may reflect a phenomenon that Tokyo has a higher concentration of international graduate students than other prefectures. Universities in Tokyo are found to be more popular among international students in the Kanto region.

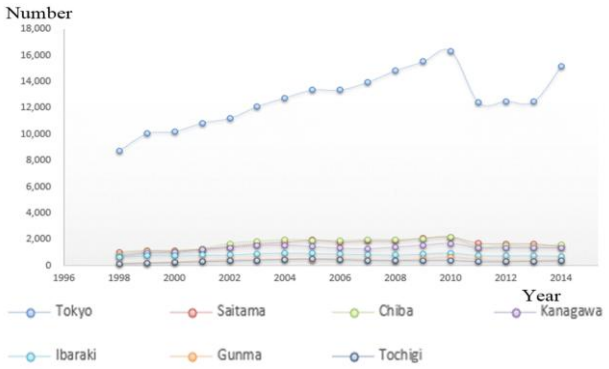

Fig. 2. International graduate school students in the Kanto region

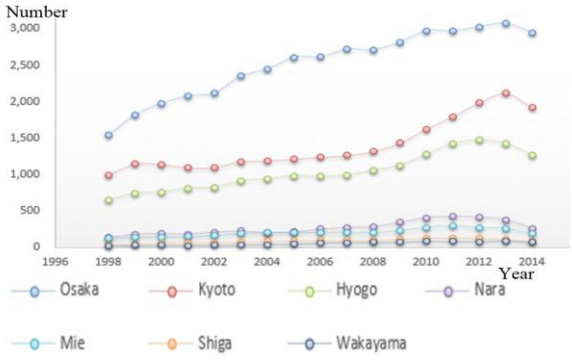

Fig. 3. International graduate school students in the Kansai region.

In the Kansai region, international graduate students among prefectures have been found to be more spread. While Osaka has the largest share of international graduate students in the region, Kyoto and Hyogo also have relatively higher shares (see Fig.3.). In 1998, the ratio of international students in the graduate schools in Osaka was 43.62% (number: 1546). The ratios in Kyoto and Hyogo were 28.22% (number: 1000) and 18.28% (number: 648) in the same year. In 2004, though the total number of international graduate students in these prefectures increased (Osaka: 2448; Kyoto: 1191; Hyogo: 944), not all their ratios were kept as before. While the ratios

in Osaka (47.76%) and Hyogo (18.42%) increased slightly, the ratio in Kyoto (23.23%) decreased instead. The decreased ratio in Kyoto then is in line with the increased ratios in other prefectures. For example, the ratio of international graduate students in Shiga increased significantly. In comparison to 1.19% (number: 42) in 1998, it became 1.66% (number: 85) in 2004. In 2014, the total number of international students at the graduate schools in the Kansai region increased in general. Osaka, Kyoto and Hyogo separately had 2950, 1919 and 1270 international graduate students (see Fig. 3.). Their ratios then were close to their 1998 levels. While the ratio in Osaka was 43.65% in 2014, it was 28.39% in Kyoto and 18.79% in Hyogo.

In general, differences among prefectures also exist in the Kansai region. Comparatively speaking, Kyoto and Hyogo, in addition to Osaka, have relatively higher shares of international graduate students within the region. Based on above information, it could be said that universities in prefectures other than Osaka may also be competitive and popular among international students. Because of the higher ratios in these prefectures, CV values in the Kansai region are comparatively lower.

For both the Kanto region and the Kansai region, it should be noticed that most leading universities are in a metropolitan area or in big cities (see Fig. 2. and Fig. 3.). Geography could play a key role and contours the map of university popularity. In the Kanto region, there are more famous universities located in Tokyo. Furthermore, the living environment of Tokyo is more comfortable and convenient. Moreover, job opportunities in Tokyo are also abundant. Thus, universities in Tokyo are more attractive and popular.

Within the same Kanto region, Saitama, Chiba and Kanagawa are closer to Tokyo than other three prefectures [13]. Economic conditions and living conditions in these prefectures are also similar to Tokyo. Though the ratios of international graduate students in these prefectures are lower than Tokyo, they are much higher than other three prefectures in the region.

Usually, when enrolling into a desired leading university becomes difficult, a person would lower its selection and applies for another university that is ranked lower. When entering a leading university in Tokyo becomes difficult, the student might select a university in another prefecture that is less competitive. In such a case, universities in Saitama, Chiba and Kanagawa that are close to Tokyo would be good selections. Increased university popularity of these prefectures in 2004 could explain the increased ratios of international graduate students in these prefectures.

In the Kansai region, on the other hand, the top universities are not only located in Osaka, but also in other prefectures such as Kyoto and Hyogo. Like the case in the Kanto region, entering a leading university is not an easy thing in this region. When it is difficult to enter a desired leading university, students may apply for other universities that are ranked lower or easier to enter. The decreased ratio in Kyoto and the increased ratio in Shiga in 2004 might be the reflections of selective changes among international students.

Still, in many cases, leading universities are more popular. Usually, a leading university has more resources and provides a person various lifetime benefits, such as job opportunities and human connections. They are priority selections among international students. Higher ratios of international graduate students in Tokyo, Osaka, Kyoto and Hyogo are the reflections of these facts.

In addition to geography, variation in the CV values in the two regions could also be influenced by policy changes. Examining Japanese international student policies over the past years, it has been found that Japanese government has established several international student plans since 1983 [14], [15]. The basic concepts of international student policies these years originate from the “100,000 international students plan” established in 1983 [14]. The aim of “100,000 international students plan” was to have 100,000 international students in Japan by 2000. However, due to the strict entry immigration inspection and visa policies over the time period 1993-1999, the number of international students in Japan then was much lower than the target of the plan [15]. Still, the ratios of international graduate students in certain prefecture(s) were high during the time when visa policy was extremely strict, reflecting the true demand of international students.

After 2000, it has been found that visa rules are relaxed and the number of international students started to increase. In 2003, the number of international students in Japan finally reached the target of “100,000 international students plan” [14]. Comparatively speaking, more students imply more competition. Those international students who find themselves difficult to enroll into their desired universities might shift their focal points to other universities that are ranked lower. The decreased ratios in Tokyo and Kyoto in 2004 could also be directly and indirectly influenced by “100,000 international students plan”.

In 2008, Japanese government launched a new policy "300,000 foreign students plan”, aiming to increase its foreign student number to 300,000 by 2020 [14]. Consequently, as shown in the figures, the overall number of international graduate students increase over time in both the Kanto region and the Kansai region (see Fig. 2. and Fig. 3.). Along with policy changes, the total number of international graduate students in each prefecture increases. However, the popularity of those universities in local areas is still low. Disparity issues still exist.

IV. Discussion

The estimated CV results indicate that universities among prefectures are not equally popular. Disparities still exist in both the Kanto region and the Kansai region. Comparatively speaking, larger disparities exist among prefectures in the Kanto region. Usually, leading universities with more resources in the metropolitan area or in big cities are strong in research and innovation. They could easily maintain their dominant academic positions and keep their influences and high popularity. Thus, leading universities are kept strong, and those universities in local areas are left unfocused and unpopular. The combined effects in turn further enlarge the disparities between the big cities and the local areas, which in turn impact the development of a country. Though the Japanese Government has established several policies to

increase international students so far, disparities issues among prefectures remain unsolved. Furthermore, the ratio of international students in Japan is still low when compared with English-speaking countries.

V. Conclusion

All in all, human resources are key to the sustainable development of country. In today's society, universities are strategic places of a nation to attract excellent human resources. In this study, popularity disparity is found to exist in both the Kanto region and the Kansai region. Ensuring university popularity in both the large cities and the local areas is critically important in this century. Policy reforms that attract more international students to the local areas could be beneficial to local economic development. [16]. All in all, further research related to education disparities in Japan should be done and more practical policies that mitigate disparity issues should be designed and proposed.

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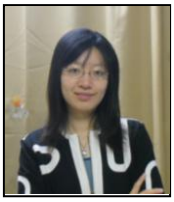

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