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A case study on the determinants of return-intentions of
Chinese talent in Japan**

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*The International Centre for the Study of East Asian Development
(ICSEAD)*

Working Paper Series Vol. 2012-08
June 2012

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Why does overseas Chinese talent intend to return?

A case study on the determinants of return-intentions of Chinese talent in Japan

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Abstract: Empirical studies on the return-intention of overseas Chinese talent have predominantly concentrated in the US, and other countries have scarcely been studied. Taking Japan - the second biggest host country of Chinese talent – as example, this paper is aimed at examining the factors of Chinese talent’s return-intention in countries other than the US. A questionnaire survey was conducted and alumni of a top university in China who are now living in Japan were invited to participate. The direct evaluation method was first used to ask the respondents specifically state the most influential factors of their return-intention. Then a discrete choice analysis (specifically, binary logit model) was conducted and the results were compared with direct evaluation. The survey results show that over 60% of overseas Chinese are intended to return. The reason lies not in the robust economy because returning to China generally will cause an immediate economic loss, which is expected to be compensated with non-pecuniary gains. The determinant of return-intention lies in the favorable social connections which provide emotional comforts. Among various types of connections, those with one’s (potential) spouse, familiar friends and relatives were found positively related to the return-intention. These results provide implications on policies to attract talented people for both home country and host country.

Key words: return-intention, influential factors, overseas Chinese talent, Japan, discrete choice method

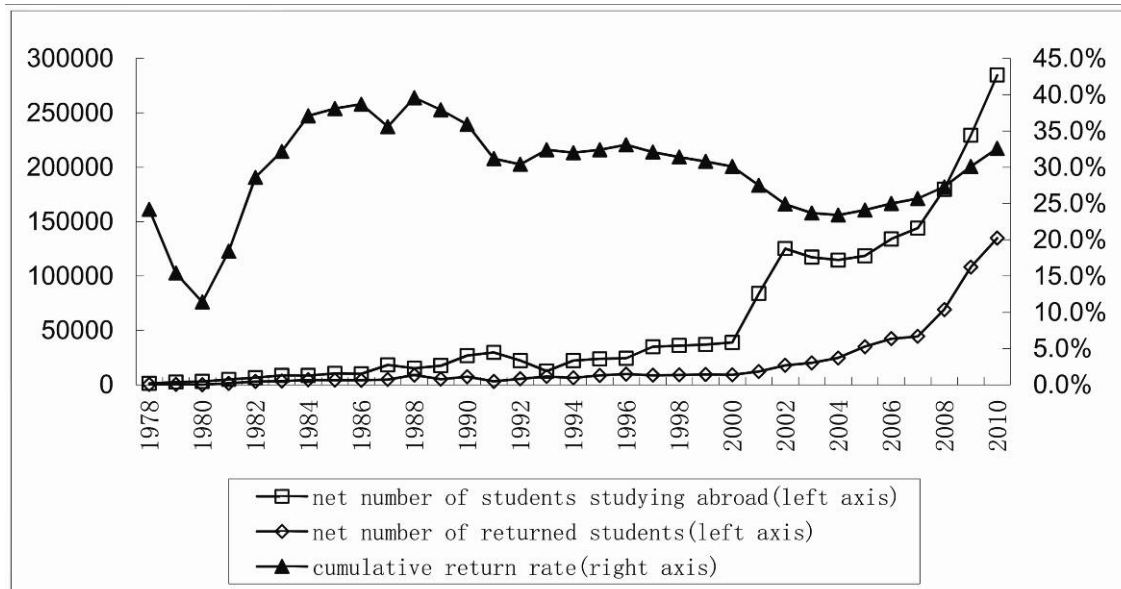
1. Introduction

The significance of talent in regional economic growth has been commonly recognized with the advent of human capital theory after Lewis’s (1954) work popularized. Since the 1960s and 1970s, the large outflow of talent from developing countries to developed countries has caused intensive concerns among scholars. There is an abundant literature concerned about the permanent loss of qualified human resources in the sending countries and commonly used the term of “brain drain” to refer to such phenomenon. In 1990s, China had been bothered with the problem of brain drain as other developing countries (Zweig, 1995), too. However, when entering the 21st century, the academia no longer said “brain drain” exists in China, because despite that China is the major

sending country of the world's highly-skilled migration currently, it also witnesses a large backflow of overseas talent. Some researchers even started to identify China as experiencing a “reverse brain drain” (Keren et al., 2003; Zeithammer and Kellogg, 2010).

To quantitatively specify the “brain” phenomenon – either the “brain drain” or the “reverse brain drain” still faces difficulties, since there is no consensus regarding the precise definition of them. Commonly, researchers agree that both the net outflow as well as the stock of talent in a country need to be considered when measuring the magnitude of “brain” phenomenon. In China, although out-migration is prevailing now, in the meanwhile a growing number of overseas talented people are returning to China. The fast-growing return migration, combined with the vast number of native educated talent graduated from universities every year, has largely alleviated the damage from talent loss. Therefore it is commonly recognized that the phenomenon of “brain drain” no longer exists in China now, but we should be careful to conclude on “reverse brain drain”, too. Because the return rate in 2010 (32.6%)¹ has just recovered to the level in 1995 (32.4%) and grows very slowly in the past decade (see Figure 1). Plus, the fact should not be overlooked that usually the best and brightest are going abroad and the cost of losing them would be more expensive and unaffordable. If China can successfully attract overseas talent back, the country will be largely benefited since returnees usually bring back advanced technology, leading edge knowledge as well as a network with the international world. In order to take advantage of this large stock of overseas talent and make effective incentive policies, it is necessary to know what affects their return intention.

Figure 1. The outflow and backflow trend of Chinese students



¹ In USA, the country which is successful in retaining foreign talents, the actual return rate of Chinese students was much lower. According to Finn(2010), the return rates of Chinese Science and Engineering(S&E) PhDs are 10% (Class of 1995, 5-year return rates) and 8% (Class of 2006, 2-year return rate).

Source: adjusted by the author based on data from MOE, China.

Note: An *overseas talent* is defined as a person who left his home country to study/work/be trained in OECD countries. To distinguish them from travelers, a time limit (at least one year) is set to ensure they have stayed or have a plan to stay abroad for a sufficient time period. There's no exact data on out flow and backflow of the overall Chinese talent. But the Ministry of Education (MOE, China)'s statistics on overseas students and returnee students portrayed an approximate picture. Using data estimated (for the missing data) and adjusted (for the contradictory data) by the author based on existing data, this figure shows the general trend of outflow and backflow of China overseas students.

Extant literature about overseas Chinese talent was mainly conducted in the US, partially due to the fact that the US has received the largest amount of Chinese talent and has the most comprehensive micro-level data compilation. To have the whole picture of the return-intention of overseas Chinese talent, more empirical studies need to be done in countries other than the US. As the second biggest host country of overseas Chinese talents, Japan is with no doubt a good choice to start with and noteworthy. This study focuses on Chinese talent who is living in Japan. Individual-level data were collected through a questionnaire survey, including the individual attributes and their comparative perception of possible influential factors between host and home countries. The respondents were asked to directly state the most influential factors. The results were then compared with those of a powerful approach frequently adopted in migration research – discrete choice model.

This study is aimed at uncovering the mechanism of recent boom of return migration to China. It contributed to the extant literature on overseas Chinese talent by supplementing an example in a host country other than the US. It also added an empirical study on return-intention by providing an observation of home country with a robust economy. As an economy that has kept around two-digit growth rate, China served as the best example country to test the question of how the economic dynamics affect return-intention of overseas talent. The results will have implications for the policies to attract talented people in both home countries as well as the host countries.

2. Literature review and research questions

In the extant literature relating international migration, there are usually two approaches to uncover the factors affecting the return-intention. One approach is to investigate on those who have returned while the other is to study those who are still abroad. Extant studies have predominantly adopted the first type (Tutu, 2010), in which the samples is severely biased because information of those who do not want to return is not included. The second approach is not flawless either, since the intention might not be the same as the final decision; however, generally, the intention is closely related to the final decision and worth a closer look. Previous studies on return intention have not been sufficient to reach a consensus on what affects a migrant's inclination to return.

Regarding the mechanism of migration, Ravenstein first developed the “Laws of Migration” (1889) and concluded that migration was governed by a “push-pull process”, where unfavorable conditions in the source place “push” people out and favorable conditions in the destination place “pull” them in. Ravenstein’s framework was widely accepted by the following theorists and most of the later migration theories are more or less variations of his conclusions. His laws has stated that population movements are bilateral. Later researchers further pointed out the powers of a country are always two-way directed, no matter in the source or the destination. That is, in the destinations country, there are push factors (“stay away” factors) besides pull factors, and in source country, there are also pull factors (“stay” factors) besides push factors (Bodvarsson and Berg, 2009, Fig1.1, p.7). Thus it is necessary to specify where the effect is directed to when using the terms of push and pull factors. In our discussion of return-intention, we focus on the home country, which means the push factors represent repulsion factors that make overseas talents hesitate to return, and pull factors represent those attractions that attract them back to the home country.

Discussions on detailed push and pull factors are often exhaustive and subject to the researcher’s preference. Attempts have been made here to exclude arbitrary factors and the following aspects are adopted for our study of Chinese talents in Japan.

2.1. Career-related factors

2.1.1. Expected income

In economics, migration is viewed as a result of rational decision making and a utility maximization process. Among the various factors affecting an individual’s utility from a place, the economic consideration is emphasized in neo-classical theories and recognized as the dominant reason. Early research on migration implicitly assumed that utility maximization is achieved through the maximization of return to one’s human capital, which is usually measured in income. Sjaastad (1962) first made the connection between migration and the return of human capital. He argued that a prospective migrant calculates the value of the opportunity available in the market at the origin, subtracts the costs of moving (assumed proportional to migration distance), and chooses the destination that maximizes the present value of lifetime earnings. His theory became a basic framework for later neoclassical economic analyses of migration. Higher salaries offered in the host country proved to decrease the return-intention of those from countries like Turkey (Gungor and Tansel, 2008) and China (Zweig, 1997).

However, return migration has been frequently observed in developing countries where the income levels are still significantly lower than the former host countries. This phenomenon cannot be completely explained by neo-classical theory. Zhang’s (2003) study argued that overseas Chinese talent tends to be willing to return when the ratio of income in host country and home country is within three times. Zeithammer and Kellogg (2010) suggested that the return rate of highly skilled Chinese migrants in the US will increase about three fold if the salary gap is narrowed to half the current level. These studies suggest that absolute income level is not the only

determinant of an individual's intention to return. Other factors affect the utility of a migrant.

2.1.2. Work environment

Highly productive talented people are characterized by a strong desire to realize personal value by utilizing knowledge and potential (Zweig, 1997). This desire is commonly expressed as trying to become a pioneer in one's own field by chasing knowledge on the leading edge, as well as a platform for implementing their knowledge. According to Wallerstein (1974)'s modern world system theory, a widely accepted interpretation of contemporary world pattern, developed countries like the US, the UK, and Japan are at the global economic core, and developing countries are left at the periphery. This modern world system applies not only to economic power but also higher education, academia, and the technological strength. Developed countries hold leading positions in these areas and provide attractive work environments for talents, allowing them to work more effectively and efficiently. Talented people with the desire to fulfill their potential are attracted to these core areas in large flow.

The quality of the work environment includes aspects of both "hardware" and "software". Good "hardware" means adequate physical resources, such as access to modern equipment, necessary references and databases, and so on. With regard to "software", a good work environment requires the inclusion of high quality peers, an open atmosphere that encourages the exchange of views among colleagues, contact with international experts, adequate financial resources, fair competition, and so on. The work environment in China used to be considered very poor, which prevented the return of many overseas talented people in the 1990s (Zweig, 1997). The situation has been much improved since then, although it is still not as competitive as in developed countries, especially in the aspect of "hardware". The respondents to the questionnaire were asked to evaluate the work environment in a comprehensive way by comparing China and Japan.

2.1.3. Career advancement prospects

The mere presence of a good work environment will not satisfy the need for talented people to achieve self-realization. They also look for better opportunities and bigger platforms to fulfill their potential, which includes prospects for career advancement. For employees who serve a research institute or a company, the prospect of career advancement means promotion opportunities. Being entrusted with a higher position offers more opportunities, better salary, greater responsibility, and a sense of greater success. However, in reality, foreigners are quite likely to be confronted with invisible yet unbreachable barriers to promotion. Ethnic groups often sense a "glass ceiling" made of tacit limits (Iredale et al., 2003). Overseas Chinese have frequently complained that they would not be given the same promotion opportunities that their local colleagues enjoyed (Xi, 2002). The frustration derived from the glass ceiling would give rise to the idea of returning to the home country. In other words, the perception of better opportunities in the home country motivates the intention to return. This was proved among foreign tertiary students in New Zealand (Soon, 2010). Chen and Yan (2000) and Iredale et al. (2003) confirmed the home country's attraction of providing more promising career advancement opportunities for Chinese returnee talent.

In the case of self-employed, they look for opportunities to start or expand a business. Given robust economic growth and various incentive policies, entrepreneurial opportunities are becoming more and more attractive in China, especially for those who have necessary social connections (Saxenian, 2001), experience in venture capital markets (Wang and Zweig, 2009), and/or access to marketable technology (Zweig et al., 2006). For talent with start-up ambition, going back to China might be a better way to develop a career.

In case of both employees and employers, career advancement prospects act as a pull factor to the home country. This thesis attempts to determine how this factor affects the intention to return.

2.1.4. Social capital resource

According to Lin, et al. (1981), social connections allow people to reach someone with the type of resource required for a person to fulfill his or her instrumental objectives. The social connections, and the following social network, are valuable capital that people can take advantage of in achieving career success (Seibert and Liden, 2001; Saxenian, 2001). Old experience of an individual largely decides his or her social connections. In previous studies, the “social connection” index was frequently used to test whether the place where one has always lived affects locational choice. However, even if the result was positive, researchers would have problems in interpretation because there is more than one type of utility in the social connection index, and social capital is just one possible explanation. Another important interpretation is that social connections can satisfy the emotional needs of people to be close to family members, relatives, and friends, with whom they have emotional attachments. People naturally feel more comfortable and relaxed in a familiar social environment and the emotional attachments with home country may drive them to return.

Previous research seldom distinguished between social capital and emotional needs. To avoid the interpretation problem, this paper attempted to separate the effects of social capital from emotional needs by designating them as variables. Variables that describe emotional needs are discussed in subsection 2.3.1.

2.2. Living environment

Career-related factors involve a talent as a producer, whose migration decision is to maximize the returns (pecuniary or psychological) of his or her investment in human capital. The other identity of a talent—a consumer—also affects his or her utility. In addition to the higher income and better job opportunities available in a developed country, a better living environment is also perceived attractive to talent from developing countries. This factor has been overlooked in prior research on international migration, but it is taken into account in research on domestic migration and has been proved related to migration decisions. This thesis attempts to determine whether living environment influences overseas Chinese talent.

The factors relating to living environment are divided into two aspects. The first represents the quality of a country’s air, water, green spaces, and so on, that is, the natural environment. The second aspect involves sociopolitical factors, such as the public service and social welfare system,

which affects the country's ability to provide education, health care, housing, and the ability to ensure a decent life for the disadvantaged people, such as the unemployed, the ill or disabled, the elderly, and families with dependent children, and so on.

Presumably, compared with Japan, the living environment in China is assumed to be less attractive thus negatively affects the intentions of overseas Chinese talent to return.

2.3. Social factors

2.3.1. Emotional needs to be close to parents, spouse, friends/relatives.

Prior studies have argued that people would settle for lower income² in the mother country even factoring out the issue of cheaper consumption³ because pecuniary loss can be compensated for by emotional gains, such as being close to one's friends/relatives (Powdthavee, 2008). For most people, foreign society means an unfamiliar, sometimes even hostile environment, which costs them extra energy to adapt to. On the other hand, people get along more easily with people who share the same language, social norms and cultural conventions as those in their home country, thus avoiding the integration problem. Moreover, being close to familiar people could be an emotional comfort and psychological gain for individuals.

As mentioned above when discussing social capital resource, this study decomposed the social connection between individuals and places into social capital and emotional needs. Further decomposition was done to divide emotional needs into three types: with parents, with a spouse, and with friends and relatives. Based on the level of intimacy, these emotional needs have different effects, if any, on the intention to return.

Prior research has shown that parental issues matter because of the filial obligation to comply with parents' wishes to return home. This obligation is particularly strong among first-born sons (Zweig and Chen, 1995; Salaff and Greve, 2009). Other social connections are seldom mentioned in extant literature. Is the proximity to parents the strongest reason for one's intention to return? Do other social connection factors matter? This study helps to find answers for these questions.

2.3.2. Child(ren)'s education

It has been recognized that a migration decision is seldom the product of an individual decision; its timing is closely related to the family life cycle and major events over the course of the lives of first and second generations of immigrants (Nauck and Settles, 2001). Usually, migrants think about utility for a family unit. By including family members like parents and a spouse, we already included the consideration of family as a decision unit. Another family member, the child(ren), is also important in an individual's decision about residential location. Parents may choose to live where they would like their children to attend school. Keren et al. (2003) found that Chinese

² The income need to be higher than a physiological minimum threshold (Reichlova, 2005).

³ Consumption might be cheaper in the home country. The gap between purchasing power in home and host country might not be as huge as income gap. But consumption price differences are becoming smaller across countries. In a world under accelerating globalizing and internationalizing process, the consumer goods are spreading worldwide, with almost the same prices for cars, electronic appliances; even daily commodities like clothes, and shoes etc.

couples in the US tend to choose to stay abroad because they are concerned about transferring their children to the highly competitive Chinese school system. According to their study, this concern appeared to be so prevalent that, even among returnees, one spouse commonly returns alone while the rest of the family remains abroad (Keren et al., 2003). Meanwhile, the home country's charm of traditional culture is on the other side of this dilemma. Some overseas talented people want their children to know more about Chinese language, culture, and history. The home country offers a perceptibly better environment to absorb this kind of information. This study examined whether the issue of children's education would affect one's intention to return.

2.3.3. Social status

Psychologists argued that people's sense of happiness depends on their surroundings. The feeling of being valued and admired by society could provide psychological gains for a returnee talent, whereas perceived discrimination abroad might hurt his or her feelings and thus compel them to return. In China's traditional culture, the intellectual is recognized as belonging to a superior class, occupying the highest hierarchical level in society (i.e., scholar, farmer, artisan, and merchant, namely *shinong gongshang*, 士农工商), just below royalty (Chen, 1995; Chen and Yan, 2000). This tradition of respecting intellectuals remains to some extent, if not exactly the same. Moreover, China has offered preferential treatment of returnees for the last three decades, and is still putting effort in attracting high-level overseas talent, thus making returnees quite a privileged class. Do overseas talents have higher social status in China? Does this affect their intention to return? This study also aims to find answers for these questions.

2.4. Institutional factors

In subsections 2.1 to 2.3, we have discussed the general factors of return-intention, which are applicable in empirical research on return migration in China as well as other countries. In the case of China, which has a different socialist political system from the western countries, institutional concerns might prevent overseas talent from coming back.

Chen (1995) pointed out that migration studies relating to countries other than China are always objective, but when China is involved, institutional factors are always brought up. This is especially true for migration studies in the 1990s. In that period, concerns about political instability in China and the disappointing democratic situation were considered main reasons for Chinese students to choose to stay in the US (Orleans, 1988; Zweig, 1997). After two decades, in the current international context, China is still frequently confronted with criticism about its undemocratic political system. Highly educated talent is usually more sensitive and concerned about the country's democratic process than less-educated nationals. Overseas talented people, who experience a different political system, are more susceptible to Western ideology and more likely to have doubts about China's political system. This might be the reason for the low rate of intention to return and the choice of talent to stay abroad. To test this hypothesis, an indicator of a democratic political system is included in the survey to detect its influence on the decisions of overseas talent.

China's fertility policy is also unique to this country. This national policy restricts one family to give birth to only one child. Hence, those who want to have more than one child would prefer to stay abroad. Thus, hypothetically, it will lower the intention to return, which will be reflected by a negative coefficient. The expected sign for each variable's coefficient is summarized in column 7 of Table 3.

3. Data

Data used in this research were collected through a questionnaire survey conducted in February and March, 2011. The author selected one of China's top universities, Peking University (PKU), and surveyed its alumni members in Japan⁴. PKU graduates who fit the following conditions were invited to participate in the survey: (i) birthplace is China; (ii) currently living in Japan; (iii) have registered in the alumni association; (iv) have stayed or have a plan to stay in Japan for more than one year. The questionnaire was online and the address was distributed via email. Additional invitations made by telephone were conducted to increase the response rate. Among 179 survey subjects we have contacted who fit the definition of overseas Chinese talent, 73 responded with valid answers, resulting in a response rate of 47.8%.

3.1. Descriptions of the samples

The majority of the respondents (63%) were male. 29% of them were married. The age of the respondents ranged from 23 to 52, averaged at 28.3. Over half of them (52.1%) had been abroad for 1 to 3 years, and a similar portion of them (50.7%) had been in Japan for 1 to 3 years.

60.3% of them came to Japan under a student visa. Very few of them (5.4%) were under permanent residence status or Japanese nationality but 31.5% would like to obtain a right of a permanent residence.

Generally, almost all the respondents had learned English enough for daily use. Only 1.4% of them had merely entry level of English language, while 20.5% were in entry level of Japanese. However, people at professional level in Japanese (15.1%) were more than those in English (8.2%).

When the survey was conducted, most of the respondents (57.5%) were holding a student visa, while 36.5% were holding various work visas.

Most people mainly got along with Chinese friends in leisure time. 13.7% of the respondents admitted that almost all friends are Chinese, while 41.1% stated that most of their friends are Chinese.

Regarding the return intention, the results show that only a few respondents (10.9%) have a clear plan to stay abroad. Most (61.6%) plan to go back to China, along with the rest (27.4%) not decided yet. The rate of people (61.6%) with intention to return is much higher than the actual

⁴ The author is grateful for the support from PKU's alumni association (PKUAA) in Japan during the survey.

return rate (32.9%) of overseas Chinese talent who went abroad from 1978 to 2010. More detailed information about the results of questionnaire survey can be found in Table 8 to 错误!未找到引用源。 in Appendix II.

Table 1. Choices of return intention

optional choices	obs	percent
will return to China immediately after graduation (in the case of students)	20	27.4%
will return to China after working in Japan for a period	25	34.2%
not decided yet	20	27.4%
intend to reside in Japan permanently	2	2.7%
intend to go to a third country	6	8.2%

Source: survey data collected by the author

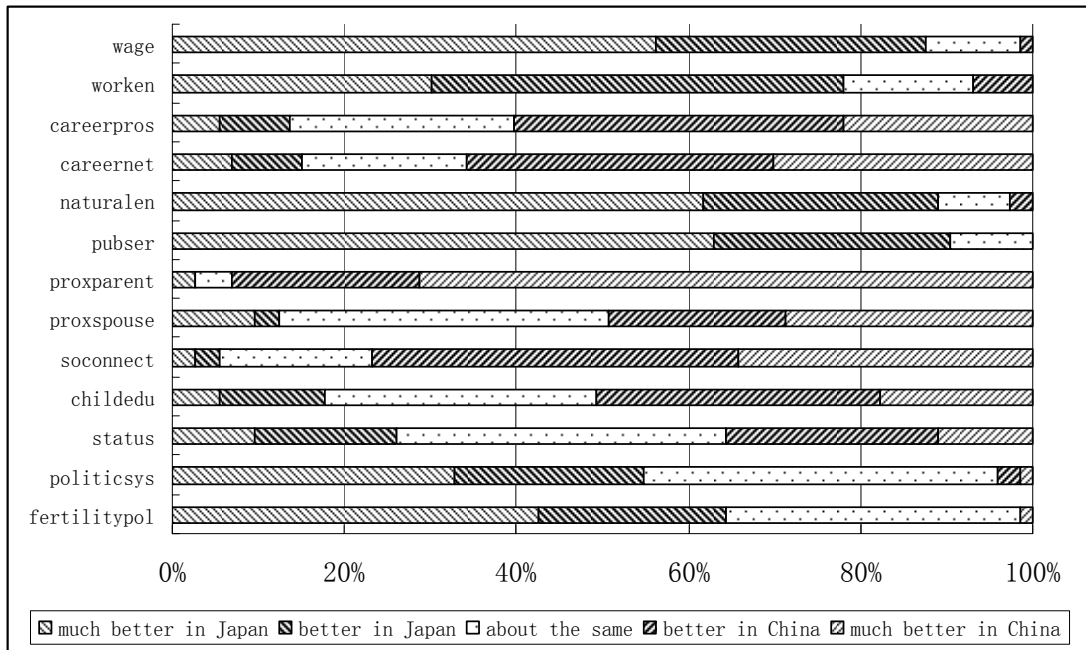
3.2. Summary of the comparison perceptions

The variables representing place information are evaluated by comparison. In the survey, the respondents were asked to compare each factor between Japan and China separately (see Figure 2). The overwhelming majority respondents agreed that Japan provides a better “expected wage”, “work environment”, “natural environment”, and “public service and social welfare system” than China. Furthermore, over half of respondents tended to think that the “political system” and “fertility system” in Japan is ideal, and most of the rest thought that there is not much difference.

On the other hand, China appears to have obvious advantages over Japan in other issues, such as “career advancement prospects”, “social capital resources”, “social connection with friends/relatives” as well as overwhelming superiority on the “proximity to parents”. Moreover, about half of respondents considered that China provides better “proximity to spouse”, and “children’s education” than Japan. Most of the rest thought that there is not much difference between the two countries. Lastly, regarding “social status”, China has a slight but not obvious advantage over Japan.

The main variables and summary statistics are listed in Table 2 and Table 3.

Figure 2. The respondents' perceptions of comparative aspects of China and Japan



Source: survey data collected by the author.

Table 2. Variable List

variables	description	value
<i>Demographic variables</i>		
<i>male</i>	gender	male=1; female=0.
<i>married</i>	marital status	married=1; unmarried=0
<i>degree</i>	indicates the education level of our subject	Bachelor degree=1; Master degree=2; in Doctor courses or courses finished=3; doctor degree=4
<i>ln_age</i>	logarithm of age	
<i>Foreign-life related variables</i>		
<i>income</i>	current income level	<2 million JPY=1; 2~4 million JPY =2; 4~6 million JPY =3; 6~8 million JPY =4; 8~10 million JPY =5.
<i>timeabroad</i>	time period have been abroad.	less than 1 year=1; 1 to 3 years=2; 4 to 10 years=3; 11 to 15 years=4; 16 to 20 years=5.
<i>wantpr</i>	whether want to obtain Japanese citizenship or the right of permanent residence	yes=1; no=0.
<i>japanese</i>	language level of Japanese	entry level=1; enough for daily use=2; mature in business Japanese (English) =3; professional level=4.
<i>english</i>	language level of English	
<i>integration</i>	the proportion of social contacts with non-Chinese friends in leisure time	almost all friends are Chinese=1 most friends are Chinese=2; Chinese and foreign friends are about half and half =3; most friends are non-Chinese=4;
<i>variables of comparison perception between home country and host country</i>		
<i>expwage</i>	expected wage	much better in Japan=1; better in Japan=2; about the same=3; better in China=4; much better in China=5.
<i>worken</i>	work environment	
<i>careerpros</i>	career development prospects	
<i>careernet</i>	social network beneficial to career	
<i>naturalen</i>	natural environment	
<i>pubser</i>	public service and social welfare system	
<i>proxparent</i>	proximity to parents	
<i>proxspouse</i>	proximity to (potential) spouse	
<i>soconnect</i>	social connection outside of job and family	
<i>childedu</i>	children's education	
<i>status</i>	social status	
<i>politicsys</i>	political system	
<i>fertilitypol</i>	fertility policy (one-child policy)	

Table 3. Summary Statistics

Variable	Obs	Mean	Std.Dev.	Min	Max	Expected Result
<i>male</i>	73	0.63	0.49	0	1	?
<i>married</i>	73	0.29	0.46	0	1	?
<i>degree</i>	73	2.37	0.81	1	4	?
<i>age</i>	73	28.30	4.53	23	52	?
<i>ln_age</i>	73	3.33	0.14	3.14	3.95	?
<i>income</i>	73	1.79	1.14	1	5	?
<i>timeabroad</i>	73	2.22	0.89	1	5	?
<i>wantpr</i>	73	0.32	0.47	0	1	-
<i>Japanese</i>	73	2.38	0.98	1	4	?
<i>English</i>	73	2.53	0.67	1	4	?
<i>integration</i>	73	2.44	0.88	1	4	-
<i>expwage</i>	73	1.58	0.74	1	4	-
<i>worken</i>	73	1.99	0.86	1	4	-
<i>careerpros</i>	73	3.63	1.09	1	5	+
<i>careernet</i>	73	3.74	1.18	1	5	+
<i>naturalen</i>	73	1.52	0.77	1	4	-
<i>pubser</i>	73	1.47	0.67	1	3	-
<i>proxparent</i>	73	4.59	0.81	1	5	+
<i>proxspouse</i>	73	3.56	1.21	1	5	?
<i>soconnect</i>	73	4.03	0.94	1	5	+
<i>childeddu</i>	73	3.45	1.09	1	5	?
<i>status</i>	73	3.11	1.11	1	5	+
<i>politicsys</i>	73	2.18	0.98	1	5	-
<i>fertilitypol</i>	73	1.96	0.95	1	5	-

4. Analysis using the direct evaluation approach

Each individual attach different weights to a possible influential factor. To uncover the relative importance of the factors, the most intuitive way is directly asking the respondents. This section uses the direct evaluation method, by which the respondents were asked to explicitly state their opinion on push/pull factors and rank the top three. Using the ranked data, a method of ordinary measurement was used to calculate the comprehensive weight of a factor for all the respondents. The absolute number of this weight has no interpretable meaning. It is meaningful only when comparing with others.

Suppose factor i ranked x th on the individual n 's list; then the frequency k ranked i on j is $F_{ij}^n=1$, if $x=j$; otherwise $F_{ij}^n=0$, then the total frequency factor i was listed on j is

$$f_{ij} = \frac{\sum_{n=1}^N F_{ij}^n}{N},$$

where $i = 1, 2, \dots, K$ and $j = 1, 2, 3$; $n = 1, 2, \dots, N$. K represents the total number of factors from which the

individual selected top three after ranking them. N is the total number of individuals who participated in ranking.

The weight of factor i can then be obtained by the following formula:

$$w_i = \sum_{j=1}^3 f_{ij} \times (K + 1 - j), i=1,2,\dots,K$$

The relative weight of each factor was calculated first on the push effect and then on the pull effect. The results are summarized in Table 4.

Table 4. Result of top three push/pull factors and relative weights

	push effect				pull effect			
	1st ⁽¹⁾	2nd	3rd	relative weight	1st	2nd	3rd	relative weight
expwage	22	13	10	7.7	1	—	1	0.3
worken	12	5	10	4.6	1	1	2	0.7
careerpros	1	4	2	1.2	20	10	4	5.9
careernet	1	1	1	0.5	4	9	13	4.3
naturalen	15	21	7	7.3	1	1	3	0.8
pubser	11	19	17	7.9	—	1	—	0.2
proxparent	—	—	—	0	33	13	12	10.0
proxspouse	2	—	—	0.4	8	9	3	3.4
soconnect	—	—	—	0	2	19	20	6.8
childededu	—	—	2	0.3	—	2	5	1.2
status	2	4	3	1.5	3	4	4	1.8
politicsys	4	4	10	3.0	—	1	—	0.2
fertilitypol	2	—	8	1.7	—	—	2	0.3

Source: survey data collected by the author

Note: the number in the column of “1st” represents the number of individuals who list the factor as the most important factor. It is the same for “2nd” and “3rd”.

Table 4 shows that according to our respondents’ perception, China’s biggest push factor is the “public service and social welfare system”, followed by the expected wage gap between the host country Japan and the “natural environment”. Factors like “work environment”, “political system”, “fertility policy” also make overseas talent hesitate to return.

On the other hand, “proximity to parents”, “career prospects”, and “social connections with relatives and friends” are perceived as the three biggest attractions of the home country. Factors like “proximity to spouse” and “social capital resources” were also perceived by many respondents as pull factors. “Children’s education” and “social status” were also pull factors, but they were seldom listed among the top three.

The results show that one factor has different effects on different people. Contrary opinions were detected about most factors listed in the questionnaire. It is logical that responses to the factors would differ according to the various circumstances of individuals. The only exemptions are two social-related factors, “the proximity to parents” and “social connections with relatives and friends”, which were recognized as pull factors by all the respondents. They are the first and the third most highly scored pull factors. No respondents considered it is important to be in Japan

to get close to parents, friends and relatives.

Besides “the proximity to parents” and “social connections with relatives and friends”, the remaining three social factors relating to spouse, children and social status were all perceived in favor of China. The first factor “proximity to spouse” was an important issue for people as a family consideration. Based on humanitarian considerations, most countries allow visas for family reunions, which means spouse is generally allowed to accompany the migrant. Despite this fact, some respondents listed “proximity to spouse” as one of the top three pull factors of China. This suggests that one’s (potential) spouse might not be willing to migrate, which might result in the respondent’s compromised decision - to return. The second factor “children’s education” is generally not a main concern in return-intention. Not many respondents listed this factor among the top three. Responses favored the home country slightly, but the advantage is not obvious. The third factor “social status” also gives a slight advantage to China, but its weights of push and pull effects are both higher than those of “children’s education”. Contrary to our assumption, the psychological utility gained from comparably higher social status in the home country was found not to be a strong incentive for overseas Chinese to return. It might be because recent returnees can no longer enjoy the superior advantages given to their predecessors who returned to China several years ago. Except outstanding experts in a few fields, general returnees are now treated no more privileged than the native educated talent. Along with the development of higher education in China, the accumulation of human capital is growing fast. In the labor market, employers have become more rational with regard to hiring an employee with overseas experience. Thus, the social status attached to returnees is fading and is no longer interpreted as a strong pull factor.

Regarding work-related factors, career advancement prospects had the second highest positive weight, which means it is the second most important attraction of the home country. Social capital was also perceived as a pull factor, whereas expected wage and work environment were more likely to be push factors. Thanks to rapid economic growth and social connections at home, better advancement prospects were perceived by overseas talent. However, despite of the distinct progress, the wage gap still exists and is considered discouraging people from returning. The situation of work environment is similar to that of wage level. We can expect China to catch up with developed countries soon under the strong financial influence of the government, but the “software” aspect will take much more time and effort before a fundamental change will be seen. As suggested by Miyagiwa (1991), an individual is more productive if he works in close proximity with highly qualified peers. Developed countries would still be more attractive as long as they hold a technological and academic advantage.

Both factors relating to living environment got high weights as push factors. Although seldom mentioned in policies to attract talent, the “natural environment” and “public service and social welfare system” were among the most weighted push factors, preceded only by “expected wage”. China still has a long way to go to improve the physical environment as well as the social services.

Institutional factors also appeared in some lists of the top three factors. The weights of the

“political system” and “fertility policies” were higher weighted as push factors than as pull ones. However, the absolute numbers of the weights were generally less than those of other push factors relating to work and living environments. Most people are not very sensitive to institutional differences of countries. The ideology problem only affects a few of overseas Chinese.

5. Analysis using the discrete choice approach

In section 4, the relative weight of each factor is measured by direct opinions of the respondents. However, the stated preference can be biased when people selected the most important factors and did the ranking. By observing one’s final choice of return-intention, the discrete choice approach can reduce the arbitrariness in finding the influential factors.

Also, as Figure 2 and Table 4 shows, a factor does not necessarily affect individuals in the same way. One factor could be a pull factor for someone but a push factor for another. Simply aggregating them together, as in the direct evaluation approach, overlooked the individual differences and thus left the stochastic tastes not observed. Discrete choice approach avoids this problem by dealing with each individual’s decision process.

5.1. Introduction of binary logit model

As a widely accepted approach to model individual decisions, discrete choice models (DCM) are frequently used in the analysis of return intention. These include binary logit (Li, et al, 1996; Soon, 2008), ordered probit (Gungor and Tansel, 2008), and multinomial logit models (Zweig, 1997; Soon, 2009). The DCM is derived from random utility theory, according to which an individual is capable of evaluating the utility associated with a set of alternatives and subsequently selecting the alternative that he or she perceives will yield maximum utility (Train, 2007). In our analysis here, we observed on the decision of return intentions. Each push or pull factor is a possible reason to change the utility of the decision maker.

An individual labeled n who faces J choices ($J = 2$ in this case, including “return” = 1, “otherwise” = 0) can obtain utility by choosing j : $U_{nj} = \beta'x_{nj} + \varepsilon_{nj}$, where x represents the vector of observable affecting factors, β is the coefficients vector, and the stochastic error ε represents the unobserved utility. The probability an individual chooses “return” is the probability utility from “return” is higher than from “otherwise”. If we assume ε follows the Gumbel independently, identically distribution⁵. The probability is then as follows :

$$P_{n1} = \frac{e^{\beta'x_{n1}}}{\sum_{j=0,1} e^{\beta'x_{nj}}}$$

Coefficients are estimated using a maximum likelihood method.

⁵ This is also known as Type I Extreme Value distribution. Sometimes it is mistakenly called Weibull distribution, from the log of which a Gumbel distribution is obtained.

5.2. Regression results and discussions

In the survey, there are five optional choices. Limited by the small number of respondents, five options are combined into two in the final alternative set, which are “return (to China)” and “otherwise” respectively. Regarding the choice variable, “return”(value = 1) is used to indicate choices of “will return to China immediately” and “will return to China after working in Japan for a period”, while “0” represents the choice of “will not return” (including “intend to reside in Japan permanently” and “intend to go to a third country”) and “undecided”. Variables were divided into three groups to apply logit analysis. Current income level were also introduced into the first and third regression (spec1 and spec2 in Table 2) as the control variable. The results are listed in Table 5.

Table 5. Logit regression results

Group of variables	Variable	Spec1		Spec2		Spec3	
		Coef	p	Coef	p	Coef	p
<i>Demographic variables</i>	<i>male</i>	0.9583	0.110				
	<i>married</i>	0.3448	0.381				
	<i>degree</i>	0.9903	0.232				
	<i>ln_age</i>	-6.1744	0.054				
<i>Foreign-life related variables</i>	<i>income</i>	-0.6176	0.048	-0.7550	0.009	-1.094	0.023
	<i>timeabroad</i>			0.5603	0.193		
	<i>wantpr</i>			-1.489	0.035		
	<i>japanese</i>			0.1211	0.735		
	<i>english</i>			0.0171	0.970		
	<i>integration</i>			-1.3060	0.002		
<i>Variables of comparison perceptions</i>	<i>expwage</i>					-0.7028	0.230
	<i>status</i>					0.2087	0.647
	<i>worken</i>					0.1047	0.855
	<i>careerpros</i>					0.2032	0.643
	<i>careernet</i>					-0.5681	0.215
	<i>naturalen</i>					1.3107	0.190
	<i>pubser</i>					-1.2052	0.194
	<i>proxparent</i>					-1.0663	0.107
	<i>proxspouse</i>					1.2841	0.009
	<i>childedu</i>					0.7522	0.139
	<i>soconnect</i>					1.6922	0.020
	<i>politicsys</i>					-0.4080	0.530
<i>fertilitypol</i>					1.0769	0.121	
	R squared	0.19		0.2861		0.5176	

(1) Current income matters, not future gains

Income is found related to one’s return intention. However, the significant result is found only for current income, not for future expected income. The current income level (in Japan) is found negatively affecting one’s choice of residence country. Those with higher incomes in Japan are less likely to return to China, due to the larger opportunity cost in Japan if they return.

Future income in China is perceived lower than in Japan, so apparently, most talented people

would bear an immediate income loss if they return; this is already shown in the direct comparison. The remaining question is whether future gains in non-pecuniary terms, such as social capital resources, social status, career advancement opportunities will compensate for immediate loss. The results do not support this hypothesis. The factors which could be the compensations of economic loss were found not significantly related to one's return-intention. These results together show that the loss in income is neither covered by the future income nor compensated by other expectations of work. Furthermore, no significant results were found to prove that the worse work environment in China is lowering people's return-intention. It appeared that the return-intention is not significantly influenced by the dynamics of China's emerging economy.

(2) Social connections matter as emotional attachments to spouse and friends/relatives (not the parents)

If economic dynamics do not attract the return of overseas talent, then what are other explanations? The answer resides in social connections. It is worth noting that social connections attract talent as emotional comforts, not as social capital. This result may be because of the social capital in the host country, but beneficial social connections can also be accumulated in the host country and thus not necessarily limited to the home country. However, social connections' another function - as emotional attachment - is much more difficult to replace and is definitely in favor of the home country.

Specifically, two types of connections – “with spouse”, “with friends and relatives” were found to be positively related. If an individual assigns higher credits to China on the variable of proximity to friends and relatives, there is a high probability he or she will choose to return. After all, life abroad costs extra energy to communicate smoothly with foreigners. When individuals do integrate into the host society, they are much more likely to stay. The positively related variable “integration” also provides evidence for this argument. This research uses the proportion of non-Chinese friends in one's leisure time (self-reported) to represent one's integration to the host society. If an individual's friends are mostly Chinese, he or she may have a lower emotional attachment to the host country. With regard to the proximity to spouse, those who left their spouse behind at home may perceive a greater necessity to return home. Unmarried individuals might have two occasions: they might have boyfriend or girlfriend but left them behind in the home country; or they might be single and find it is easier or better to find Mr. or Ms. Right back in China. In either case, the desire to be close to their (potential) spouse increases an individual's return-intention.

It is contrary to the general viewpoint that the “proximity to parents” was not found significantly related. Most overseas Chinese left their parents in China, and the majority of the respondents agreed that China is much better for being proximate to parents. It is also frequently listed as one of the top three factors pulling them back to China. However, the regression results indicate that the final decision to return is not decided by this factor. Although people feel a strong need to be close to their parents, they may unconsciously sacrifice this need and give priority to

other factors during the actual decision process.

(3) The influence of age and initial plan

It has been noted that the migration process is selective because differences of personal attributes affect how persons respond to push-pull factors, and these conditions also shape their ability to overcome intervening obstacles. The results in this analysis show that age is negatively related to one's return-intention. The older the talent, the less he or she intends to return. The result that "older age, less return intention" is consistent with life circle theory. Our respondents are all in the post-college stage and before the retirement stage in the life cycle. Since they are all of working age, the older an individual is, the bigger the cost if they return. This will largely reduce their intention to return.

However, those who wish to obtain a permanent residence in Japan or change to Japanese nationality are found less likely to return. The wish implies an overseas Chinese's initial plan about returning. If an individual came to Japan with a plan to go back in the future, he or she is more likely to return to China after completing their task (e.g., degree, training, work contract, etc.) If an individual has no plan to return initially, he or she is more likely to consider getting a permanent residence status or a nationality, and at the same time has a lower intention to return.

Other individual attributes, such as gender, marital status, educational level, along with the language level and the time spent abroad were found not to significantly affect the return-intention.

5.3. Comparison between the two approaches

After the analysis, it is found that the results of the binary logit analysis were different from those of the direct evaluation method. The factors stated as most important ones were not found to be significantly affecting decision making. An individual's actual decision to return or not is a very complicated process. People may not be completely aware of their own decision process and unconsciously make biased stated preferences.

People tend to exaggerate the effect of some factors, especially the things they are bothered with. For example, although an overwhelming majority of the respondents considered that "proximity to parents" a factor in favor of China, the regression results indicate that it does not influence the final decisions. While most people are bothering with parental issues, the need to be proximate to parents is highly likely to be sacrificed when thinking about their return-intention. Another example is the exaggerated effect of expected income gap in stated preferences. "Expected income" has the second highest weight as push factors in the opinions of the respondents, but they are intended to return despite of the income loss. When wage has risen to a certain level in the home country, an overseas talent will accept this loss and return anyway.

On the other hand, people tend to underestimate the aspects which they are hesitated to admit. For example, even when they do enjoy a social environment with familiar friends and relatives, they may not like to state it explicitly or even may not have realized its importance. However, this concealed relationship is made clear in the results of behavioral analysis.

The comparison analysis revealed that treating one factor in isolation might produce different results from taking other relative factors into consideration, which implies a limitation of the direct evaluation method. The advantage of the direct evaluation method is that its results are direct and will not lead to wrong implications. However, as illustrated above, respondents are very likely to offer biased answers that might not be the key determinants. Therefore there is a high possibility that the really important issues might be overlooked and it is quite questionable to what extent the implications are effective. This suggests that researchers and policy makers need to be cautious when using the direct evaluation method.

6. Conclusions and policy implications

6.1. Conclusions

Although China has experienced rapid economic growth, which seems positive for attracting overseas talent to return, the fact is that people want to come back not because economic prospects are better. Instead, most would be willing to return even with the expectation of economic losses. Even if career advancement prospect are expected to be better in the home country, it is not enough to compensate for economic loss. What would compensate them are the emotional gains from a familiar social environment.

Among various social connections, against the general point of view, what matters the most is not the need to be close to parents. The reason is that although being close to parents was generally considered very important by almost all respondents, those unwilling to return would sacrifice it. On the other hand, social interactions with friends and relatives and spouses have strong influences on the return-intention. Adult individuals need to build their own social circles. Familiar and integrated social networks will largely determine where they choose to live. If overseas talent had low levels of integration in the host country's society, and if they thought that being close to friends and relatives and spouses in China was important, they were very likely to show a high intention to return.

6.2. Implications for the home country

In the discussion of return rate, it should be noted that the rate of return-intention is generally higher than the actual rate of return. For example, Zweig and Chen (1995) found that 33% of Chinese Science and Engineering graduate students in the US intended to return, while Zeithammer and Kellogg (2010) found that this number had risen to 45%. However, since the mid-1990s, the actual return rate in the US has been around 10% (Finn, 2010). Thus, the actual return rate of Chinese talent in Japan might also be lower than that of the surveyed rate. It is necessary to build a serial database and research the respondents' actual decisions to return, similar to research in the US. However, even at this stage, the study of return intention provides suggestions on how to make policies effective to attract talent back to the home country.

Results showed that the determinant of return intention is primarily social connections,

especially the emotional need to be close to (potential) spouses as well as direct social contact with friends and relatives. Familiar social and cultural atmosphere and cultural communication give people psychological satisfaction, which is an inherent advantage of the home country. On the other hand, overseas talent who is better integrated into Japanese society would be less likely to return. China can provide little incentive with regard to social connections; neither does it need to, because it is naturally with advantage of social connections with overseas Chinese. Thus, policy in China should focus on improving the stated push factors, which are the natural environment, public services, and the social welfare system. It should be noted that unlike in the 1990s, the political system is no longer as sensitive an issue for overseas talent. It seems more urgent to change the living environment than to solve ideological differences in the political system.

The regression results also show that people who are older or earn higher incomes tend to be less willing to return. This means that the recent generation of large talent outflow is likely to generate a new returning wave, as a measure of quantity (not the return rate). However, when the home country desires to attract high-level talent that has already achieved success abroad, the task will be tougher.

Prospects of future career advancement without glass ceiling are not a decisive factor in the return-intention. Moreover, future income is generally perceived worse in the home country. It seems that the robust economy itself offers limited direct attraction to change one's return-intention. This could be good news for other developing countries with less promising economic growth because one's utility is not only measured by gains from work. However, it is also possible that the country's development prospects needs to pass a certain threshold to dilute its constraining effect. It is more likely that when the gap of income level was narrowed to a certain level, economic consideration will no longer be the dominant factor.

6.3. Implication for the host country

This research also sheds light on the policy of retaining talented people in the host country. In the case of Japan, in spite of the low return rate of overall overseas Chinese (accumulatively 32.6% until 2010), the rate of our respondents with intention to return is as high as 61.6%. This number is much higher than its main counterpart in the US, where the return intention of Chinese talent⁶ was recently reported to be 45% (Zeithammer and Kellogg, 2010). If excluding those who want to go to a third country and those who are undecided yet, the proportion of respondents willing to stay in Japan is rather small (merely 2.7%). This is consistent with the Japanese government's conservative attitude towards accepting long-term immigrants unlike its counterparts such as the US, Canada, or Australia (Xi, 2002). However, considering that the

⁶ The research object of Zeithammer and Kellogg (2010) is Chinese Science and Engineering graduate students in the US.

survey was taken among former graduates of a top university in China, Japan's international competitiveness in attracting the best talent is worrying. The fact, that Chinese talented people are usually more competent in English than in Japanese (see Table 3), permits them to choose locations across the world. In other words, they do not necessarily stick to Japan, which further challenges Japan's brain-retain policy.

If Japan wants to retain Chinese talent, effort could be made to promote the integration of Chinese talent with the Japanese society, by enhancing communication and deepening cultural understanding in order to form emotional ties.

In addition, based on the push and pull factors that were perceived by our respondents, China can provide better career development prospects than Japan. If Japan wants to retain international talent, it should eliminate restrictions on and discrimination against foreigners and create a fair working environment.

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Appendix I: Appendix tables

Table 6. The distribution of international students from China, by country of origin

destination country	percentage(%)	rank
United States	21.6	1
Japan	15.3	2
Australia	11.3	3
United Kingdom	8.9	4
Canada	7.1	5
Korea	6.0	6
Germany	5.0	7
France	4.1	8
New Zealand	2.7	9
Russian Federation	1.8	10

Source: Education at a glance 2010, OECD

Table 7-1. The results of collinearity diagnosis (1)

	male	married	degree	ln_age	income	timeabroad	wantpr	japanese	english	integration
male	1.000									
married	-0.077	1.000								
degree	0.282	0.197	1.000							
ln_age	-0.046	0.578	0.217	1.000						
income	-0.039	0.382	-0.157	0.409	1.000					
timeabroad	0.030	0.461	0.215	0.737	0.416	1.000				
wantpr	-0.091	0.155	-0.092	0.396	0.149	0.367	1.000			
japanese	-0.368	0.092	-0.164	0.306	0.220	0.430	0.248	1.000		
english	0.018	-0.056	0.118	-0.107	0.000	0.081	-0.146	0.107	1.000	
integration	-0.362	0.200	0.042	0.354	0.215	0.355	0.199	0.285	0.163	1.000
expwage	0.136	-0.003	0.126	0.187	0.174	0.207	0.071	0.093	0.016	0.034
worken	-0.079	-0.061	-0.173	-0.190	-0.187	-0.215	-0.231	0.056	-0.036	-0.121
careerpros	0.184	-0.035	0.205	-0.132	-0.017	0.129	-0.150	-0.113	0.123	-0.234
careernet	0.169	0.012	-0.014	-0.325	0.022	-0.197	-0.403	-0.177	0.197	-0.356
naturalen	0.151	0.082	0.223	-0.103	-0.194	-0.212	-0.270	-0.233	-0.117	-0.219
pubser	0.067	0.101	0.011	-0.091	-0.018	-0.151	-0.298	-0.064	-0.161	-0.045
proxparent	-0.109	-0.089	-0.061	-0.419	0.057	-0.201	-0.239	-0.009	0.231	-0.055
proxspouse	0.098	-0.221	0.054	-0.332	-0.206	-0.349	-0.439	-0.289	0.122	-0.285
soconnect	0.235	-0.245	0.041	-0.464	-0.072	-0.274	-0.272	-0.282	0.065	-0.433
childedu	0.005	-0.153	0.107	-0.320	0.020	-0.190	-0.337	-0.177	-0.031	-0.280
status	0.127	-0.036	0.202	-0.094	-0.026	0.060	-0.147	0.037	0.088	-0.163
politicsys	0.024	0.071	0.021	-0.264	-0.079	-0.206	-0.337	-0.174	0.086	-0.076
fertilitypol	0.027	-0.101	0.002	-0.318	-0.239	-0.270	-0.408	-0.102	-0.031	-0.111

Table 7-2. The results of collinearity diagnosis (2)

	expwage	worken	careerpros	careernet	naturalen	pubser	proxparent	proxspouse	soconnect	childeddu	status	politicsys	fertilitypol
expwage	1.000												
worken	0.078	1.000											
careerpros	0.078	0.069	1.000										
careernet	-0.080	0.024	0.466	1.000									
naturalen	0.150	0.286	0.101	0.045	1.000								
pubser	0.236	0.205	-0.046	0.015	0.470	1.000							
proxparent	-0.178	0.111	0.344	0.437	-0.009	-0.052	1.000						
proxspouse	-0.086	0.101	0.033	0.269	0.189	0.067	0.251	1.000					
soconnect	-0.221	-0.034	0.363	0.469	-0.001	-0.153	0.323	0.217	1.000				
childeddu	0.103	0.229	0.236	0.222	0.263	0.031	0.321	0.424	0.392	1.000			
status	0.158	0.162	0.448	0.297	-0.019	-0.032	0.281	0.108	0.236	0.370	1.000		
politicsys	0.163	0.069	0.050	0.077	0.394	0.424	0.093	0.184	-0.186	0.223	0.148	1.000	
fertilitypol	0.034	0.255	0.147	0.090	0.374	0.490	0.104	0.346	-0.030	0.192	0.254	0.622	1.000

Appendix II: Questions and summary results of the questionnaire

Table 8-1. Questions and summary results of the questionnaire

Questions	Optional answers	Obs (persons)	Percentage
Gender	male	46	63.0%
	female	27	37.0%
Degree	with a PHD degree	7	9.6%
	in PHD courses or completed	21	28.8%
	in master courses or with a master degree	37	50.7%
	with a bachelor or equivalent degree	8	11.0%
marital status	unmarried	52	71.2%
	married	21	28.8%
has been abroad for	16 to 20 years	2	2.7%
	11 to 15 years	3	4.1%
	4 to 10 years	17	23.3%
	1 to 3 years	38	52.1%
	less than 1 year	13	17.8%
has been in Japan for	16 to 20 years	1	1.4%
	11 to 15 years	4	5.5%
	4 to 10 years	15	20.5%
	1 to 3 years	37	50.7%
	less than 1 year	16	21.9%
the visa type when first came to Japan	all kinds of working visa	18	24.7%
	pre-college student visa	1	1.4%
	student visa	44	60.3%
	others	10	13.7%
current visa	non-permanent residence status	69	94.5%
	Japanese nationality	2	2.7%
	right of permanent residence	2	2.7%
	others	0	0.0%
Do you want to obtain Japanese citizenship or the right of permanent residence?	yes	23	31.5%
	no	50	68.5%
level of Japanese language	professional level	11	15.1%
	mature in business English	21	28.8%
	enough for daily use	26	35.6%
	entry level	15	20.5%
level of English language	professional level	6	8.2%
	mature in business English	28	38.4%
	enough for daily use	38	52.1%
	entry level	1	1.4%
annual income(pretax) in 2010	8 to 10 million JPY	3	4.1%
	6 to 8 million JPY	5	6.8%
	4 to 6 million JPY	8	11.0%
	2 to 4 million JPY	15	20.5%
	less than 2 million JPY	42	57.5%

Table 8-2. Questions and summary results of the questionnaire (continue)

Questions	Optional answers	Obs (person)	Percentage
current occupation	researcher in universities or research institutes	7	9.6%
	R&D workers in enterprise	15	20.5%
	administrative worker in enterprise	4	5.5%
	student	42	57.5%
	others	5	6.8%
range of social contacts in leisure time	almost all friends are Chinese	10	13.7%
	most friends are Chinese	30	41.1%
	Chinese and foreign friends are about half and half	24	32.9%
	most friends are foreigners	9	12.3%
majored in which discipline	economics and management	6	8.2%
	art and humanities	6	8.2%
	social studies	18	24.7%
	applied natural sciences	26	35.6%
	natural sciences	17	23.3%
choice of country for future residence	will return to China immediately after graduation (in the case of students)	20	27.4%
	will return to China after working in Japan for a period	25	34.2%
	not decided yet	20	27.4%
	planning to reside in Japan permanently	2	2.7%
	planning to go to a third country	6	8.2%
the occupation wish to take if return to China	start-up entrepreneurs	8	11.0%
	researcher in universities or research institutes	30	41.1%
	R&D workers in enterprise	14	19.2%
	administrative worker in enterprise	6	8.2%
	government civil servants	6	8.2%
	student	1	1.4%
	others	8	11.0%
How do you evaluate current preferential policies for returnee talents?	cannot really work on attracting talents back, and enlarged social injustice meanwhile	4	5.5%
	They have some effect. But it is more important to improve the overall institutional environment, to create a fair playing field.	48	65.8%
	They are an expedient measures, but necessary at present.	7	9.6%
	They show that the country is valuing overseas talent, and can work much on attracting them to contribute to the home country.	14	19.2%

Table 8-3. Questions and summary results of the questionnaire (continue)

Questions	Optional answers	Obs (person)	Percentage
Your opinion on preferential policies.	opposite	1	1.4%
	indifferent	16	21.9%
	support	56	76.7%
Do you think the following preferential policies for returnee talents are necessary?		No observations	YES observations
	tax breaks and rent deduction	12	61
	resolving troubles relating hukou, children's education	7	66
	material reward: houses or cars.	37	36
	pecunial reward: award money, research funds, start-up funds	8	65

Table 9. Question: Please compare China and Japan on the following factors.

	much better in Japan	better in Japan	about the same	better in China	much better in China
expected wage	41	23	8	1	0
work environment	22	35	11	5	0
career development prospects	4	6	19	28	16
social network beneficial to career	5	6	14	26	22
natural environment	45	20	6	2	0
public service and social welfare	46	20	7	0	0
proximity to parents	2	0	3	16	52
proximity to (potential) spouse	7	2	28	15	21
social connection outside of job	2	2	13	31	25
better for children's education	4	9	23	24	13
social status	7	12	28	18	8
political environment	24	16	30	2	1
childbirth system	31	16	25	0	1

Table 10. Question: Please list the top 3 important factors that pushing you out of your home country (push effect) and that pull you back to the home country (pull effect)

ranking	push effect			pull effect		
	1st	2nd	3rd	1st	2nd	3rd
expected wage	22	13	10	1		1
work environment	12	5	10	1	1	2
career development prospects	1	4	2	20	10	4
social network beneficial to career	1	1	1	4	9	13
natural environment	15	21	7	1	1	3
public service and social welfare	11	19	17		1	
proximity to parents				33	13	12
proximity to (potential) spouse	2			8	9	3
social connection outside of job				2	19	20
better for children's education			2		2	5
social status	2	4	3	3	4	4
political environment	4	4	10		1	
childbirth system	2		8			2