Singapore's Strategies for Attracting Highly-Skilled Foreign Human Resources —How does Singapore Recruit Foreign Talent?—

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Summary

1. Singapore first began to take active steps to attract highly-skilled foreign workers in the latter half of the 1980s. Workers from other countries have bridged shortfalls when Singapore's efforts to train its own highly-skilled human resources have failed to keep pace during the successive stages of its economic advancement. Singapore's approach has been characterized by a comprehensive policy encompassing efforts to attract not only highly skilled foreign workers, but also companies, students, tourists and international conferences. This has resulted in synergy benefits, and in the creation of mechanisms that ensure a steady inflow of highly-skilled people through various routes.

2. In the early 2000s, Singapore began to recruit leading scientists from around the world to take up positions in research institutions or as university professors as a way of enhancing its domestic capacity for scientific and technological innovation. These scientists in turn attracted more scientists from other countries through their own networking activities, and their presence also encouraged young researchers and students to move to Singapore. As a result, science and technology R&D activities in Singapore surged from almost zero over a short period of time to a level at which significant progress could be made.

3. More recently, the Singaporean government has started to limit inflows of foreign workers, including highly skilled people, while increasing its focus on the training of Singaporean citizens as highly skilled workers. Its aim is to create a cluster of highly skilled domestic and foreign human resources.

4. Although Japan has maintained a stance of actively welcoming highly skilled foreign workers, the actual inflow has remained low. The reasons for this situation have been analyzed and countermeasures put in place, but Japan's response has clearly been too slow. Moreover, considerable time will be needed for the effects of the countermeasures to manifest themselves.

5. Japan is unlikely to become a cluster of highly-skilled foreign workers on the same level as Singapore and has no need to do so. However, it should perhaps learn from the culture that made this possible in Singapore. Specifically, Japan needs to be more aware of the openness that has allowed Singapore to accept foreigner workers actively when it is in Singapore's own interests to do so, and of the logic behind that stance. Japan also needs to absorb a little more of the mindset of tolerance toward diversity, which is a fundamental element of Singapore's approach.

Japan's progress toward "domestic globalization" has been slow. In addition to the fact that foreign direct investment in Japan is low by international standards, inflows of foreigners into the country are also extremely low. While Japan has traditionally been cautious about accepting unskilled workers, it has actively welcomed highly skilled human resources, such as workers in professional and technical fields. In recent years there has been growing awareness of the importance of accepting highly qualified foreign workers, both to enhance the ability of Japanese organizations to function in a global context, and also as a way of energizing Japan's economy and society through the assimilation of diverse values and ideas. Despite this, Japan receives only a limited inflow of highly skilled foreign workers and needs to take steps to attract these people.

Japan's deep-rooted country-centrism contrasts sharply with the openness of Singapore. In human terms, this is reflected in the presence of highly skilled workers from around the globe in Singapore, where they are active in fields ranging from finance and business to education and research. Singapore has created mechanisms to deal with inflows of highly skilled foreign workers, but a detailed examination of those mechanisms reveals that they did not form spontaneously but rather through sustained efforts by the Singaporean government. The Singapore government is keenly aware that the survival of a small country depends on its ability to utilize the full potential of both domestic and foreign human resources. Its systems provide glimpses of this sense of crisis, and of the openness and logic behind its determination to make active use of human resources that contribute to Singapore, regardless whether they are local or foreign.

This paper examines the methods used by Singapore to attract highly skilled foreign workers. Part 1 provides an overall analysis of acceptance systems for foreign workers, while Part 2 focuses on the content and evolution of measures used to attract foreign workers and the routes through which human resources flow into Singapore. Part 3 describes the methods used by Singapore to attract ultra-high-skilled workers in the form of world-class scientists. Part 4 examines the public backlash against the large number of foreigners in Singapore, to which the government has responded by retreating moderately from its policy of attracting foreign workers. The paper concludes in Part 5 with an examination of the situation in Japan. After looking at the low level of inflows of highly skilled foreign workers into Japan and examining measures introduced to remedy this situation, we will suggest that Japan should adopt a little more of Singapore's openness.

1. Policies on Foreign Workers

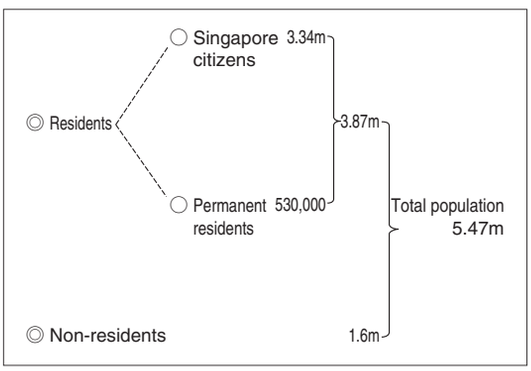
(1) 40% of Population Foreigners

Singapore has accepted large numbers of foreigners since gaining independence in 1965. There is almost universal agreement among the people of Singapore that the nation's current economic prosperity would not have been possible without this influx of foreigners. This is because Singapore would have been unable to provide the workers needed for rapid economic growth from its own population. Singapore has always had a small population, and its birthrate has been falling continually, as evidenced by the fact that the total fertility rate declined to 1.82 in the 1980s. At 1.26, Singapore's total fertility rate today is even lower than the Japanese rate of 1.34[(1)].

An analysis of Singapore's demographics using the classifications employed by the Singaporean government shows that the total population of 5.47 million can first be divided into residents and non-residents (Fig. 1). Residents consist of both Singapore citizens and foreigners with permanent resident status. Non-residents are foreigners who do not have the right of permanent residence. Permanent residents are sometimes regarded as potential future citizens, and when the Singaporean government talks about foreigners, it is usually referring to non-residents[(2)]. People who have obtained permanent resident status can work freely without any of the work permits described below and receive preferential treatment compared with non-residents in such areas as housing, medical

care and education.

Fig. 1 Singapore's Demographic Structure (2014)



Source: Singapore Department of Statistics database (http://www.singstat.gov.sg/statistics)

(2) Acceptance Systems Linked to Skill Levels

A key characteristic of Singapore's policy on foreign workers is the fact that workers are accepted through separate tracks based on clearly defined skill categories. This is also reflected in work permits. Non-resident foreigners require a work permit in order to work in Singapore. While there are many types of work permit, the four main ones are ① the Work Permit (WP) for low-skilled workers, ② the S Pass for mid-skilled workers, ③ the Employment Pass (EP) for high-skilled workers, and ④ the Personalized Employment Pass (PEP) for elite high-skilled workers (Table 1).

The vast majority of foreign workers are WP holders, who accounted for 73.4% of total work permit holders in December 2014 (Table 2). These workers now play a vital role in a number of sectors, including construction, manufacturing and home (maid) services, and workplaces in these industries could not function without their presence. In addition to offsetting Singapore's domestic labor shortage, WP holders are also used as a buffer against fluctuations in labor supply and demand. Workers are accepted only for a limited period, and the system is strictly managed by the Singaporean government. For example, employers of WP holders must pay a foreign worker levy and a security bond, and there are also quotas limiting the number of people that can be employed. WP holders are not eligible for permanent residence and are subject to strict regulations. They are not allowed to bring their families to Singapore, and prior approval is required if a WP holder wishes to marry a resident (citizen or permanent resident). In addition, female foreign WP holders are not allowed to have children.

Table 1 Main Types of Work Passes in Singapore

	Personalised Employment Pass	Employment Pass	S Pass	Work Permit
Eligibility	Top-level high-skilled workers (managers, executives, specialists)	High-skilled workers (managers, executives, specialists)	Medium-skilled workers	Low-skilled workers
Monthly salary (basic)	Minimum of S$12,000 for persons transferring from EP Minimum of S$18,000 for new arrivals	Minimum of S$3,300 Higher for older workers	Minimum of S$2,200 Higher for older workers	No restrictions
Foreign worker levy	Not applicable		Applicable	
Employment ceiling	Not applicable		Applicable	
Security bond	Not applicable			Applicable to all except Malaysians
Accompanying family	Allowed	Allowed subject to conditions		Not allowed
Marriage	Allowed			Prior permit required
Pregnancy, childbirth	Allowed			Not allowed
Qualified to obtain permanent residence	Yes			No

Notes: Persons with Personalized Employment Passes must maintain a minimum annual income of S$144,000 after acquiring the permit.
Source: Singapore Ministry of Manpower website (http://www.mom.gov.sg/foreign-manpower/Pages/default.aspx)

Table 2 Number of Workers by Type of Work Pass in Singapore (December 2012)

(Thousand workers, %)

	Number	
		%
Total	1,336.7	100.0
Employment Pass	176.6	13.2
S Pass	164.7	12.3
Work Permit	980.8	73.4
Domestic work	218.3	16.3
Construction	321.2	24.0
Others	441.3	33.0
Others	14.7	1.1

Source: Singapore Ministry of Manpower, "Foreign Workforce Numbers"

In contrast, the government wants EP holders, who are seen as drivers of innovation and economic vitality, to stay as long as possible and contribute to Singapore. For this reason, Singapore has encouraged foreign workers to settle by offering a variety of benefits. EPs are granted to foreign management, administration and specialist workers with a monthly income of at least S$3,300 (approx. ¥290,000). The foreign worker levy, security bond and employment quotas do not apply to EP holders, and if certain conditions are met they are allowed to bring their families to Singapore. EP holders are also free to marry and have children. Depending on years of residence in Singapore, academic background, income and other factors, EP holders can also obtain permanent resident status. Most Japanese expatriates working for Japanese companies in Singapore are EP holders.

The S Pass is positioned between the EP and WP in the acceptance structure and is available to foreign workers who are medium-skilled rather than low-skilled or high-skilled. Unlike WP holders, S Pass holders are eligible to acquire permanent residence, but they are subject to foreign worker levies and employment quotas in the same way as WP holders.

The PEP, which provides greater flexibility than the EP, was introduced in 2007 in response to intensifying global competition for highly qualified workers. Like the EP, it is available to management, administration and specialist workers. However, those wishing to switch from an EP to a PEP must have a minimum monthly income of S$12,000 (approx. ¥1.04 million), or S$18,000 (approx. ¥1.57 million) in the case of new arrivals. This is significantly higher than the income threshold for EP. The main difference between the EP and the PEP is the fact that while an EP is tied to a specific employer, a PEP is linked to the individual worker. An EP becomes invalid if an EP holder resigns or changes jobs. This means that termination of employment results in immediate deportation, while a change of jobs requires a new EP application by the new employer. In contrast, PEP holders can change jobs without invalidating their PEPs and can remain in Singapore for up to six months without work if they leave their present employment.

In addition to the EP and PEP, another type of work permit used by the Singapore Government that provides preferential treatment for foreign talent is the EntrePass. Targeted towards entrepreneurs, the EntrePass was introduced in 2004 with the aim of attracting innovative companies to Singapore and stimulating entrepreneurship. It is available to foreigners who are preparing to start up companies or have recently launched new businesses. Not all businesses are eligible. To qualify for an EntrePass, the applicant's business must meet specific requirements, including (1) investment or equity participation by a government-approved venture capital company or angel investor, (2) ownership of registered intellectual property rights, (3) partnership with research institutes affiliated to the Agency for Science, Technology and Research (A*STAR) or a university in Singapore, and (4) support from a government-sponsored incubator. In addition, the business must have paid-up capital of at least S$50,000 (¥4.35 million), and the applicant must have a shareholding of at least 30%.

2. Measures to Attract Highly Skilled Foreign Workers

(1) Activities Stepped up in the Late 1990s

As we have already seen, above, Singapore has kept its doors open to highly skilled foreign workers ever since gaining independence, but it was in the late 1980s that it began to take a more active approach to recruitment. After starting out with a labor-intensive economy, Singapore gradually built a more advanced economic structure while steadily increasing its per capita GDP. It aimed for technology-intensive economy in the 1990s, and for a knowledge- and innovation-intensive economy in the 2000s, and there was a gradual increase in the importance of highly skilled workers to the realization of these goals. However, Singapore's small population and falling birthrate meant that domestic supplies of highly skilled workers were unable to keep pace with demand. While working to develop its own human resources, Singapore turned to overseas recruitment to make up the shortfall in the supply of highly skilled workers.

In 1988, Singapore launched the "Eminent Entrepreneurs/Professionals Scheme," a program designed to encourage the relocation of elite highly skilled workers from Hong Kong to Singapore by offering them permanent residence[(3)]. The scheme was subsequently expanded to include a wide range of highly skilled workers from around the world, and steps were gradually taken to facilitate acceptance, including the relaxation of permanent residence requirements.

Other initiatives relating to the attraction of highly skilled foreign workers included the establishment of the International Manpower Program by the Economic Development Board (EDB) in 1991, and the creation of the Foreign Talent Unit by the Prime Minister's Office in 1995. The Ministry of Labor, which was limited to administration functions relating to low-skill workers, was reorganized into the Ministry of Manpower (MOM), which was given overall responsibility for foreign workers, including highly skilled workers, as well as the task of attracting highly skilled foreign workers.

By this time, Singapore was starting to refer to the goal of becoming a global cluster of highly skilled workers, including both Singaporeans and foreigners. The Singapore Talent Recruitment (STAR) Committee was created in 1998 with members drawn from multiple ministries and agencies. The STAR Committee was given three roles: (1) the development and implementation of strategies to attract and retain highly skilled workers both domestically and internationally, (2) the establishment of Singapore as a global hub for highly skilled human resources and the maintenance of strong social cohesion and national vitality through integration between Singaporeans and foreigners, and (3) the assessment of public and private sector recommendations concerning the development of measures to attract highly skilled foreign workers and develop domestic human resources[(4)].

In 1999 Singapore announced "Manpower 21: Vision of a Talent Capital" as its human resource strategy for the 21st century. This strategy also called for Singapore's evolution into a "Talent Capital" through the development and accumulation of highly competitive human resources. One of the six core components of this plan was a policy advocating accelerated efforts to attract foreign talent as a way of expanding the pool of highly skilled labor.

The Singaporean government's enthusiasm for the recruitment of highly skilled foreign workers reached its height in the first decade of the 21st century. It began to implement actual recruitment activities based on mechanisms established during the 1990s, and in 2007 the PEP was introduced. A few years earlier in 2004, the government had launched the Global Investor Program (GIP) and Financial Investor Scheme (FIS). The government offered permanent residence to foreign entrepreneurs and investors under the GIP, and to persons with substantial financial assets under the FIS[(5)]. These systems took preferential treatment to a new level, since they provided immediate access to permanent resident status, in contrast with EP and PEP holders, who could only obtain perma-

nent resident status after staying in Singapore for a certain period of time and meeting certain conditions.

From around 2010, the Singaporean government began to tone down its stance on the recruitment of highly skilled foreign workers. The FIS was abolished in 2012, and the criteria for the GIP were tightened. Today very few people are able to obtain permanent resident status without first going through the work pass process.

(2) Comprehensive Approach to Recruitment

A major feature of Singapore's efforts to attract highly skilled human resources is that initiatives are implemented not in isolation, but rather as part of a comprehensive approach encompassing businesses, students, tourists and international conferences. When a foreign company establishes a business operation in Singapore, highly skilled foreign workers are initially brought in through internal transfers. Later other routes, such as local hiring, are used.

The arrival of a foreign business corporation in Singapore also triggers an influx of foreign companies in peripheral areas, such as legal services and recruitment. These in turn lead to an inflow of highly skilled workers to fill jobs in these businesses. This accumulation of human resources attracts other foreign companies to Singapore.

In addition, a certain percentage of foreign students accepted by universities in Singapore find jobs with companies in Singapore and remain as highly skilled workers instead of returning to their own countries after graduation. Efforts to attract foreign tourists and international conferences also create a good impression of Singapore, leading to an increase in the number of foreigners that come to Singapore to work or study.

These factors are reflected in the Singaporean government's efforts to ensure that its policies are compatible with each type of entity that it wishes to attract, such as highly skilled foreign workers, while also integrating these various policies. At the same time, the government has worked to attract foreigners and foreign companies by enhancing the overall attractiveness of Singapore through development of initiatives focusing on culture, art and sports, as well as the economy. This is because non-economic factors also have an important bearing on decisions made by highly skilled workers looking for places to work and companies looking for locations that will provide high added value. This contrasts with the overwhelming importance of economic factors to low-skill workers looking for employment and companies looking for low-cost production sites.

As a result of this comprehensive approach, highly skilled foreign workers are today flowing into Singapore via a diverse range of routes apart from direct recruitment by the Singaporean government. These include inflows resulting from the establishment of business operations by foreign-owned companies, and the settlement of foreign students. In this way, Singapore has created mechanisms that ensure a steady influx of foreign talent.

Contact Singapore, a government agency jointly administered by the Ministry of Manpower and the Economic Development Board, plays an important role in attracting highly skilled workers to Singapore. It has two missions: to attract highly skilled foreign workers to Singapore, and encourage highly skilled Singaporean expats to return to Singapore. It also provides a one-stop source of information for foreigners, Singaporean students overseas, citizens, investors, business owners and so on. It is important to note that Contact Singapore is exclusively focused on highly skilled workers, and students as the highly skilled workers of the future.

Contact Singapore has offices in major countries around the world, as well as an extensive website. The main types of information provided are (1) job and lifestyle information for foreigners and Singaporean students and workers in other countries, (2) information about investment and business establishment for foreigners and expat Singaporean investors and entrepreneurs, and (3) information about employment for foreign-owned companies in Singapore. Contact Singapore is also involved in recruitment activities, including the operation of a job portal site with information

about vacancies offered by companies in Singapore. A search on this website using the term "financial services" will bring up not only foreign-owned financial institutions, such as Bank of America Merrill Lynch and Standard Chartered, but also local institutions, such as United Overseas Bank, and the Government Investment Corporation[6].

(3) Inflows Resulting from Transfers within Companies and Local Recruitment

As outlined earlier, highly skilled foreign workers flow into Singapore via various routes. From the employer's perspective, there are two main routes.

The first route is employment with foreign-owned companies with offices in Singapore. These companies transfer their own employees to their Singapore offices and hire foreigners within Singapore. This was the principal route until Singapore began to recruit highly skilled foreign workers actively in the second half of the 1980s. Foreign-owned companies are still being attracted to establish operations in Singapore as a result of enthusiastic promotion activities by the Singaporean government, and there is still a steady stream of highly skilled foreign workers flowing into Singapore via this route.

Like the foreign-owned companies that employed them, most of the people entering Singapore along this route were initially from developed countries, including the United States, Western Europe, Australia and Japan, in part because many of these people moved to Singapore as a result of transfers within their companies[7]. The range of nationalities represented among people flowing into Singapore along this route subsequently diversified. This resulted both from the expanding range of nationalities of foreign companies establishing operations in Singapore, and also from an increase in local hiring. The majority of foreign nationals working for Japanese-owned companies in Singapore are still Japanese employees assigned to Singapore through internal transfers. However, foreign-owned companies from other countries are increasingly opting for local recruitment of people with a wide range of nationalities. A situation involving business negotiations between a Russian woman who job-hopped to an Australian company and her Indian counterpart working for an American company would not be considered unusual in Singapore. Reasons for the small number of non-Japanese employed by Japanese-owned companies in Singapore include the fact that it would be difficult for people who do not understand Japanese to work in a Japanese corporate environment, as well as a uniquely Japanese business culture that prevails in these companies.

The second route is employment with local Singaporean organizations, including business corporations, universities and research institutes. Large-scale recruitment of highly skilled foreign workers by local Singaporean companies began in the financial sector. Government-linked companies (GLCs), such as the Development Bank of Singapore (DBS) led the trend, followed by private sector banks. The pattern subsequently spread to a wide range of other industries, such as telecommunications and legal services[8]. As described later in this paper, recruitment of highly skilled foreign workers by universities and research institutes surged in the 2000s.

From the perspective of workers, routes into Singapore include not only transfers within companies, but also job vacancy postings on corporate websites or recruitment sites, job brokers, and personal introductions. The establishment of companies in Singapore also accounts for a small but significant inflow of people.

One reason for the increase in local recruitment in recent years is a tendency for foreign students to remain in Singapore and find jobs after completing their studies. This trend reflects major growth in the number of foreign students in Singapore over the past decade. The majority of people taking this route are from ASEAN, China and India. As noted later, Singapore actively accepts foreign students as part of its efforts to internationalize higher education. High-achieving foreign students are eligible for non-repayable grants, in exchange for which they are in principle required to

work for a company based in Singapore for three years after graduation. In addition to an expanded influx of students as a result of systems such as this, there has also been increase in the number of privately funded foreign students, who are attracted by the high standard of education in Singapore, or have hopes of finding work there after graduation. After reaching 18% in 2010, the percentage of foreign students in Singapore subsequently fell back to 13% due to the tightening acceptance criteria[9]. However, the level remains high.

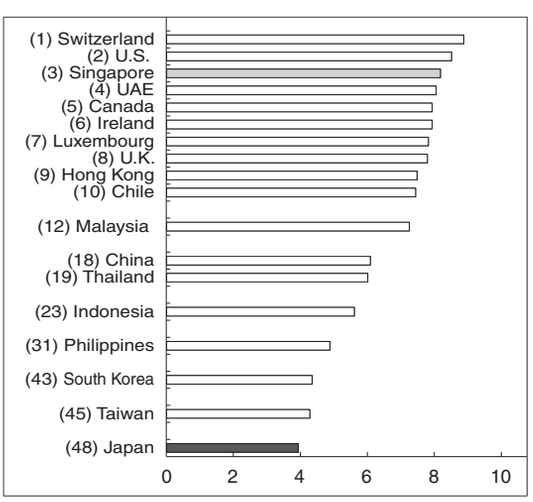
In 2007, Singapore introduced the Work Holiday Program, which is an internship system for young foreigners. By offering undergraduates and recent graduates aged between 18 and 25 opportunities to experience work and life in Singapore, the program aims to encourage them to take up formal employment in Singapore, either on completion of their internships, or at a later date. Evidence that the program is designed to bring in people who will eventually become highly skilled workers can be found in the fact that eligibility is limited to students and graduates from nine countries and regions, including Japan, the United States and Hong Kong, and from the world's top 200 universities.

What factors attract highly skilled foreign workers to choose the path of employment in Singapore? The most important reason is the fact that Singapore offers excellent employment conditions and future potential. In addition, English is understood, and there are few safety or public health problems. Other advantages include convenient, high-quality lifestyles, and low tax rates for high income earners. Also important is the fact that foreigners are welcome in Singapore's richly diverse society.

Singapore was ranked 16th out of 60 countries in terms of its overall score in IMD's 2014 *World Talent Report*, which rates companies in various countries according to their ability to develop, attract and maintain human resources. Although higher than Japan's rank of 28th, this is not an especially high score. However, Singapore's appeal ranking for highly skilled foreign workers was third behind Switzerland and the United States (2014, Fig. 2). The fact that Japan was ranked only 48th for this item is indicative of its limited attractiveness to highly skilled foreign workers.

Singapore is very popular as a destination for overseas postings resulting from transfers within companies. Expats place a high value on Singapore's excellent economic conditions and living environment. According to the *Expat Explorer Survey* conducted by the HSBC in 2014, Singapore was placed second behind Switzerland in the livability rankings (Table 3). Japan was held back by its overall economic situation and the difficulty of setting up home, and its ranking was only 18th. Singapore's attractiveness has been somewhat reduced in recent years due to the rising cost of living, and the increased difficulty of obtaining work passes.

Fig. 2 Appeal Rankings for Highly Skilled Foreign Workers (IMD Survey, 2014)



Notes: The survey covered 60 countries. Business executives in each country were asked to assess the attractiveness of the business environment in their country for highly skilled foreign workers on six levels. The results were then converted to a score of 1-10, and countries were ranked on that basis. The numbers in parentheses before each country name represent the ranking.
Source: "IMD World Talent Report 2014," November 2014

Table 3 Expat Livability Rankings (HSBC survey, 2014)

(Rankings)

	Overall													
		Economics				Experience				Raising children				
			Household income	Disposable income	Local economy		Setting up	Integration	Quality of life		Childcare	Education	Healthcare	Experience for children
Switzerland	1	2	1	1	5	5	22	26	1	10	27	13	2	2
Singapore	**2**	**3**	**6**	**11**	**1**	**3**	**3**	**27**	**4**	**5**	**16**	**8**	**6**	**7**
China	3	1	1	1	5	1	1	1	5	12	7	3	24	12
Germany	4	7	14	9	3	10	15	12	7	3	10	10	5	4
Bahrain	5	11	17	6	15	2	4	16	2	9	8	15	9	11
New Zealand	6	22	25	34	9	1	1	23	3	1	12	5	1	5
Thailand	7	13	16	3	20	6	10	10	5	14	1	27	28	3
Taiwan	8	9	5	8	14	7	20	1	8	18	9	17	23	13
India	9	12	4	17	16	12	4	17	18	6	2	2	20	18
Hong Kong	10	6	3	12	11	17	8	25	18	22	11	28	25	6
Japan	18	25	25	25	22	16	29	6	14	4	15	1	10	9

Source: HSBC, "Expat Explorer Survey 2014," 2014.

3. Measures to Attract Ultra-High-Skill Workers

(1) Attracting World-Class Scientists

Since the early 2000s, the government of Singapore has been focusing on enhancing Singapore's capacity for innovation, especially in science and technology. This stance reflects the government's perception that innovation is essential to continuing economic development now that Singapore has caught up with the developed countries. The prerequisite for achieving this goal is Singapore's transformation into a research and development cluster and center for dynamic R&D activities. As a first step toward this vision, the government has sought to attract world-class scientists to Singapore. The thinking behind this approach was quite logical. It would have taken many years to develop talent on this level within Singapore, but if talent could be attracted from other countries, Singapore would be able to achieve rapid improvements in level of domestic R&D. As an additional benefit, the presence of foreign talent would also contribute to the development of human resources within Singapore.

The Agency for Science, Technology and Research (A*STAR) has played a central role in these efforts to attract foreign scientists. A*STAR was created in 2002 through the restructuring and renaming of the National Science and Technology Board as an economic agency under the Ministry of Trade and Industry (MTI). Its mission is to create an innovative economy[10]. In addition to acting as bridge between the R&D sector and industry in Singapore, A*STAR also operates 18 affiliated research organizations and consortiums and is involved in the training of scientists.

When A*STAR was first established, Singapore recruited large numbers of world-class scientists with the aim of putting A*STAR and its affiliated research organizations on track. These people were recruited using a "pole-and-line" approach. Philip Yeo, Executive Chairman of A*STAR from 2001 to 2007, was particularly well-known for his head-hunting activities. In 2000, the Singapore government decided to make the development of biomedical industry a priority, and Mr. Yeo responded by recruiting over 100 people in that field through various personal networks. He would personally study scientific papers, and would go and meet any scientist whose work seemed promising[11] [12]. As a result of these energetic efforts by Mr. Yeo and other senior officials of the Singaporean government, large numbers of world-class players were attracted to Singapore. Most were involved in research activities in Biopolis[13], a bioscience research community managed by A*STAR.

In addition to high salaries, the world-class scientists were also promised allowances for housing, education for their children, travel expenses and other needs, as well as ample research funding and advanced research facilities. Great care was also taken over the individual circumstances of those recruited, including their lifestyles and families. For example, a French scientist invited to work at an A∗STAR research facility revealed in an interview that he had received other offers, but that the deciding factor in Singapore's favor was the assistance of A∗STAR in arranging employment for his accompanying spouse in Singapore[14].

On the other side of the equation, there is no tenure, and the scientists are subject to rigorous assessments. Assessments are in principle carried out every three years, and anyone who fails to achieve the expected results will be dismissed[15].

Today A∗STAR is fully operational. It recruits scientists in four main ways: (1) through direct recruitment at international conferences and other venues, (2) through collaboration with universities, (3) through the use of head-hunters, and (4) through the job-seeking and recruitment SNS LinkedIn. (LinkedIn is used mainly to recruit middle-ranked scientists.)

As noted above, the Singapore government also provides scholarships to foreign students. In addition, A∗STAR runs scholarship programs designed specifically to support the development of talent in the field of science and technology. The various scholarship programs featured on the A∗STAR website are very interesting for two reasons. First, scholarships are available to foreigners as well as to Singaporean citizens. Second, recipients are able to study not only at universities in Singapore, but also at the world's top universities. For example, the National Science Scholarship funds students in PhD or undergraduate programs with majors in biomedicine, natural sciences or engineering at the world's leading universities, while the A∗STAR Graduate Scholarship (Overseas) Scholarship is available to people in PhD programs at nine designated universities, including Oxford University and Carnegie Mellon University. Both types of scholarship are available to Singaporean citizens and foreigners wishing to acquire Singaporean citizenship in the future. Recipients are required to work for an A∗STAR-affiliated research organization for a specific period after completing their degrees.

This approach appears to be based on the extremely logical viewpoint that the purpose of these systems is to train talented human resources in the field of science and technology, that it is irrelevant whether they are citizens of Singapore or other countries provided that they contribute to Singapore, and that there is no need to limit the institutions used to train such people to universities in Singapore.

(2) University Teaching Staff also Recruited Globally

Another way in which Singapore has sought to improve the potential for innovation in science and technology is through the internationalization of institutions of higher education. The aim is to make Singapore a global education hub by attracting talented students, teaching staff and researchers from around the world. Of particular interest in this context is the close linkage that exists between the internationalization of higher education and industrial policy from the viewpoint of the Singaporean government. Evidence of this linkage includes the fact that internationalization efforts are being led not by the Ministry of Education, but by the Economic Development Board (EDB).

In 1998 the EDB established the World Class Universities Program with the aim of attracting at least 10 foreign universities to establish facilities in Singapore over a 10-year period[16]. In 2002 the government took the concept a step further with the launch of the Global Schoolhouse Initiative. Under this initiative, continuing efforts to attract foreign universities were accompanied by a new emphasis on the attraction of foreign students. The numerical target was to attract 150,000 fully self-funded foreign students by 2015.[17] As noted earlier, the percentage of foreign students at universities in Singapore reached 18% at one point as a result of these initiatives.

Universities in Singapore are also working to-

ward internationalization and have stepped up their efforts to recruit foreign teaching staff as part of this process. Of the 25 teaching staff in the political science department of the National University of Singapore (NUS), 18, or 72%, were born in countries other than Singapore. Similarly, the same university's Lee Kuan Yew School of Public Policy has 44 foreign-born teaching staff who make up 54% of the 82-member faculty[18]. Singapore Management University, which was established in 2000, has a Belgian president, Dr. Arnoud de Meyer. In addition, around 60% of its 300 teaching staff are foreign-born.

The current president of Nanyang Technological University (NTU) is Dr. Bertil Andersson from Sweden. NTU was established in 1991 as a technical university operating primarily as a teaching institution. However, it switched to a research focus in 2005 in line with government policy. At the same time, it modified its policies on teacher appointment, promotion and tenure to reflect standards at the world's top universities. One-quarter of teaching staff lost their tenures, and the new staff recruited to run the newly established research programs were predominantly foreign teachers[19]. According to Dr. Andersson, the decision to recruit mainly foreigners rather than Singaporeans was prompted by the need to put the research programs on track as quickly as possible[20].

The same reasoning appears to have been behind the NTU's decision to recruit a faculty consisting primarily of foreigners for the Lee Kong Chian School of Medicine, which it established in 2013 in partnership with Imperial College London. An Australian, Professor James Best, was appointed as Dean, and only one Singaporean was appointed among the 21 full professors. The others were mostly from Europe and North America, including seven from the United Kingdom and five from Sweden[21].

As a result of this emphasis on the global recruitment of scientists, teachers and students, for-

Table 4 R&D Employees in Singapore (2012)

(Persons, %)

	Overall			Private sector		Government sector		Universities, polytechnics		A*STAR-affiliated public research institute	
		Citizens, permanent residents	Foreign nationals	Citizens, permanent residents	Foreign nationals	Citizens, permanent residents	Foreign nationals	Citizens, permanent residents	Foreign nationals	Citizens, permanent residents	Foreign nationals
Total	45,001	30,614 (68.0)	14,387 (32.0)	16,844 (76.6)	5,152 (23.4)	3,524 (92.6)	282 (7.4)	6,809 (45.6)	8,114 (54.4)	3,437 (80.4)	839 (19.6)
Researchers	38,432	24,936 (64.9)	13,496 (35.1)	14,231 (76.3)	4,426 (23.7)	2,236 (93.1)	165 (6.9)	5,685 (41.3)	8,086 (58.7)	2,774 (77.2)	819 (22.8)
Graduates	30,109	21,380 (71.0)	8,729 (29.0)	12,296 (74.6)	4,196 (25.4)	2,156 (92.9)	164 (7.1)	4,208 (54.2)	3,551 (45.8)	2,720 (76.9)	818 (23.1)
PhD	8,367	4,929 (58.9)	3,438 (41.1)	993 (65.8)	516 (34.2)	369 (87.0)	55 (13.0)	2,196 (50.5)	2,151 (49.5)	1,371 (65.7)	716 (34.3)
Masters	7,319	5,250 (71.7)	2,069 (28.3)	3,114 (71.3)	1,253 (28.7)	753 (94.0)	48 (6.0)	862 (54.8)	710 (45.2)	521 (90.0)	58 (10.0)
Bachelors	14,423	11,201 (77.7)	3,222 (22.3)	8,189 (77.1)	2,427 (22.9)	1,034 (94.4)	61 (5.6)	1,150 (62.5)	690 (37.5)	828 (95.0)	44 (5.0)
Students	5,924	1,410 (23.8)	4,514 (76.2)	0	0	0	0	1,410 (23.8)	4,514 (76.2)	0	0
PhD	5,605	1,288 (23.0)	4,317 (77.0)	0	0	0	0	1,288 (23.0)	4,317 (77.0)	0	0
Masters	319	122 (38.2)	197 (61.8)	0	0	0	0	122 (38.2)	197 (61.8)	0	0
No degree	2,399	2,146 (89.5)	253 (10.5)	1,935 (89.4)	230 (10.6)	80 (98.8)	1 (1.2)	77 (78.6)	21 (21.4)	54 (98.2)	1 (1.8)
Technician	3,022	2,554 (84.5)	468 (15.5)	1,164 (75.0)	387 (25.0)	404 (90.2)	44 (9.8)	582 (97.0)	18 (3.0)	404 (95.5)	19 (4.5)
Support staff	3,547	3,124 (88.1)	423 (11.9)	1,449 (81.0)	339 (19.0)	884 (92.4)	73 (7.6)	532 (98.2)	10 (1.8)	259 (99.6)	1 (0.4)

Notes 1: A "foreign national" here means a foreigner without permanent residence status.
Notes 2: Figures in ( ) represent percentages of the total.
Source: Agency for Science, Technology and Research Singapore, "National Survey of R&D in Singapore 2012," December 2013

eigners (non-residents without permanent resident status) make up 32% of Singapore's R&D work force (2012, Table 4). Foreigners also account for 19.6% of staff in A*STAR-affiliated research institutes, and 76.2% of students in doctorate and masters degree programs.

(3) Contributing to the Improvement of Science and Technology Innovation Potential

A large percentage of the world-class scientists recruited by Singapore with offers of high incomes return to their own countries or relocate to other countries after a few years in Singapore[(22)]. This has led to criticism within Singapore that the huge fiscal cost of attracting foreign workers is a waste of taxpayers' money. Obviously the Singaporean government wants to keep top scientists in Singapore as long as possible, and from this perspective the government's overseas recruitment policy cannot be regarded as entirely successful. However, during their few years in Singapore, these top scientists have made major contributions to the rapid start-up of scientific research in Singapore, including the creation of research environments and the training of young scientists and students. In this sense, the recruitment policy can be seen as yielding significant benefits.

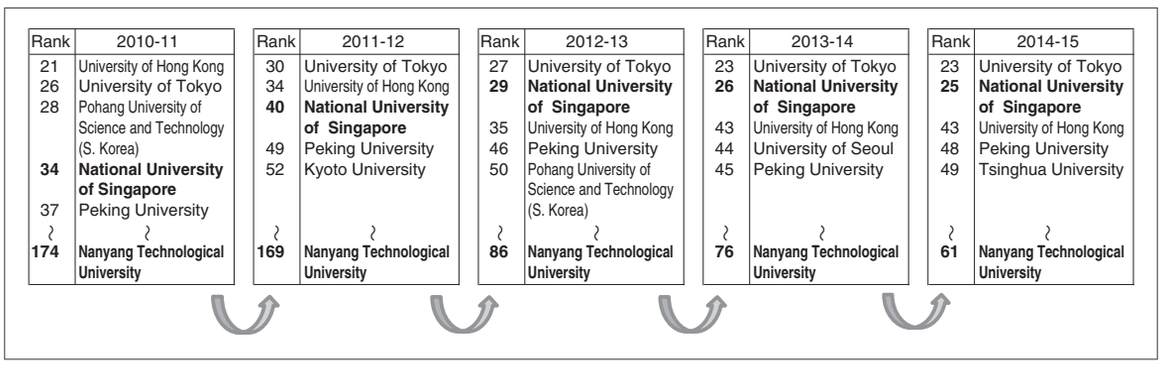
There have also been cases in which top scientists recruited to Singapore have worked through their own networks to attract other scientists from around the world. In addition, the presence of these top players has attracted young scientists and students to Singapore. As these people move to other countries after a certain period of time in Singapore, Singapore is being incorporated into global scientific research networks. Singapore today is a valuable location in terms of career formation for young scientists in specific fields, although the range of such fields is not extensive. Obviously Singaporean scientists and students gain excellent opportunities to raise their level of ability through interaction with world-class talent and access to the information that they possess. Moreover, this clustering of talent, together with generous incentives offered by the Singaporean government, have led numerous companies from around the world to establish research facilities in Singapore. A recent example is Procter & Gamble, which in 2014 opened Asia's biggest R&D center in Biopolis.

Various ranking surveys confirm the improvement in Singapore's capacity for innovation in science and technology. In the World University Rankings published by *Times Higher Education*, the National University of Singapore (NUS) was ranked fourth in Asia in the 2010-11 survey, third in the 2011-2012 survey, and second after the University of Tokyo in all surveys since 2012-2013 (Fig. 3). NUS was placed 25th in the world in the 2014-2015 survey. The only Japanese university in the top 30 was the University of Tokyo. Nanyang Technological University (NTU) was placed 174th in the world in the 2010-2011 survey but has improved its ranking each year since then, reaching 61st position in the 2014-2015 survey.

In a 2013 survey of the number of papers published by the science journal *Nature* and its 17 sister journals, NUS was ranked 6th in the Asia-Pacific region and 46th in the world, while NTU was ranked 12th in the Asia-Pacific region and 73rd in the world (Table 5). The A*STAR research institute group came 19th in Asia but was not in the top 100 globally. Singapore's emphasis on the biomedical field for more than 10 years, as symbolized by the establishment of Biopolis, has been successful. In 2013, Singapore was ranked second behind the United States in the biotechnology innovation rankings compiled by *Scientific American* (Fig. 4).

Although Singapore's capacity for innovation in science and technology has improved, the improvement is limited to specific fields, and research in Singapore has not achieved the same depth and breadth as in Japan, especially in basic research. Furthermore, research and development activities in Singapore have so far yielded few practical applications. However, we need to recognize that Singapore started from almost zero and reached its present level in a very short period of time. Singapore has been able to put scientific research activities on track with the help of world-class players, and the achievement of continuing

Fig. 3 Positions of Singaporean Universities in World Rankings (Published by Times Higher Education)



Rank	2010-11
21	University of Hong Kong
26	University of Tokyo
28	Pohang University of Science and Technology (S. Korea)
34	**National University of Singapore**
37	Peking University
≀	≀
174	**Nanyang Technological University**

Rank	2011-12
30	University of Tokyo
34	University of Hong Kong
40	**National University of Singapore**
49	Peking University
52	Kyoto University
≀	≀
169	**Nanyang Technological University**

Rank	2012-13
27	University of Tokyo
29	**National University of Singapore**
35	University of Hong Kong
46	Peking University
50	Pohang University of Science and Technology (S. Korea)
≀	≀
86	**Nanyang Technological University**

Rank	2013-14
23	University of Tokyo
26	**National University of Singapore**
43	University of Hong Kong
44	University of Seoul
45	Peking University
≀	≀
76	**Nanyang Technological University**

Rank	2014-15
23	University of Tokyo
25	**National University of Singapore**
43	University of Hong Kong
48	Peking University
49	Tsinghua University
≀	≀
61	**Nanyang Technological University**

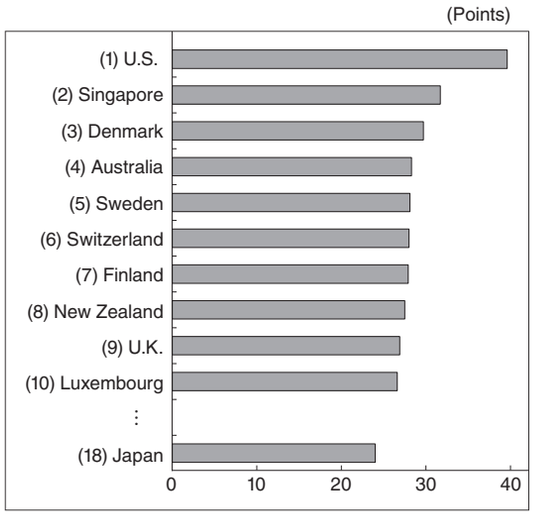
Notes 1: The rankings are calculated as scores based on 13 indicators in five areas. The areas are weighted as follows: teaching (30%), research (30%), citations (32.5%), innovation (2.5%) and international staff and students (5%).
Notes 2: The rankings for the top five Asian universities and Nanyang Technological University are shown here. The numbers indicate their positions in the world rankings.
Source: Times Higher Education, "World University Rankings" (http://www.timeshighereducation.co.uk/world-university-rankings/)

Table 5 *Nature* Publication Rankings for Institutions in the Asia-Pacific Region

Rank	Research institution	Country	Number of papers(corrected)	Ref. World rank
1	Chinese Academy of Sciences	China	63.15	6
2	University of Tokyo	Japan	57.19	8
3	Kyoto University	Japan	23.57	27
4	Riken	Japan	21.88	31
5	Osaka University	Japan	17.98	41
6	**National University of Singapore**	**Singapore**	**17.61**	**46**
7	Tohoku University	Japan	17.41	47
8	Melbourne University	Australia	15.33	54
9	University of Science and Technology of China	China	15.11	57
10	Tsinghua University	China	13.83	64
11	Australian National University	Australia	12.64	72
12	**Nanyang Technological University**	**Singapore**	**12.59**	**73**
13	KAIST	South Korea	12.12	77
14	Peking University	China	11.16	81
15	Nagoya University	Japan	10.68	87
16	University of Queensland	Australia	10.62	88
17	BGI	China	10.5	91
18	Hokkaido University	Japan	8.45	-
19	**A∗STAR**	**Singapore**	**8.20**	-
20	University of Seoul	South Korea	8.14	-

Notes 1: The number of papers (corrected) reflects the allocation of co-authored papers to each institution according to each author's contribution.
Notes 2: The 17 *Nature* sister journals include *Nature Chemistry, Nature Biotechnology, Nature Climate Change* and *Nature Cell Biology*.
Source: Nature Publishing Group, "Nature Publishing Index 2013/ Asia-Pacific," March 2014

Fig. 4 Biotechnology Innovation Rankings (2013)



Notes 1: Scores for each country are calculated based on points allocated in seven categories: ① number of public companies and public company revenues, ② intellectual property protection, ③ enterprise support, ④ intensity, ⑤ education, work force, ⑥ foundations, and ⑦ policy and stability.
Notes 2: The numbers in parentheses before each country name represent the ranking.
Source: "Worldview Scorecard: The 6th Annual Global Biotechnology Survey," Scientific American, *Scientific American Worldview 2014*, pp.34-65

development and further improvement in its capacity for innovation in science and technology are tasks for the future.

4. Recent Changes

(1) Moderate Shift away from Active Acceptance

Friction between citizens and immigrants can easily occur in countries that accept large numbers of foreign immigrants. Four out of every 10 people in Singapore are now foreigners, and changes are starting to occur in the welcoming stance of past years. From around 2009, when Singapore recorded negative growth as a result of the global financial crisis, Singaporeans started to become concerned about the effects of a growing foreign population, including social instability, declining employment opportunities for Singapore citizens, rising real estate prices, and congestion on roads and subways. However, these concerns about foreigners in Singapore are far removed from the anti-immigrant campaigns that are now occurring in some European countries. In addition to differences in economic conditions and unemployment rates, Singaporeans are also well aware that foreigners are essential to economic activities in their country.

Concerns about foreign workers normally tend to be directed toward low-skill workers, but in Singapore some of the dissatisfaction also focuses on highly skilled workers, including those with permanent resident status. The main areas of concern are as follows. First, access to university places and jobs with leading companies is being reduced because of the presence of foreigners coming into Singapore from other parts of the world. Second, the preferential treatment offered to attract highly skilled foreign workers is unfair. Third, while permanent residents enjoy the same rights as Singaporeans in most areas, first-generation male residents are exempted from military service. Fourth, most permanent residents do not try to obtain citizenship, indicating that their commitment to Singapore is weak[(23)].

In addition to these concerns about highly skilled people, The Singaporean government is increasingly worried that excessive reliance on foreign workers will have a negative effect on the country's ability to achieve sustainable economic growth in the long-term future. The government has thus started to limit the acceptance of foreign workers in general since around 2010. It is important to note that while the government has stated that it will no longer accept foreigners at the rapid pace of previous years, it has not changed its basic stance that Singapore needs to accept inflows of foreign workers.

Measures to curb inflows of highly skilled foreign workers include an increase in the minimum salary required for an Employment Pass (EP), and a gradual tightening of the conditions relating to accompanying family members[(24)]. Moreover, since August 2014, companies wishing to apply for an EP have been required to advertise their vacancies to Singaporeans also for at least 14 days on the Jobs Bank employment website run by the Workforce Development Agency.

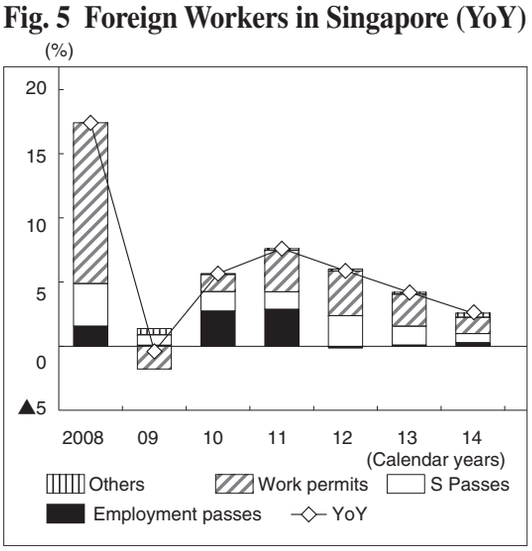
(2) Making Singapore a "Home for Talent"

As a result of these measures, growth in the number of foreign workers in Singapore has now started to slow. After declining dramatically during the global financial crisis, the growth rate of Singapore's foreign work force recovered to a peak of 7.6% year on year in 2011. By 2014 it had fallen to 2.6% (Fig. 5). While the rate of increase has fallen in all work pass categories, the decline has been especially marked for EP holders. In addition to these measures to curb inflows of foreign workers, the Singapore government has also tightened the criteria for permanent resident status. The number of people granted permanent resident status each year in the four years from 2010 to 2013 was around 27,000-30,000, which is less than one-half of the 2008 peak of 79,000.

While curbing the acceptance of highly skilled foreign workers, the Singaporean government has stepped up its efforts to develop highly skilled human resources among its own citizens. In addition to improve children's education, the government is also focusing on reeducation and occupational training for adults. The fiscal 2015 budget announced in February 2015 included the SkillsFuture Credit system, which from 2016 onwards will provide Singaporean citizens aged 25 and older with funding for education and training. Each citizen will initially receive S$500 (about ¥44,000), followed by future top-up credits. They will be able to use this money to enroll in a variety of educational and training programs whenever they choose[25].

Until now Singapore has sought to turn itself into a cluster for highly skilled people by raising the skill levels of its own people and attracting talent from other countries. As indicated by these recent policy changes, there has been a moderate shift in emphasis toward the improvement of Singaporeans' skill levels. We can also glimpse the aims of this shift in the "Home for Talent" concept. This was formulated by the Economic Development Board (EDB) and approved by its International Advisory Council in 2009 as one of the three core components of the "Host to Home" policy, which also encompasses the "Home for Talent" and Home for Business" concepts. This indicates that Singapore's goal is not simply to host talent from other countries, but to become a home for—or cluster of—talent, whether Singaporean or foreign.

Fig. 5 Foreign Workers in Singapore (YoY)



Notes: Work permits are issued to low-skill workers, S Passes to medium-skill workers, and employment passes to highly skilled workers.
Source: Singapore Ministry of Manpower, Labor market statistical information database (http://stats.mom.gov.sg/Pages/Home.aspx)

5. Current Situation and Issues in Japan

(1) Active Acceptance of Highly Skilled Workers

At 127.14 million, Japan's population is about 24 times larger than that of Singapore, yet Japan's resident foreign population of 2.44 million is only marginally larger than Singapore's total of 2.32 million (United Nations statistics, all from 2013). Foreigners make up 1.9% of Japan's total population, which is of course far lower than the Singapore ratio of 42.9%. In fact it is also lower than the 10.8% average for developed countries and the world average of 3.2%. Only Mexico (0.9%) and Poland (1.7%) have lower ratios than Japan (Table 6). A comparison with the 1990 ratio of 0.9% (1.08 million) indicates that there has been a

steady increase in the number of foreigners living in Japan. However, the level is still low by world standards.

This situation reflects Japan's cautious stance on the acceptance of low-skill foreign workers. Even in countries that actively welcome highly skilled workers, including Singapore, in terms of head counts, the numbers of low-skilled workers are generally much higher. In contrast, Japan has maintained a policy of actively accepting workers in specialist and technical fields while in principle shutting out unskilled workers[(26)]. That is why the number of foreign workers and foreigners in general in Japan is low.

What is the situation surrounding the acceptance of highly skilled foreign workers in Japan? For the purposes of this paper, qualified residents in specialist and technical fields and highly skilled foreign professionals, as defined in Japan's points system, will be referred to as broadly defined "highly skilled workers." However, the residential categories for specialist and technical fields need to be viewed with a certain amount of latitude, since they encompass attributes that differ somewhat from the usual image of highly skilled workers. For example, nightclub dancers are included in the "entertainment" sub-category under specialist and technical fields [(27)].

The points system was introduced to facilitate acceptance of highly skilled foreign workers in the three categories of advanced academic research activities, advanced specialized and technical activities and advanced business management activities. Points are allocated according to assess-

Table 6 Foreign Migrants in Major Countries/Regions (2013)

	Population (thousands)	Foreign migrants (thousands)	Foreign population (%)	Share of world foreign migrants total (%)
World	7,162,119	231,522	3.2	100.0
ASEAN	617,660	9,498	1.5	4.1
Brunei	418	206	49.3	0.1
Cambodia	15,135	76	0.5	0.0
Indonesia	249,866	295	0.1	0.1
Laos	6,770	22	0.3	0.0
Malaysia	29,717	2,469	8.3	1.1
Myanmar	53,259	103	0.2	0.0
Philippines	98,394	213	0.2	0.1
Singapore	**5,412**	**2,323**	**42.9**	**1.0**
Thailand	67,011	3,722	5.6	1.6
Vietnam	91,680	68	0.1	0.0
Northeast Asia	1,620,807	7,720	0.5	3.3
Japan	**127,144**	**2,437**	**1.9**	**1.1**
China	1,408,896	849	0.1	0.4
Hong Kong	7,204	2,805	38.9	1.2
South Korea	49,263	1,232	2.5	0.5
Others	28,301	397	1.4	0.2
South Asia	1,749,046	15,002	0.9	6.5
Oceania	38,304	7,938	20.7	3.4
North America	355,361	53,095	14.9	22.9
U.S.	320,051	45,785	14.3	19.8
Latin America	616,645	8,548	1.4	3.7
Europe	742,452	72,450	9.8	31.3
EU28	508,368	50,651	10.0	21.9
Middle East	245,707	33,144	13.5	14.3
Africa	1,110,635	18,644	1.7	8.1
Others	65,503	5,483	8.4	2.4

Source: United Nations, Department of Economic and Social Affairs, "Trends in International Migrant Stock"

ment criteria based on the characteristics of each field, including academic background, work history, annual income and age. Individuals with a total score of 70 are eligible for preferential treatment under the immigration control system (Fig. 6). The system was first introduced in May 2012. Changes to the system in December 2013 include an easing of the approval criteria.

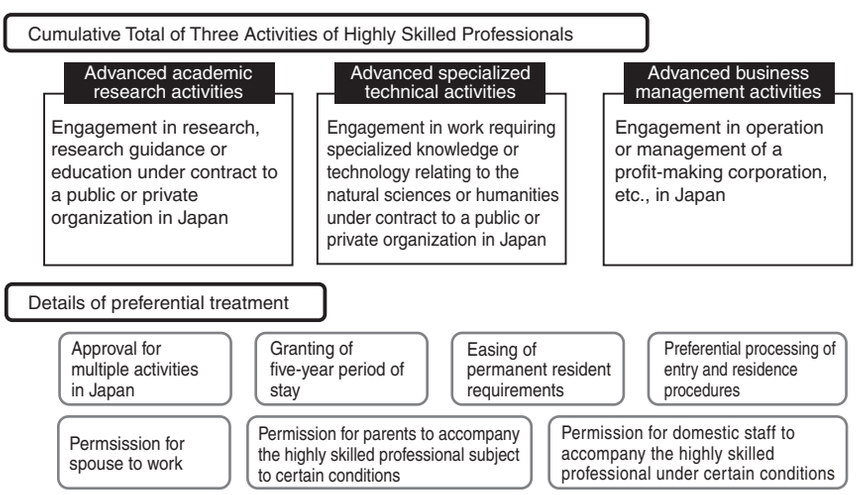
(2) Actual Inflow Limited in Scale

According to the Ministry of Health, Labour and Welfare[28], as of October 2014 there were 788,000 foreign workers in Japan, of whom 147,000, or 18.7%, were people with residence qualifications for specific professional fields (Fig. 7). The number of highly skilled foreign workers in Japan under the points-based system as of June 30, 2014 was 1,446 (Ministry of Justice). This means that there are just under 150,000 highly skilled foreign workers (broadly defined) in Japan, which is lower than Singapore's total of 177,000 EP holders as of June 2014. The number qualified to reside in Japan as students is actually larger at 197,000 as of June 30, 2014 (Ministry of Justice).

There has been a marked slowdown in the number of highly skilled foreign workers entering Japan in recent years. Because the points-based system was introduced only recently and the absolute number of people admitted under this system is still small, we look instead at the number of people with residential qualifications for specialized and technical fields. After expanding steadily from the 1990s until 2008, that total has remained basically static since 2009 (Fig. 8). Even if we exclude the entertainment category, which has been affected by the introduction of stricter criteria, the rate of increase remains marginal. While there is a greater awareness in principle of the need to bring in highly skilled foreign workers, this is still not being reflected in practice.

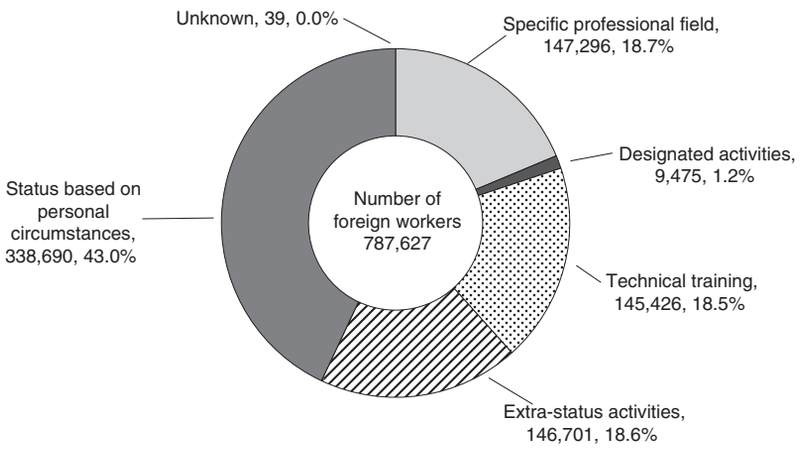
This can be confirmed from the results of various surveys. For example, 71.2% of companies participating in a survey conducted by the Japan Institute for Labour Policy and Training in January 2013[29] had never employed a highly skilled foreign worker (Fig. 9). When companies were asked how many highly skilled foreign workers they had hired over the past three years, most responded the number was fewer than five, with 41.7% of companies that had employed foreign students in Japan as full employees ticking the box for "one or more but fewer than five" (Table 7). In reality, few companies in Japan employ highly skilled foreign workers, and those that do tend to hire only a very limited number.

Fig. 6 Points-Based Preferential Immigration Treatment for Highly Skilled Foreign Professionals



Source: Immigration Bureau, Ministry of Justice, Points-based Preferential Immigration Treatment for Highly Skilled Foreign Professionals (http://www.immi-moj.go.jp/newimmiact_3/pdf/141121leaflet.pdf)

Fig. 7 Number of Foreign Workers by Type of Residence Status



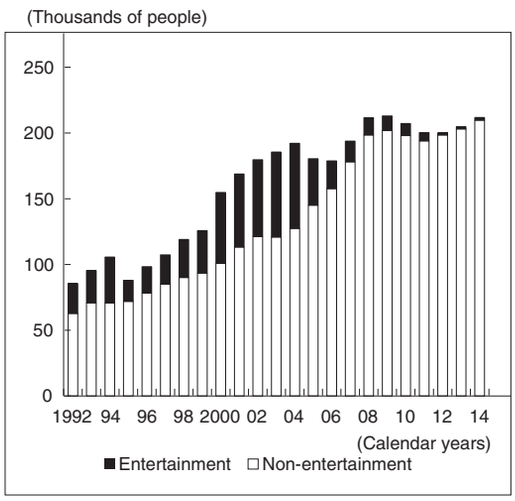
Source: Ministry of Health, Labour and Welfare, "Notifications Concerning Employment of Foreign Nationals" (January 30, 2015)

Specific proffesional field	Professors Artists (composers, painters, writers, etc.) Religious activities Journalists Investors/ Business managers (e.g., managers/administrators of foreign-owned companies) Legal/accounting services Medical services Researchers Instructors (e.g., junior/senior high school language teachers) Engineers (e.g., mechanical engineers) Specialists in the humanities and international services (interpreters, designers, language teachers in private companies, persons involved in advertising, promotion, overseas business activities or product development, etc.) Intracompany transferees Entertainers (actors, singers, dancers, professional sports players, etc.) Skilled labours (foreign cuisine chefs, sports coaches, aircraft pilots, metalworkers, etc.)
Designated activities	E.g., foreign candidates for nursing and care positions under economic partnership agreements, persons on working holidays, highly skilled foreign workers under the points system)
Technical training	Persons in Japan under technical training schemes
Extra-status activities	Persons in Japan with residential status for cultural activities, short-term residence, study, training or family visits who have obtained permission to egnage in other activities
Status based on personal circumstances	Permanent residents, spouses, etc., of Japanese or permanent residents, fixed residents

Source: HelloWork, Prefectural Labour Departments, Ministry of Health, Labour and Welfare, "To Employers of Foreign Nationals: Following the Rules when Employing Foreign Nationals" (leaflet)

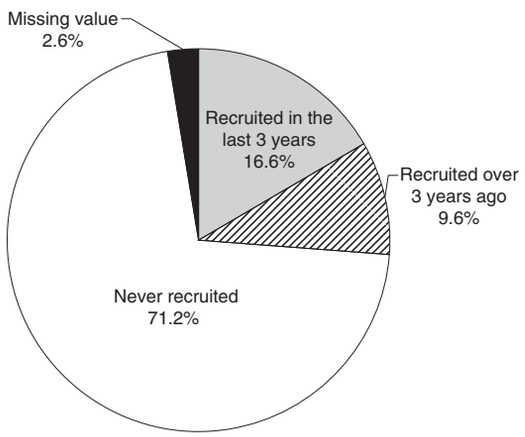
The various factors put forward to explain the limited inflow of highly skilled foreign workers into Japan can be summed up as follows. First, there are factors on the receiving side. Comments that are frequently heard in the business community indicate that companies do not perceive a real need to employ foreigners, lack the structures to accommodate them, and would find it difficult to gain the understanding of their customers and suppliers. The most frequent reason for not employing highly skilled foreign workers in the aforementioned survey by the Japan Institute for Labour Policy and Training was “not needed,” which was cited by 60.3% of companies (Fig. 10). Companies that trade mainly in Japan or trade with other countries but have already established sales channels can probably manage with just Japanese workers. Companies that have never employed

Fig. 8 Foreign Workers with Residential Status for Specialized and Technical Fields (Long-Term Trend)



Notes: Values as of June 30, 2014
Source: Immigration Bureau, Ministry of Justice, "Statistics on Foreign Residents"

Fig. 9 Recruitment of Highly Skilled Foreign Workers by Japanese Companies (based on results of 2013 survey)



Source: Japan Institute for Labour Policy and Training,"Survey Concerning the Acceptance of Highly Skilled Foreign Workers by Companies," JILPT Survey Series, No.110, May 2013

Table 7 Number of Highly Skilled Foreign Workers Recruited over the Past Three Years (based on results of 2013 survey)

(%)

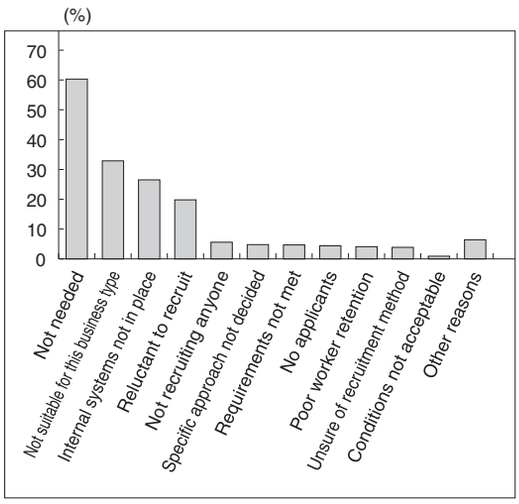
	Not applicable	1 or more but fewer than 5	5 or more but fewer than 10	10 or more
Students (full employees)	53.3	41.7	3.6	1.3
Students (contract employees)	89.1	8.7	0.7	1.4
Mid-career recruitment of highly skilled workers as full employees	66.2	29.4	3.7	0.7
Mid-career recruitment of highly skilled workers as contract employees	80.0	14.1	2.4	3.4
Overseas recruitment of highly skilled workers (recruitment of new graduates as full employees)	94.3	3.6	1.4	0.7
Overseas recruitment of highly skilled workers (recruitment of new graduates as contract employees)	53.3	41.7	3.6	1.3
Overseas recruitment of highly skilled workers (mid-career recruitment as full employees)	95.6	3.3	0.4	0.7
Overseas recruitment of highly skilled workers (mid-career recruitment as contract employees)	89.4	5.7	2.1	2.8

Notes: Aggregated figures excluding missing values
Source: Japan Institute for Labour Policy and Training, "Survey Concerning the Acceptance and Utilization of Highly Skilled Foreign Workers by Companies," JILPT Survey Series, No.110, May 2013

a foreigner may have indicated that they had no need for foreign employees simply because they were unable to visualize a clear picture of how they might use foreign workers in their organizations.

Factors relating to the highly skilled foreign workers themselves include a lack of job opportunities, as well as lifestyle difficulties, such as the fact that Japan is not an English-speaking country. Another reason may be the perceived lack of future potential in Japan because of its prolonged economic stagnation. These factors are also reflected in Japan's low livability score and overall ranking of 18th in the HSBC Expat Explorer Sur-

Fig. 10 Reasons for not Hiring Highly Skilled Foreign Workers (based on results of 2013 survey)



Source: Japan Institute for Labour Policy and Training, "Survey Concerning the Acceptance and Utilization of Highly Skilled Foreign Workers by Companies," JILPT Survey Series, No.110, May 2013

vey cited earlier in this paper (Table 3).

Japan has already implemented a number of measures to attract highly skilled foreign workers. In 2008 the government announced a plan to increase the number of foreign students in Japan, whom it saw as potential highly skilled foreign workers, from 140,000 in that year to 300,000 by 2020. Since the 2011 school years, English (actually referred to as "foreign language activities") has been a compulsory subject for fifth-and sixth-year elementary school students. The aim of this move is to increase familiarity with English, especially the pronunciation, from elementary school age. We have already looked at the points system for highly skilled foreign workers, which was introduced in 2012. In addition, the government is currently considering the easing of regulations to make it easier for foreigners to establish companies in Japan[(30)].

The Ministry of Education, Culture, Sports, Science and Technology is implementing the World Premier International Research Center Initiative (WPI) with the aim of creating an excellent research environment that will attract top-level scientists from around the world. In fiscal 2007, five facilities, including the Kavli Institute for the Physics and Mathematics of the Universe (Kavli IPMU) at the University of Tokyo Institute for Advanced Study, were selected for the WPI. Another four have been added since fiscal 2010. As a truly global institute for advanced learning and research, the Okinawa Institute of Science and Technology Graduate University (OIST), which was established in 2011, is playing a pioneering role in efforts to attract world-class scientists.

Kavli IPMU and OIST both have a number of features in common with A*STAR's efforts to attract foreign talent. First, they attract the world's top scientists by providing internationally competitive research environments. Second, the presence of these top-level scientists has enabled them to attract talented scientists from around the world. Third, they provide excellent lifestyle support to ensure that scientists can concentrate on their research activities without worrying about difficulties relating to life in Japan.

(3) Why Japan Should Learn from Singapore's Openness

Efforts to analyze the factors that hinder the acceptance of highly skilled foreign workers have made progress, and countermeasures are being developed. Of course, Japan has clearly taken too long to reach this stage. Singapore has formulated and implemented a series of measures relating to the active recruitment of highly skilled foreign workers since the second half of the 1980s, and many other countries have also been working to attract people for many years. In addition, there has been a steady inflow of highly skilled foreign workers employed by the many foreign-owned companies that have established operations in Singapore. Inflows via this route in Japan are limited because of the small number of foreign companies with operations in Japan. Furthermore, it will take a considerable period of time for improvements in the living environment, including the ability to use English, to become apparent. In contrast with Singapore, however, where there is an absolute shortage of workers at all levels, some Japanese companies do not even perceive a need for highly skilled foreign workers.

Table 8 Career Status of Foreign Students (Fiscal 2012)

Upper: Number of students
Lower: Percentage

	In Japan				In home country				In other country				Sub-total	Unknown	Graduation (completion)
	Job-seeking	Further education	Other	Total	Job-seeking	Further education	Other	Total	Job-seeking	Further education	Other	Total			Total students
Total	8,722 (23.5%)	10,981 (29.6%)	5,469 (14.8%)	25,172 (67.9%)	3,984 (10.7%)	340 (0.9%)	7,036 (19.0%)	11,360 (30.7%)	133 (0.4%)	230 (0.6%)	167 (0.5%)	530 (1.4%)	37,062 (100.0%)	2,233	39,295
Bachelor or higher degree	6,356 (27.2%)	3,861 (16.5%)	3,553 (15.2%)	13,770 (59.0%)	3,315 (14.2%)	196 (0.8%)	5,570 (23.9%)	9,031 (38.7%)	126 (0.5%)	206 (0.9%)	149 (0.6%)	481 (2.1%)	23,332 (100.0%)	2,162	25,494
PhD	483 (17.1%)	40 (1.4%)	700 (24.8%)	1,223 (43.2%)	892 (31.5%)	16 (0.6%)	591 (20.9%)	1,449 (51.2%)	50 (1.8%)	5 (0.2%)	51 (1.8%)	106 (3.7%)	2,828 (100.0%)	314	3,142
Masters	2,393 (28.5%)	1,574 (18.7%)	1,153 (13.7%)	5,120 (60.9%)	1,294 (15.4%)	91 (1.1%)	1,757 (20.9%)	3,142 (37.4%)	48 (0.6%)	53 (0.6%)	43 (0.5%)	144 (1.7%)	8,406 (100.0%)	842	9,248
Professional degree	143 (32.2%)	23 (5.2%)	86 (19.4%)	252 (56.8%)	113 (25.5%)	2 (0.5%)	69 (15.5%)	184 (41.4%)	6 (1.4%)	1 (0.2%)	1 (0.2%)	8 (1.8%)	444 (100.0%)	67	511
Bachelor (undergraduate)	3,337 (28.6%)	2,224 (19.1%)	1,614 (13.8%)	7,175 (61.6%)	1,016 (8.7%)	87 (0.7%)	3,153 (27.1%)	4,256 (36.5%)	22 (0.2%)	147 (1.3%)	54 (0.5%)	223 (1.9%)	11,654 (100.0%)	939	12,593
Other	2,366 (17.2%)	7,120 (51.9%)	1,916 (14.0%)	11,402 (83.0%)	669 (4.9%)	144 (1.0%)	1,466 (10.7%)	2,329 (17.0%)	7 (0.1%)	24 (0.2%)	18 (0.1%)	49 (0.4%)	13,730 (100.0%)	71	13,801

Notes: "Others" includes people who continue job-seeking activities after graduation (completion).
Source: Japan Student Services Association, "Results of Survey of Academic Progress of and Degree Conferment on Foreign Students in Fiscal 2012," May 2014

Foreign students at Japanese universities are seen as a potential source of highly skilled foreign workers in the future. However, while the number of such students has increased steadily, only a small number find work in Japan after graduation. According to a survey conducted by Japan Student Services Association in fiscal 2012, only 27.2% of foreign university students are employed in Japan after graduation (Table 8). This is attributable in part to the students own circumstances, since some never intended to remain in Japan after graduation. In other cases, students have been unable to find jobs because of mismatching between their needs and those of Japanese companies. Other factors include the limited attractiveness of employment with Japanese companies from the viewpoint of foreign students. Even when foreign students have found jobs with Japanese companies, a significant number have failed to settle in their jobs because of their discomfort with the work methods and assessment systems used by Japanese employers, and because the companies concerned are not fully prepared to accommodate foreign employees.

When Japan's history, culture, ethnic composition and national characteristics are taken into account in addition to these hurdles, it seems unlikely that there will be significant inflows of highly skilled foreign workers, or that it will be easy to reach a stage at which these people will "contribute greatly to the creation of a new vitality in the Japanese economy and society and to the strengthening of international competitiveness," as envisaged in the Basic Plan for Immigration Control (fourth edition) [(31)].

Despite this, Japan needs to work steadily to move beyond a situation in which the number of highly skilled foreign workers is extremely low by world standards. Our first goal should be to create an environment in which companies and universities that need foreign talent can recruit those people and use them to their full potential, and in which highly skilled foreign workers can gain the greatest possible satisfaction from their working lives in Japan.

As described in this paper, a strong sense of crisis triggered by an absolute shortage of human resources in Singapore has led to the development of an extensive range of policies designed to attract highly skilled foreign workers to that country. Although there have been changes recently, in the past, at least, Singapore has worked toward the clear and simple goal of giving first priority to national economic development, and all policies

have been required to converge on that goal. To this extent, policy management is easier for Singapore. Another factor that has facilitated policy management is the fact that the People's Action Party has held a stable majority ever since the founding of Singapore.

Singapore is a special country in various ways, and clearly its unique characteristics have contributed to its success in attracting highly skilled foreign workers. Japan is unlikely to evolve into a cluster of highly skilled foreign workers on the same level as Singapore. Nor does it need to do so. However, this does not mean that Japan can afford not to learn from Singapore's example. Japan has much to learn from the aspects of Singapore's culture that have attracted highly skilled foreign workers. Specifically, we need to emulate the openness that has enabled Singapore to accept people from outside positively, provided that they can contribute. The people of Singapore certainly do not lack awareness of their citizenship and fully understand the limitations of approaches that focus solely on citizens of their own country. They have few scruples about accepting foreigners who can produce good results, and it would be fair to say that the entire nation has pursued an open innovation model with the aim of achieving innovation efficiently by procuring human resources, and the skills and knowledge that come with those resources, from outside of Singapore.

Japan has been unable to shake off Japan-centrism, despite the fact that the people have been lamenting the harmful effects of that mindset for many years. In the business sector, for example, even though business corporations have started to appointed top executives from outside of their organizations, they still remain nervous about employing foreigners[32]. Because people are not used to employing or working with foreigners, they react with rejection. Because of this tendency toward rejection, there is little growth in the number of foreigners accepted, with the result that there are few opportunities to eliminate the tendency to reject foreigners. To break out of this vicious circle, Japan will need to adopt Singapore's openness and the logic behind it, and to move a little closer to a mindset based on tolerance of diversity, which is a prerequisite for the acceptance of people from other countries.

End Notes

1. United Nations, Population Division, "World Population Prospects: The 2012 Revision," estimates, 2005-2010.

2. Examples can be found on the Inland Revenue Authority of Singapore website (http://www.iras.gov.sg/irashome/page01.aspx?id=88).

3. Obonai [2000], p. 440

4. "Speech by George Yeo, Minister for Information & the Arts and Second Minister for Trade & Industry, at the 1998 Enterprise 50 Award Presentation and Gala Dinner on 25 November 1998" (Singapore Government Press Release), November 25, 1998.

5. Persons with assets of over S$20 million (approx. ¥1,740 million), and at least S$10 million (approx. ¥870 million) deposited in Singapore were eligible under the Financial Investor Scheme. A total of 1,080 people acquired permanent resident status in Singapore between 2004 and 2012 under this scheme. (Singapore Parliament Report, "Applications for Singapore Permanent Residence Under the Financial Investor Scheme" (written answers to questions) Parliament No.12, Session No.1, Volume No.89, October 15, 2012.)

6. Search results as of March 25, 2015(https://cs.amris.com/wizards_v2/cs/vacancySearch.php?jobTypeId=11)

7. Yue [2011] p.13.

8. Low [2001].

9. Ministry of Education, "International Students Receiving Tuition Grant," (Parliamentary Replies) January 20, 2014.

10. Agency for Science, Technology and Research, "Annual Report April 2013 - March 2014," [2014]

11. Jacobs [2010] p.33.

12. Recipient of the 11th Nikkei Asia Prize for Science Technology (Nihon Keizai Shimbun, May 24, 2006, http://nikkei.jp/hensei/asia2006/asia/prize_jusyo2.html)

13. Established in 2003, Biopolis is home to government-funded public sector biotechnology research organizations, especially A*STAR-affiliated organizations, as well as domestic and foreign universities and corporate research institutes.

14. "A home for world's best scientists," The Strait Times, December 31, [2013].

15. Jacobs [2010] p.33.

16. This target was achieved five years later, according to H. Ota [2008].

17. The numerical target was scrapped in 2009, in part because of a change in perception toward the view that instead of simply trying to increase the head-count of foreign students, it was more important to attract high-quality students. (Ministry of Trade and Industry, "Minister Lim Hng Kiang's written reply to Parliament questions on EDB's Global Schoolhouse Initiative," October 17, 2012.)

18. In the 2014 budget debate in Singapore's parliament, Seah Kian Peng, MP for Marine Parage GRC, commented: "A New Model of Government: Less Thinking, More Funding." (March 3, 2014)

19. Andersson et al [2013] p.7.

20. Ibid.

21. NTU website (http://www.ntu.edu.sg/AboutNTU/Pages/AcademicHighlights.aspx)

22. Apart from personal circumstances, their reasons for leaving Singapore include research budget cuts, and a reluctance to a culture that gives priority to research linked to practical uses. For example, Dr. Neal Copeland and his wife, Dr. Nancy Jenkins, moved from the U.S. National Cancer Institute to the Institute of Molecular and Cell Biology (IMCB) at the National University of Singapore in 2006. Initially they were given a free research environment, but a subsequent shift in government policy resulted in a reduction in their research budget and a loss of research freedom, prompting them to move to an institute in Texas in 2011. (National Center for Biotechnology Information, Disease Models & Mechanisms [2012] pp.713-717.)

23. Factors that discourage permanent residents from acquiring Singaporean citizenship include the loss of their original citizenship, since Singapore does not allow dual nationality, and the fact that they would face military service obligations.

24. Measures to reduce intakes of low- and mid-skilled foreign workers include an increase in the foreign employee levy for holders of Work Permits and S Passes, the reduction of employment quotas, and an increase in the minimum monthly salary required for an S Pass.

25. Singapore Ministry of Finance, "Budget 2015," February 23, 2015.

26. In reality a significant number of foreigners are employed as low-skilled workers in Japan. Skill training programs for foreigners are particularly significant in this context. Although intended as a way of transferring technology to developing countries as part of Japan's international contribution, these programs are also used as a source of cheap labor. The gap between these systems and the actual situation is responsible for a variety of abuses, including the unfair treatment of foreign trainees.

27. Controversy arose over the fact that those qualified to reside in Japan under the entertainment category were mostly female dancers from the Philippines, who worked as hostesses in bars and clubs. In 2005 and 2006, the ministerial ordinance concerning admission to Japan under the entertainment category was revised, and entry and residence screening criteria were tightened. As a result, the number of resident foreigners under the entertainment category plummeted from a peak of 64,742 at the end of 2004 to just 1,991 as of June 30, 2014.

28. This is the total number employed by business owners and excludes special permanent residents, foreign diplomats and public sector workers.

29. Japan Institute for Labour Policy and Training [2013]

30. "Foreigners to be able to start companies without Japanese shareholders," *Nihon Keizai Shimbun*, March 3, 2015.

31. Ministry of Justice, *Basic Plan for Immigration Control (fourth edition)*, March 2010, [P.22 in English version]

32. For example, when Takeda Pharmaceutical Company appointed a French citizen, Christophe Weber, as its new CEO in 2014, shareholders and employees initially reacted negatively, with some even saying that their company had been hijacked by a foreigner. ("230 Years of Isolation, 1 Year of Openness, the Struggles of a Global Takeda," *Nikkei Business*, March 2, 2015, pp.30-31.)

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17. Yeoh, Brenda and Weiqiang Lin [2012] "Rapid Growth in Singapore's Immigrant Population Brings Policy Challenges," Migration Policy Institute, *Migration Policy*, April 3, 2012.

18. Yue, Chia Siow [2011] "Foreign Labor in Singapore: Trends, Policies, Impacts, and Challenges," Philippine Institute for Development Studies, *Discussion Paper Series*, No.2011-24, December 2011.