Migration and the Medical Markets in Japan*

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1. Introduction

Japanese economy has been stagnated what we call for lost two decades since the bubble burst. One of the reasons is the decrease in labor force due to the aging society as well as the decline in fertility rate. In Japan, the number of the dead has exceeded that of the natal since 2007 and the natural population has been decreasing. This is very rare phenomenon and can be seen only in transitional economies such as Russia, Poland and Hungary, where socialist economy collapsed and was in a state of disorder.

The aging in Japan has been advanced at the accelerating speed. The nursing care insurance was introduced in Japan for the aged to live a stable life without worrying about their care. When we look at it in detail, the number of the insured aged 65 and over is called the first category insured and there are 29 million people in it, 14 million of them is aged 75 and over. The number of the first category increases by 34.2%, and the number of people who require cares is 4.86 million people and increases 123% compared with 2000 years. Furthermore, the number of people who took advantage of the caring insurance in

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fact 2010 is 3.62 million people, and increases by 143%, and 2.93 million of who received the home-based care, and increases by 202%, compared with 2000.

Ratio of people aged 65 and over is 20.3%, and ratio of those who aged 75 and over is 9.1% in 2005 and according to data of the projection by National Institute of Population and Social Security Research, respectively 26.9% and 13.1% in 2015, 30.5% and 18.2% in 2025, and 55% and 26.5% in 2055.

While population has been decreasing, the number of household has been increasing in Japan. This means that the number of member per household has been decreasing and amounted to 2.46 in 2010. One of the reasons is the increase in the ratio of single household, which was 29.5% in 2005 and is estimated to amount to 32.7% in 2015, 37.4% in 2030.

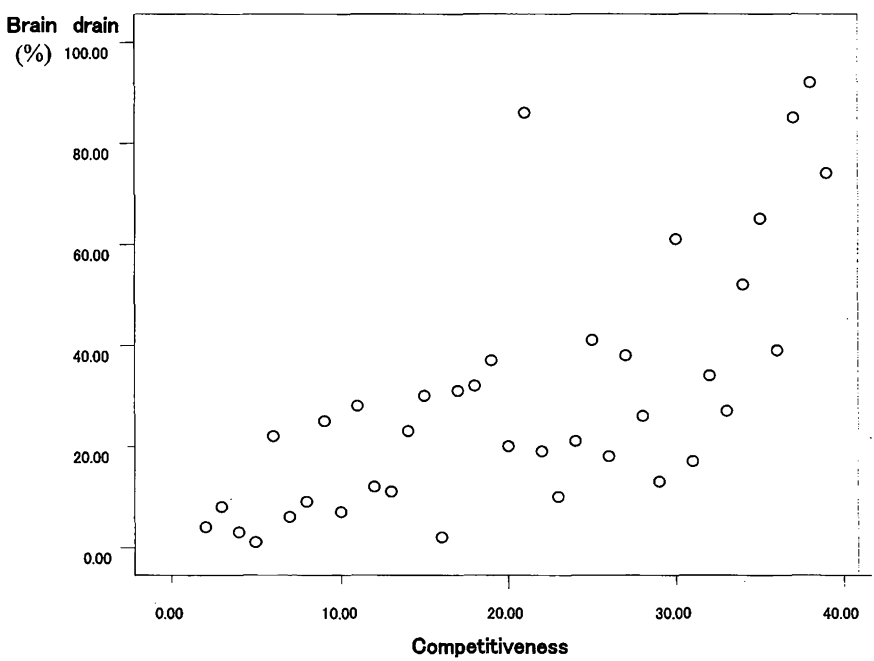
When we look at the households in which those who ages 65 years old and over live, 23% of them are single households, 23.2% of them are only the couple who are both 65 or over, and the ratio of the traditional type of family where they live with their child's family is only 17.5% in 2009. It seems that the role of family as a care giver is going to get smaller and smaller. Therefore we need to improve the care insurance as well as public care support system and make them sustainable.

Now, Japan has been in difficult situation where fiscal deficits have been growing. In particular, the social security expenditure (27.3 trillion), which account for about half of total expenditure of general account (54.1 trillion) in 2010, has been increasing. If the present system is going to continue in the future, it is estimated by Ministry of Health, Labor and Welfare (MHLW) that it will amount to increase every year by 1.3 trillion automatically and the degree of the discretionary budgets is going to get narrower and narrower. According to MHLW, expenditure of public pension exceeded 10% of GDP in 2009, and a pensioner is supported by 1.8 persons who pay the insurance bill[1]. It seems that it is getting very difficult for the pension system to maintain in the present system.

It seems that we need to promote deregulations, and build an opener and freer institution and market in order to activate Japanese economy. According to the competitiveness index by IMD (international institute for management develop), the Japan's rank is the 27th and

is behind Korea, Taiwan and Thailand. IMD quotes that areas which Japan is behind with are entrepreneurship, the extent of acceptance toward foreign way of thinking, international experience and social framework. It seems that strength of Japanese organization has lain in internal teamwork so far that often emphasizes harmony of the team rather than individual ability. However, in the age of globalization on the contrary, there is a possibility that this factor may depress individual ability as well as social development. Nowadays, movement of people has become prevalent, and they prefer moving in order to make the most of their ability. According to the World Economic Forum, Japan is the 26th in the rank of attractiveness of a nation, and the 88th in the rank of female labor participation rate, among 139 countries. Figure 1 shows that high competitiveness implies low brain drain. Now is the time when every country competes vigorously in pursuit of high skilled

Figure 1 Relationship between brain drain and competitiveness



workers. Japan should remove the barriers to movement of people, in particular movement of skilled workers in order to keep up with the times.

In this paper, we propose Japan should adopt an open policy toward medical fields. There are various arguments for as well as against the deregulations of medical markets. We approach this issue from the viewpoint of modern economics theoretically.

The Japanese government is beginning to recognize that Japan should introduce the skilled workers from foreign countries, and first of all decided to accept nurses and care givers from Philippine as well as Indonesia. However the conditions are strict and it is not so easy for them to work in Japan. Japan is the least advanced in internationalization among developed countries. If Japan fails in acceptance of medical workers from foreign countries, Japan would lag behind the wave of internationalization remarkably.

There are a lot of research papers about the individual country's immigration, for example, Coleman D. and Rowthorn (2004) in the case of U.K., Bauer T etc (2002) in the case of Portuguese, Yamanaka (1993) in the case of Japan and Chiquiar D and Hanson. G.H. (2005) in the case of Mexico. There is also a survey paper of Barnighausen, T., and Bloom, David E (2009) on the medical market we focus here. There is a serious problem on international migration in the medical market, that is, it is getting difficult to retain physicians in the developing countries, and they tend to move to the developed countries. This is related to the brain drain which has been discussed for long time. The representative paper is Bhagwati (1974, 1975). We introduce the positive externality into the previous model and derive from the new possibility of getting benefit for the both countries. In that case, we refer to Oded Stark (2003).

2. International Situation in the Medical Market

First of all, let's see how positively some countries accept medical workers from foreign country. Table 1 shows the ratio of physicians who acquired the qualification of physician in foreign countries to all the physicians operated in U.S.A, Canada, U.K. and Australia,

which are considered to accept many immigrants. They are included in the category of immigrants. As it shows, about one fourth of the physicians come from the foreign countries. While U.S. and U.K have characteristics of many physicians coming from the developing countries, Canada and Australia have characteristics of those who come from the developed countries such as U.K., U.S. and Australia or Canada. In Japan, not to mention foreigners, even if the Japanese acquire the qualification of physicians approved in foreign countries, they are not allowed to give medical treatment in Japan. As a result of that, when a skilled physician lives in a foreign country, Japanese patients have to go to the foreign country and see the doctor. It costs too much for them.

Table 1 Number of physicians from foreign countries

Country	A	B	C (%)	D (%)	E (%)
U.S	293	208,733	25.0	60.2	6.5
U.K	231	39,266	28.3	75.2	2.5
Canada	220	15,701	23.1	43.4	22.3
Australia	271	14,346	26.5	40.0	33.5

source ; The world health organization, 2005

A: number of physicians per 100,000 of people

B: number of immigrated physicians

C: Ratio of immigrated physicians to all the physicians

D: Ratio of immigrated physicians from developing countries

E: Ratio of immigrated physicians from other three developed countries quoted here

According to Fitzhugh (2005), 4.9% of all the physicians operated in U.S.A come from India, 3% of them account for the returnees who acquired the qualification of physician in foreign countries, and 2.1% come from Philippine[2]. In U.K., 10.9% come from India, 2.1% come from Ireland, and 1.9% come from Pakistan. In Canada, 4.0% come from U.K., 2.6% come from South Africa, and 2.1% come from India. In Australia, 8.6% come from U.K., 4.0% come from India and 3.2% come from New Zealand.

Mutual movement of the physicians is executed among these four developed countries.

Since there is no handicap on the language and similar culture background in these countries, they tend to response to economic factors sensitively. That is the reason why many Canadian medical workers move to the U.S. market.

Table 2 shows ratio of brain drain in several countries. B is the number of physicians from a source country practicing in the recipient countries and C is the total number of physicians practicing in the source countries. The recipient countries here are the United States, the United Kingdom, Canada and Australia.

Table 2 Ratio of brain drain to the recipient countries

Source country (A)	number of brain drain; (B)	Number of physi-cians in A; (C)	Ratio of brain drain =B/(B+C)),%
New Zealand	2483	8491	22.6
Philippines	18303	91408	16.7
Singapore	750	5747	11.5
Thailand	1562	18140	7.9
South Korea	4455	84611	5.0
Australia	2263	54212	4.0
India	59523	503900	10.6
Ireland	6423	9166	41.2
Jamaica	1589	2253	41.4
Haiti	1067	1949	35.4
U. K	10838	138667	7.2
Canada	9105	68096	11.8
U.S	673	836036	0.1

source ; The world health organization, 2005

We can observe that India has sent most of the physicians to the four recipient countries, followed by Philippines. Ratio of brain drain represents an approximate percentage of medical school graduates from source countries who are now working in one of the four

recipient countries. This high ratio of brain drain might imply a loss to the health systems of the source countries[3]. In addition, there are costs in terms of investment in education and human capital. Moreover, many medical educations are influenced by the "Western" demands and the training programs are also getting to be aligned with not the local patterns of disease and levels of technology in the developing countries but the ones in the developed countries. As a result, young medical workers tend to seek placement not in their own countries but in the developed countries, which is major impediments to disease-reduction initiatives sponsored by the WHO. However, in the disease-reduction –issues in the developing countries, not only the medical problem but also the other issues such as environmental amenities as well as political stability are involved. It seems that only the prevention of migration could not resolve the problems.

When we look at some countries in which ratio of the brain drain is relatively high, it is worth their notice that they try to introduce general foreign workers positively. Singapore has accepted foreigners since 2006 positively, and her population increased by 740,000 to 5.08 million in total and 1.85 million people of them are foreigners. Considering that the total fertility rate of Singapore is 1.16 in 2010, the increase in population is worth its notice. Korea adopts a favorable policy toward high skilled workers who can get the gold card that allow them to extend their permitted period of residence. Philippine sends many medical workers to foreign countries. About 10 % of her population work in foreign countries and make remittance about 10% of GDP to their family. The remittance supports high level of economic growth in Philippine. India also sends many medical workers to foreign countries. Thus it seems that both the sending countries and the receiving countries are playing win-win game. From now on, the competition aiming for high-skilled workers is going to be getting more and more severe in the world.

The leading-edge medical technology of Japan is top level in the world. If medical tourism is promoted in Japan, it seems that many foreigners come to Japan to receive the medical treatment of Japan, which will lead to improvement of whole medical system in Japan. In this case, it would be absolute strength in attracting the foreigners that there are physicians, nurses and care helpers in the hospital who are from various foreign countries

and can speak their languages. In fact, there are international hospitals that have resident foreign language-speaking staffs in Korea. So, in this sense, Japan should work on accepting the medical workers from foreign countries positively

In that case, there might appear various sorts of frictions due to the difference of culture. But it seems that as things are keeping with the times, people can adjust themselves to new environment. In our opinion, Japan should promote acceptance of the medical workers from Philippine and Indonesia positively as innovative breakthroughs in internationalization of Japan.

3. Migration Theory

(1) Simple theory

Let's consider the simple theory as a useful guide of migration problem. Whether the individual (i) decide to migrate or not depends on the wage differences and the moving cost. The simple formulation can be expressed as the followings.

$$M_i = W_{f,i} - W_{h,i} - C_i > 0 \qquad (1)$$

W_f and W_h represent the wage of the receiving and sending country respectively, and C_i represents the migration cost. It depends on an individual. For example, if he or she is a person who could adapt oneself to new environment easily, his cost of migration is low, and if he has relatives and friends in his destination country, it might be a great help for him to adapt himself to new environment, and then migration cost would get lower. When we suppose that this decision on whether to migrate or not is executed in terms of utility, and utility is assumed to be logarithmic and the variables are expressed as natural log, the higher is the destination wage and the lower is the home wage and the migration cost, individual is more likely to migrate. Furthermore, if these terms are interpreted as present discounted value, then the likelihood of migration will decline with the age of individual since the remaining working life of the old becomes shorter. In general, since the population of developing countries is likely to be skewed towards the young working classes, international migration is likely to have tendency from the developing countries to the

developed countries.

(2) Skill and Wage

Next, let's introduce skill level into the model. Let individuals in the home (sending) country have skill levels designated as $s_{h,i}$, with mean $\mu_{s,h}$ and variance $\sigma^2_{s,h}$. If the individual with skill (s_i) works at the destination, or the home, the wages are assumed to be represented respectively as:

$$W_{f,i} = \alpha_f + \beta_f s_i \qquad W_{h,i} = \alpha_h + \beta_h s_i \tag{2}$$

with means and variances, respectively, μ_{wf}, μ_{wh}, σ^2_{wf}, σ^2_{wh}. Substituting into (1):

$$M = \alpha_f - \alpha_h + (\beta_f - \beta_h)\, s_i - c_i \tag{3}$$

If the return to skill in foreign countries (β_f) is greater than that of the home contry (β_h), migration will increase with skill given the other conditions being constant. Following Borjas(1989), if s_i is normally distributed, which means $W_{f,i}$ and $W_{h,i}$ are also normally distributed, the migration rate from home country to the foreign country can be expressed as:

$$M' = 1 - \Phi\left(\frac{-(\mu_{wf} - \mu_{wh} - c)}{\sigma_m}\right) \tag{4}$$

Where c_i=c(constant) for simplicity, σ_m is the mean of c_i, σ_m is the standard deviation of M, and Φ is the cumulative distribution function of the standard normal function. Here σ_m is a function of the variance of the $W_{f,i}$ and $W_{h,i}$. If we assume $\mu_{wf} - \mu_{wh} - c > 0$, that is, the wage of the destination country is relatively high, the migration rate depends on the wage distribution of the two countries (σ_m). Since σ_m is maximized at the point where $\frac{\sigma_{wh}}{\sigma_{wf}} = 1$ the migration rate will be an inverse "U" shaped function of $\frac{\sigma_{wh}}{\sigma_{wf}}$. In this case, when income dispersion at the destination country is big, even if the average wage is high there, people might choose not to migrate because they think the possibility of their wage being low. Therefore, the migration rate depends not only on an average wage, but also on the wage's dispersion. In this theory, only if the income's dispersion or income equality of both countries is the same, an average wage matters for migration. When we look at the actual data of Gini index of Philippine and Japan, they are 0.461 (2000) and 0.249 (1993) respectively[4]. The large Gini index in Philippine implies that there are some of the poor

who cannot migrate though they really would like to because of the income constraints. So, it seems that there is room for migrants to increase if policy on supporting the poor with high skill is implemented.

(3) Migration cost

Let's see migration cost. This is related with non-economic factor such as social network. For example, it means the existence of friends and relatives. They have already been living in the destination country where the potential migrants try to migrate to. They would take care of the migrants in the procedures of the migration and in the adaptation to new surroundings. Thus, their existence might help to reduce the cost of migration. In addition, the social network could reduce migration cost directly and retrieve income constraint on potential migration by providing moving expenses.

With regard to migration, policies are also important factors. When policy authorities put strict constraints on selection by skill, the cost of migration will increase. Adversely, when constraints on family reunification as well as restraints on examination of visa are relaxed, migration will increase. Adding these cost related to policies, the new decision equation is modifies as the followings:

$$M_i = W_{f,i} - W_{h,i} - C_i + m_i - n^* > 0 \qquad (5)$$

Here n^* represents the cost imposed by immigration policy and m_i reflects the benefit of social network. If the individual has social network, this will increase the possibility of migration.

It seems that the extent of internationalization in the destination country (Japan) is also related with the migration cost for the migrants. For example, if there are many foreign students as well as teachers at public school or many foreign labors work there, this might give the potential migrants an inducement to migrate wih their family.

When the minimum cost is needed in migration, poor people would not be able to migrate due to income constraint. When this minimum cost is represented as C', the proportion of the population who couldn't migrate would be:

$$P = \Phi\left(\frac{-(\mu_s - C')}{\sigma_m}\right)$$

Thus, the smaller is mean income and the higher is the standard deviation of income, the higher the proportion of potential migrants who will be income constrained is. However theses income constraints are relaxed through social network. For example, remittances from previous migrants could mitigate the income constraints.

Let's see the case where Japan introduces the medical workers from Philippine. In this case, it might be desirable to reduce the migration cost from the viewpoint of the economic policy. For example, implementing the policy of giving a subsidy might be taken into during the job training as a policy. It is important for us to think what kind of policy we should take a policy to attract the persons who are able and enthusiastic.

(4) Externality

One of main topics in the migration is which level of skilled people to accept. We suppose that the skill is the same meaning as human capital. That is, high level of the skill means high level of human capital. What we would like to emphasize here is that externalities arise in production. That is, when individuals try to acquire high level of human capital, they make not only themselves more productive, but also they would affect productivity of others around them. Adversely, when individuals are less productive, productivity of people around them would decrease. Thus, when many high skilled persons migrate in the country, new idea and innovation would come up and labor productivity might go up. This is one of big benefits in the movement of people as well as in the internationalization.

When we try to introduce externalities into model, a simple way to be thought is to assume that output of a worker depends not only on his or her human capital but also on the human capital of others. For example, let output per worker f (s_i) and this production function assumes to be concave[5]. Following Oded (2003), we also assume labor is only productive factor and the output as a whole is n workers times the per worker production function. As a result of this, social output function is one of the social average levels of human capital. If the number of workers is n and they are homogenous, the level of human capital that individuals choose is the average level of society as a whole. In this case, since

the externalities are not taken into consideration, social optimization is not attained. That is, since an individual worker will not consider his own level of human capital from the viewpoint of social optimum, the prevailing level of human capital will be less than social optimum level.

Let's assume an opportunity to migrate to the developed countries (F country) and the returns to human capital in F are higher than in the home country (H). A worker's output in F is again a concave function of the worker's level of human capital. Of course, all the migrants cannot always get jobs. We suppose here probability of securing employment is p. So, they can't obtain job with probability 1-p. Worker's decision is which level of human capital to acquire. It is obvious that it depends positively on p. Therefore, in the presence of possibility of migration, migrants would try to form much more human capital than in the absence of possibility of migration. As a result of that, the level of inefficient human capital could be improved and consequently welfare could be raised by the possibility of migration. Not surprisingly, if this effect is so big, output of the non-migrant in home country could go up due to more total human capital.

We have considered about possibility of migrant's getting job in the receiving countries so far. However we need to think about possibility of getting the unemployed for the natives due to the increase in the migrants. One of the arguments the opposition group insists is this possibility. But there are possibilities that two counterbalancing forces might occur. One is that the labors in the host country try to accumulate more human capital to escape being unemployed. This might improve labor productivity as a whole. The other is that influx of high skilled migrants might create new jobs and reduce unemployment rate through externality effects.

In this model, the possibility of taking a job (p) becomes an important variable. When p* is selected as an equilibrium, the difference between output of the migrant and one of the non-migrant is maximized and a unique maximum is attained. In addition, at this p*, welfare of the non-migrant is also maximized by the possibility of migration. That is, the scarcity of human capital arising from migration is supplemented by enhancement effect of human capital by the non-migrants through the possibility of migration.

However in fact, it would be difficult to know p*. However as long as the actual possibility (p) is not greater than this p* ($o < p \leq p^*$), people try to build more human capital than otherwise. As a result of that, the net outputs of a non-migrant under migration become higher than the net outputs of a worker in the absence of possibility of migration. To sum up, when a controlled migration policy under the optimal p* is attained, the socially optimal human capital would be formed and welfare of non-migrants would be enhanced. Furthermore in this case, migration doesn't always imply a loss in the sending countries.

4. Migration between Philippine and Japan

(1) Wage difference

Let's see the actual wages in Philippine and Japan. Nurse's wage per month on average in Philippine is estimated to be $200 and even physician's wage is less than $400. In the country side, the former is estimated to be less than $100. On the other hand, that in the developed countries is relatively high. Nurse's wage per two weeks in Canada is estimated to be equal to that per year in Philippine. According to data by the Ministry of Health, Labor and Welfare in Japan, average salary per month at the age of 35.8 years old in 2004 is estimated to be 316,000 yen (about $3511). Thus, since the salary per month in Japan exceed the year's salary in Philippine by far, there are great incentives for Filipinos to migrate to and work in Japan. In Japan, nurse's status is considered to be assistants of physician. On the other hand, the nurse's one in the medical field of U.S.A is higher and their authority is much greater compared with Japan. The nurses at high rank such as practitioners can practice a simple treatment, and have the authority that almost matches physicians. Therefore the nurse's salary in U.S.A. is much high and the average one is estimated to be $58000 on average. Since the whole average worker's salary is estimated to be $36000, we can see how much the nurse's salary in U.S.A is. That is the reason why so many nurses migrate from Canada and U.K. to U.S.A.

Thus we could understand that medical worker's salary in the developed countries is

much higher compared with other industries. Nevertheless, there exists the scarcity of medical workers in the developed countries. It seems that there are some reasons such as mismatches due to lack of information as well as regulations of entry into the medical markets. Since they have to deal with human's life and spend times of stress all the time, a separation rate of the job is high. Furthermore, since the job is what we call risky, tough and dirty, there are not many applicants who would like to seek the job in the medical market.

In particular, it is getting important to secure the nurses who could deal with serious operation as well as emergency situation. In order to attain that, we need to meet demand for total number of medical workers, and we have to recruit applicants who are ready to work under the present condition irrespective of nationality. Of course, it is necessary that the foreign workers have to meet certain minimum standards, but the lower the hurdle is, the better it is for them. Furthermore as the aging society is going to advance more and more, and the demand for the nurses as well as care givers is expected to increase, we are going to be forced to rely on the foreign medical workers.

(2) Barrier to migration:

Let's examine about some reasons that are against accepting the foreign medical workers. For example, when we introduce the nurses from Philippine, the opposition groups insist that quality of medical service might go down due to the difference of language, culture and medical technology. Though it might take some time to learn about the language as well as Japanese medical service, it seems that they can acquire them. The medical mistake which can be often seen in recent years, are made by the even Japanese medical workers. We should not judge by nationality that foreign medical workers would make mistakes more than Japanese.

There are a lot of kinds of medical service relatively from simple level to complicated as well as high level. It seems that even the simple job could be attractive for the foreign workers from the viewpoint of wages, and they are willing to take them. This might help much when there is shortage of medical stuffs absolutely. It is a great help for the patients

that the medical stuffs are always in state of on call irrespective nationality.

The second reason against it is the negative effects on the domestic workers. This is true if foreign labor and domestic labor are substitutes. Economic theory teaches us that it is natural that the increase in labor supply leads to the decrease in the wage. If a worker wants to avert it, he has to improve his labor productivity by accumulating human capital, and which lead to increase of labor productivity as a whole of society. This is indeed the merit of competitive market. There is no valid reason to protect domestic vested interests only in the medical market. If they are complementary to one another, accepting the foreign workers might improve labor productivity of the domestic medical industry. It seems that this is more likely to be the case in the domestic market where there is absolute shortage of the medical stuffs.

In addition, it seems that international exchange of medical stuff will lead to development of medical as well as caring technology. For example, as quality level of Japanese caring technology is very high, it could become export goods. In fact, some companies are ready to start the operation of caring service in China. Internationalization in Japanese medical sector is far behind compared with other countries. For example, when you have an organ transplant performed, you have to go to foreign countries and have the operation carried out in many cases. It costs too much and takes a lot of time to have it. Some foreign countries have been promoting the medical tourism. For example, Singapore is planning on accepting a million of foreign patients in 2012, and the foreign patients in Korea in 2007 were 16000 people, but she is trying to attain a target of 100000 foreign patients in 2012. For accepting the foreign patients, foreign nurses and care givers are necessities. So deregulation and reform about medical markets should be reconsidered from perspective of the whole society. In addition, the training system for medical interpreter and accessibility for the patient's family as well as friends should be taken into consideration. If these are brought to completion, they would contribute greatly to development of the Japanese tourism industry.

(3) Limits of internal adjustment in the Japanese medical market

It is well known that free trade brings the most efficient resource allocation for every country. If labor services are considered to be equivalent to goods and capital, it would be optimal for the medical workers to move from low-wage to high wage countries, which will lead to decrease in medical cost of the developed countries, and increase in national income of the sending countries.

The care insurance was introduced in Japan 2000, which affected great effects on the structure of industry. Care services for the persons who require them used to be conducted by family or their spouse. However, once the market for the care service was formed, many females were set free from the role of care-givers. With the aging in Japanese society and the increase of the females' participation in the labor market, the structure of employment has changed substantially. While the labors in the manufacturing and construction sector decrease, which is partly due to economic downtown, those who work in the medical and welfare sector increase after 2000. Employment in the manufacturing sector in 2002 is 10.02 million people, and of which man is 7.98 million, female is 4.03 million and the ratio of man to female is about 2:1[6]. On the other hand, one in the medical and welfare sector is 4.74 million, and of which man is 1.12 million, female is 3.62 million, and the ratio is about 1:3. In 2009, employment in the manufacturing is 10.73 million, and of which man is 7.5 million and female is 3.22 million. On the other hand, those who work in the medical and welfare sector is 6.21 million, and of which man is 1.5 million and female is 4.7 million.

The decrease of the employment in the manufacturing sector from 2002 to 2009 is offset by the increase in the medical and welfare sector for man. However the latter doesn't increase much enough to counterbalance the decrease in the construction sector. On the other hand, for female, the latter increase much more than to offset the former. As a whole of society, while employment for female increase, one for man decrease. The number of labors who work in the care market increase from 0.55 million in 2000 to1.37 million in 2009, and the ratio of female to man is 1:4 in 2009[7]. As a result of that, the remarkable things happened that the wage of female aged less than 30 in single household exceeded one for man under the same condition. Thus we could realize again that economy is

moving by the force of market

However, when the market is supposed to be imperfect, it is no wonder that there appears a disequilibrium, that is, the scarcity of the medical workers in Japan like other developed countries. According to the survey by the Ministry of Health, Labor and Welfare, Japan lacks 24000 of the physicians and lacks 40000 of nurses in 2010. Particularly, there are great shortages in local and rural areas, obstetrics and gynecology department, rehabilitation and hospital departments in which stuffs are always stationed in order to keep 24-hour availability. Japan is the second among the developed countries in the infant mortality[8]. This might be related to the shortage of obstetricians and gynecologists, and emergency medical service. In the care markets too, there are serious shortages of care givers.

One of the reasons for the shortage of medical workers is the way of wage determination. The wages of care givers are not determined by the market but by the Minister of Health, Labor and Welfare in the light of the social security council's advice. The care services practiced through the care insurance system are operated by insurance fee as well as tax revenue. Therefore, the prices as well as amount of them are fixed exogenously. As a result, the wages of care givers are also determined basing on them. The fixing of the wages means that the adjustment of the labor market is made through quantity. Therefore even if the labor shortage in the care market appears, there would be no surprise. In addition, even if the care givers try to heighten the quality of care and make efforts to improve care system, such efforts don't cause any effect on their wages. As a result of that, more and more people would become disenchanted with the job and would left their places. Since care is surely considered to be quasi-public good, its prices should not be perfectly left to the markets. However, when quality of care service is heightened by care givers' efforts, their wages should be increased to some extent. Otherwise, nobody would be willing to take the job.

There is the regulation on the entry of nursing facilities into the care market in Japan. The main reason is that if there is no control, there might be fears for reduction in quality of them, and furthermore people rely on them too much, and which will lead to increase in

the cost of care service as a whole. To be sure, though it is the case, the demand for them has been increasing due to the aging of society as realistic problems. According to the survey by the Ministry of Health, Labor and Welfare in 2009, about 420000 people is waiting for entering a nursing home for the elderly. It seems that considering that the size of care market continues to grow from now on, it is impossible for the government to control it. So it seems that the policy authorities should try to device a system to leave it to the market as much as possible. In order to attain this target, movement of people should be liberalized. Then attractiveness for the job of care service should be heightened so that persons with high-level-ability can get jobs in the care market. In this case, we should not discriminate with regard to the care givers between Japanese and foreign workers, and should decide whether to hire or not, based on their ability not on their races.

In reality, labor supply for care giver is less than 150,000 people per year for these five years and the pass rate of the examination for care givers is about 50%. It does not increase. We might need to improve the examination system for the care givers. But on the other hand, it seems that there are the limits to fill up the shortage only in the domestic market, and we are forced to rely on the foreign medical workers to some extent.

(4) Migration cost

The conditions for accepting the nurses from Philippine under EPA (economic partnership agreement) are to hold the qualification of nurse in Philippine and 3 years business experience. They are supposed to learn Japanese and to acquire caring service through the public organization for six months right after they come to Japan[9]. After that, medical institutions accept them. However in order for them to be employed as nurses, they have to hold the Japanese qualification for nurse. It means that, they have to pass the Japanese national examination for nurse, and the medical institutions that accept them have to support financially and spiritually until they pass the examination, training them on the job. The training period is 3 years for the nurse, and 4 years for the care giver. If they can't pass the examination during these periods, the applicants have to return to home country, and the experience in Japan would end up with waste of money and time.

The national examination itself is very difficult for even Japanese and more difficult for the foreigners because the old-style-language with regard to the technical term is used[10]. It seems that it is useless to exclude able medical stuffs through such a kind of entry barrier. It is time to communicate with the instruments such as touch panel nowadays. So the Japanese government might propose policy that allows the applicants to use information instrument in the examination.

In addition, when foreign medical workers are hired in fact, it is guaranteed that their wages are equal to or more than the Japanese ones. This policy protects the Japanese nurse's wage from going down, but it costs too much for the medical institutions to accept them. Considering all these things, they have less incentive to accept them positively.

5. Analogy with Education Market: From the Viewpoint of Externality

If we can identify students with nurses, we can evaluate the effects of accepting foreign medical workers by analogy with accepting the foreign students. U.S.A. is accepting the foreign students positively, about 690,000 of foreign students in 2009-2010, and 18.5% of which are from China, 15.2% of which are from India, and 10.4% of which are from Korea. About 60% of the cost of studying in U.S.A for the foreign students is paid by the students, about 10% of that is paid by foreign public organization, and U.S.A. only bears the rest of that. As a result of that, net contribution to U.S. Economy by foreign students and their families is estimated to be $18.776 billion, and $448 million of which is the amount that the students' spouse and children have yielded. This calculation includes only tuition and living expenses, and not the multiplier effects[11]. On the other hand, about 260,000 of U.S.A. students are studying abroad in 2008-2009. U.S.A is accepting the foreign students about three times as many as U.S.A students studying abroad. So, 17% of the students who became a bachelor's degree in the fields of science and technology, 32% of the students who got a master's degree, and 37% of the students who acquired a Ph's degree, are foreign-born in 2004. According to the science technology index 2010, 31.3% of persons who hold a Ph's degree (320000 persons) are foreign-born as a whole in 2006,

and 15.3% in the field of social science, but in particular 51.5% in the field of technology and 46.8% in the field of computer/science which account for almost half of all Ph holders[12]. We can see that how much U.S.A. relies on the persons who come from foreign countries. They get a professional job in their professional field, and many of them come from Asian countries which rank the second next to U.S.A (first). There are many foreign-born teachers in U.S universities and the number is 113,494 in 2008-2009, and 23.5% of which are Chinese, 9.5% of which are Indian, 8.8% of which are Korean, 5.0% of which are Japanese, and 4.7% of which are German.

When we look at the universities of the Ph holder who graduated from in Asian countries, more than half the students graduated from the top-level universities of the countries such as Seoul University in Korea, Taiwan National University in Taiwan and Beijing University as well as Tsinghua University in China. It is predicted that about 70% of all the Ph holders would become U.S. citizen.

By the way, when we look at education investment from the viewpoint of the return, it seems at first sight that one of the three, law, business and medical school, which seem to yield the highest return, is considered to be optimum choice. However the foreign students choose science, technology and economics etc for themselves. Of course, they could choose one of the former three if they would want. One of the reasons is that they think that since the U.S. top-level students probably choose the most profitable school, it gets easier relatively to get scholarship if they would choose science, technology or economics. In addition, the initial cost of law, business and medical school is much more expensive than the latter departments. So it seems that they choose a department from the viewpoints of cost-benefit, and they are pleased with the choice.

It seems that the foreign-born Ph holders have contributed greatly to U.S. research and development sector, and there are no differences in the contribution no matter who are immigrants, or naturalized Americans or foreigners who hold green card. It is no wonder that many Americans win the Novel Prizes considering internationalization of America's society.

Japanese government has promoted the increase in the foreign student studying in

Japan. The number that the universities in Japan accepted in 1998 was 510,00, over 100,000 in 2004 and over 120,000 in 2008. Most of them come from Asian countries (92.7%), in particular China, Korea and Taiwan (72.7%). Table 3 shows that the share of the foreign student is lower than the other countries. On the other hand, the number of Japanese students studying in the foreign universities which have the exchange agreements between the universities is 18,570 in 2004 and 24,508 in 2008, but with regards to the number of studying abroad more than one year decrease from 813 in 2004 to 449 in 2008[13]. In Japan, language seminar for short period less than one month is popular, and about 50% of studying abroad is language study in 2008.

Table 3 Share of the foreign students

country	Foreign students	Ratio of foreign student (%)
U.S.	582,984:(2006)	5.5
U.K.	356,080:(2005)	24.9
France	265,039:(2005)	11.8
Germany	248,357:(2005)	12.5
Australia	239,495:(2005)	25.0
China	162,695:(2006)	0.9
Japan	118,498:(2007)	3.3

Sources: Institute of international education: open doors' 2010 fast facts

When we look at the number of Japanese students studying in U.S.A, it decreases from 47,073 in 1997-1998 to 35,282 in 2006-2007. This presents a striking contrast to other Asian countries. In India, it increases from 33,818 to 83,833, in China from 46,958 to 67,723, in Korea from 42,890 to 62,392. Furthermore, the Japan's characteristic is that the ratio of graduate school is small (20%) and one of under-graduate school is high (62%) in 2006-2007. In China and India, the former is 72% and the latter is 15%, and in Korea, 38% and 45%. The number of foreign teachers in Japan increases a little from 3.1% in 1997 to 5,763(3.4%) in 2007, but the absolute level is low.

Conclusion

Nowadays all of Japan has been smothered in a sense of helplessness due to the long recession. The aging in Japan has been advancing at accelerated speed. It is not too much to say that it would be unreasonable to push families or housewives for taking care of the old parents. On the other hand, the present caring insurance system doesn't work well. There are great shortages of the nurses as well as the care givers. In order to cover an absolute shortage of the medical workers, we need to encourage the policies that accept the nurses and care givers from Philippine as well as Indonesia and carry out this policy as breakthrough of internationalization. If this project works well, freer movement of people and internationalization would be encouraged in the many fields and Japanese society would be activated.

The biggest merit of accepting the foreign worker is to secure able personnel and to reduce employment cost. We cannot support the arguments that emphasize the reduction of medical quality and are against introducing the medical workers from foreign countries from the perspective of the difference of language and culture. It seems that the difference of language as well as culture is not so big barrier. In the case of Japan, since the extent of internationalization is far behind, the barrier is too higher compared with other countries. But as internationalization is advanced, the barrier would be getting smaller. As long as we have strong desire to build international society, it seems that it would be possible for us to adapt ourselves to new surroundings. Since the medical service is on call 24 hours around the clock, it is tough. In addition, it is said to be risky and dirty. If the foreign workers are willing to take on such job, it might be a big help for us. Furthermore, if domestic labor and foreign labor are complementary to one another, accepting them might enhance the whole productivity in the medical fields, and increase wage.

When we consider accepting the foreign workers from the viewpoint of long-term horizon, the increase in tax revenue and insurance bill due to the increase in employment can be considered as benefits, and the increase in the benefit of pension in the future as well as other expenditures related to education and social security as costs. It is important

to subsume them in the social insurance system. Since the foreign workers are usually young, and in particular, the medical workers from the foreign countries intend to work for long time as full-time labors, it seems that the national burden of the receiving country would be lightened. In this respect, a more detailed empirical analysis would be needed, and left to future research.

Notes

1 According to Newspaper (Japanese Economy 2005 1.25), the average ration of OECD countries is 7.2%, and that of U.S. is 6% in 2005.

2 The data in this paragraph comes from Fitzhugh Mullan, M. D. (2005).

3 In the next section, it is proved theoretically brain drain doesn't always lead to economic loss, but sometimes economic benefit, for the source countries.

4 The source of this data is World Development Indicator 2006.

5 s_i is individual (i)' s human capital.

6 The ratio for the construction sector is 5:1.

7 These data come from the Ministry of health, labor and welfare, "Survey about the nursing facilities for the elderly and a business establishment"

8 Refer to the Newspaper (Mainiti Shinbun, 2011/03/02 Japan)

9 A foundation: Association of oversea technological seminar (AOTS) and an independent administrative institution: international exchange fund

10 The pass rate is less than 1%. A successful applicant is 3 people of about 290

11 These data is from Institute of international education: open doors' 2010

12 These data come from U.S. Department Education

13 These data come from Japan Student Services Organization

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