# What makes a place attractive to returnee entrepreneurs in China?
## −Behavior analysis on the locational choices—

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

Working Paper Series Vol. 2012-11
October 2012



**The International Centre for the Study of East Asian Development, Kitakyushu**

# What makes a place attractive to returnee entrepreneurs in China?

## —Behavior analysis on the locational choices—

October 2012
PENG Xue
The International Centre for the Study of East Asian Development, Japan

**Abstract:** Returnee entrepreneurs have caught intensive attention from China's local governments due to their significant roles in regional economic development, but they distributed very unevenly in the country and the research on the influential factors of their uneven distribution has yet remained undeveloped. Taking the most notable returnee entrepreneurs as samples, this paper examines how returnee entrepreneurs choose to locate their firms by analyzing their locational choice behaviors within a utility maximization framework. A nested logit model is derived to empirically analyze the impact of place as well as personal characteristics on the probability of a place to be chosen. The results show that the locational choices of returnee entrepreneurs were largely affected by economic factors (such as market size and economic dynamics), high technology power, and social connections. The result that the effect of tolerance factor is not statistically significantly influential suggests that entrepreneurs may behave differently from other members of creative class and future scholars need to be more cautious to mix employers with employees when discussing creative class theory. From the analysis results of this paper, policy implications were drawn to guide the policymakers and practitioners to attract returnee entrepreneurs.

**Key words: locational choice behavior, returnee entrepreneurs, nested logit model, China**

# 1. Introduction

In contemporary urban economics, the significant role of knowledge and human creativity in promoting regional economic development and increasing employment and wealth has been commonly recognized. This role has been materialized depending largely on enterprises which transfer knowledge and creativity into economic productivity. Among all types of enterprises, high-tech enterprises are especially of public interest due to their roles in increasing productivity efficiency, creating high added value, and revitalizing the growth of traditional industries, which China needs very urgently in order to transform the old economic growth model. In the emerging economy like China, international returnees have made active contribution to facilitate China's transition from a world factory to a more creative country, by bringing back resources like human capital, leading technologies, business know-how and international networks, etc. Besides their prominent roles in the development of modern China's higher education industries, research institutes and multinational firms, increasing number of returnees are active in high-tech sectors as entrepreneurs (Dai, 2006). Where they choose to locate their firms has attracted intensive attention from the city governors, policy makers and scholars.

As to the explanation of the locational choice of entrepreneurs, a large body of literature has evolved around the perspective of firms, such as the famous theories of Marshall (agglomeration

economies), Weber (transportation costs), Von Thünen (land use model), Cristaller (central place theory) and Alonso (central business district). Later studies have developed around two main types of influential factors (Hayter, 1997). The first type is developed under a neoclassical framework and focused on regional characteristics such as agglomeration externalities and proximity to customers that minimize transportation and other costs and advance the firm's efficiency through knowledge spillovers (Figueiredo et al., 2002; Audretsch et al., 2005; Guimaraes et al., 2000). The second type includes institutional factors shaped by local governments such as taxes, regional wage levels or other factors that form the regional economic environment (Bartik, 1985; Carlton, 1983; Coughlin et al., 1991; Glaeser and Kerr, 2009). Until recently, studies from the perspective of entrepreneurs are relatively few. As latest progress in this field, individual entrepreneurs who are the main driver in the choice of firm location have attracted intensive research interests, and a behavioral framework which allows inclusion of the personal characteristics of entrepreneurs has been developed (Wright et al., 2008, Kolympiris and Kalaitzandonakes, 2012). This paper adopts the behavioral analysis framework and focuses on individual returnee entrepreneurs. By examining their locational choice behavior, this study demonstrates that the personal characteristics of entrepreneurs, along with place attributes, have impact on the final returned destination. Before this study, the observation that some places are attracting entrepreneurs with certain personal characteristics used to be an intuitive descriptions, which is now empirically proved.

This study offers a few contributions to the existing literature in the following ways. First, it reveals the situation of uneven distribution of returnee entrepreneurs in China and for the first time examines the reason for the uneven distribution. Prior studies about returnee entrepreneurs in China have emerged mainly discussing on firm performances and impacts (Wright, et al., 2008; Dai and Liu, 2009), but seldom looked at the locational choices of returnee entrepreneurs. The only exception is the work of Wright, et al. (2008), who have studied the returnee entrepreneurs' locational choices of types of science parks (university-affiliated or not), but it is only on a small spatial level within a city and does not help to explain the regional unbalanced distribution. This paper focuses on a wider spatial level and studies the returnee entrepreneurs' choices of places across city boundaries, which is on the provincial level in this study.

Second, the research about returnees sheds light on the study of talent distribution in China. The distribution of general talent (not necessarily the returnee) has been frequently studied, such as by Li and Florida (2006), Zhang and Fan (2006), Qian (2010) and so on. These studies have defects in the way that they did not factor out the impact of registered residence status (*hukou* in Chinese) system, which affects urban citizens' rights in various ways, such as social welfares, employment opportunities and child(ren)'s education and thus is thus affective to one's locational choice. By studying returnees, the restriction from *hukou* system can be much alleviated because cities (including the major ones) usually offered legal residence for them as preferential treatments. Thus this study provides valuable reference to compare with those results from study on talent restricted by *hukou* system.

Moreover, the general trend in the study of talent has shifted the focus to a specific group of people named creative class, which comprises people who are featured with inputting human creativity in their occupations. Creative class theory differs from traditional human capital theory in the way that the former measures skills on an occupational basis while the latter on an educational basis (Florida, 2002). According to Florida, the entrepreneurial creativity is of the four

types of creativities that compose the creative core, who are featured by favoring a tolerant, open and diversified environment (the other three types of creativity are scientific creativity, technological or innovative creativity, artistic or cultural creativity). By introducing the key factors – tolerance into the locational choice study, this paper serves as a valuable observation for the test of the locational preferences of creative class.

This study may also contribute to the ongoing policy dialogue on how to effectively attract returnee entrepreneurs. The significance of returnees in promoting high-tech entrepreneurship has been widely recognized by the local, regional and national governments. Various policies have been designed and implemented in order to create local environments conducive to returnee entrepreneurship (Hart, 2003; Wennekers and Thurik, 1999). By focusing on the best returnee entrepreneurs, the results of this paper help to make policies more effective.

The rest of the paper is organized in the following order. In section 2, the distribution pattern of returnee entrepreneurs is demonstrated. In section 3, literature about the influential factors of locational choice behavior is reviewed. In section 4, the nested logit model is adopted to model the locational choice process of returnee entrepreneurs using hand collected individual level data. Results are discussed in section 5, followed by brief conclusions in section 6.

## 2. The distribution pattern of returnee entrepreneurs in China

Despite the intensive attention on returnee entrepreneurs, there are no systematic statistics about their distribution, except the data based on 2003, which was released at the Exhibition of Chinese Returnees' Entrepreneurship Achievements held at Beijing in 2004. No updates are published since then, although the number of returnee entrepreneurs has grown very quickly and their distribution has changed greatly after 2003. To demonstrate the recent distribution pattern of returnee entrepreneurs, this study approximated the number of them in each province. Restricted by the data availability, the estimated dataset is based on year no later than 2008. However, it is when the boom of returnee entrepreneurs has got close to its peak and the number of start-up parks for returnee entrepreneurs has got into a stabilized period. Thus we believe that this dataset is adequate to catch the fiercest change during the five years before 2008 and can reveal the latest distribution pattern.

Limited by the serious shortage of necessary information, data in all provinces cannot be obtained from the identical source or estimation method. The officially released data were adopted primarily for provinces with available information. For other provinces without published data, the numbers of returnee entrepreneurs were estimated based on information in the nearest year. The results of the distribution pattern in each province are shown in Figure 1, and the details are listed in Table 1.

Table 1 presents the most recent estimation on Chinese returnee entrepreneurs' distribution since the officially published data in 2003. Although its accuracy still needs to be improved, the dataset portrays the general picture of the distribution of returnee entrepreneurs.

The new distribution pattern of returnee entrepreneurs reveals the following features:

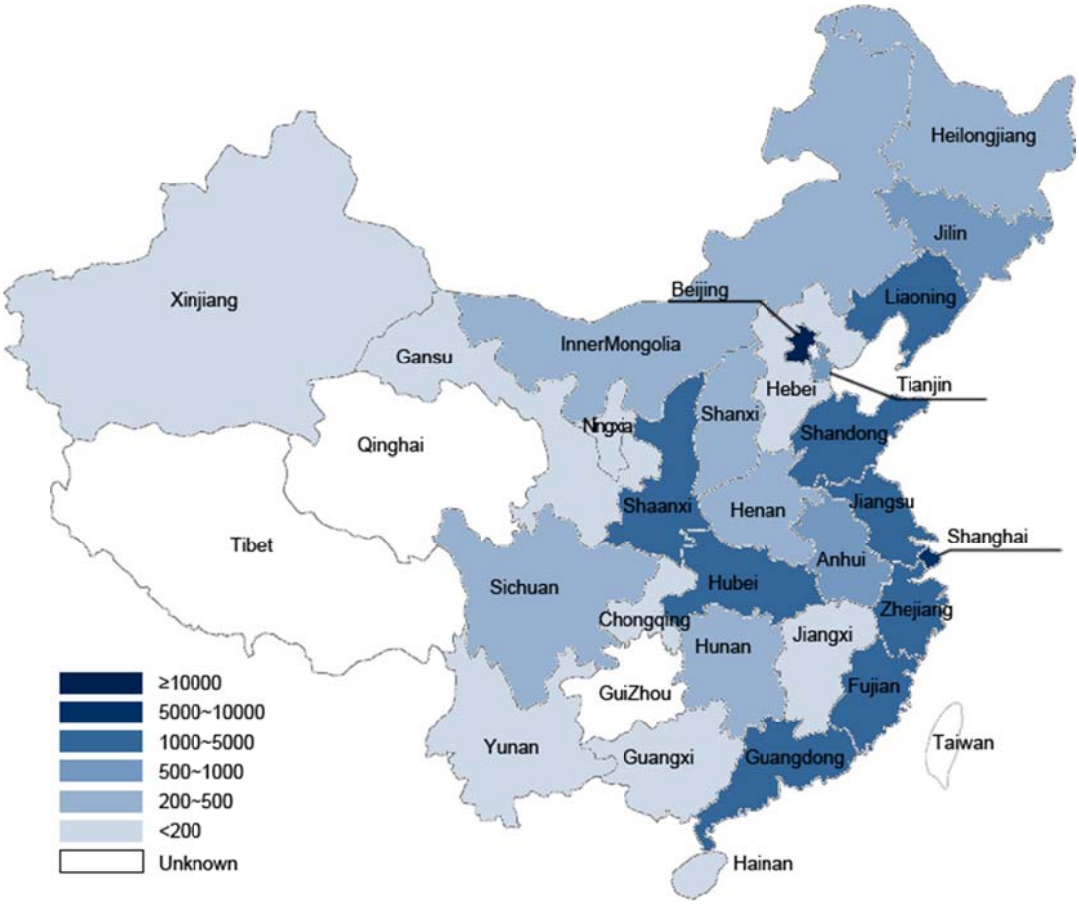
(1) Coastal provinces have more returnee entrepreneurs than inland provinces;

(2) Beijing and Shanghai have numbers of returnee entrepreneurs that are overwhelmingly higher than other provinces, including other coastal provinces;

(3) Among inland provinces, the central provinces have more returnee entrepreneurs than western ones.

(4) Returnee entrepreneurs generally follow the same distribution pattern as general returnees. However, between Beijing and Shanghai, the differences in the distribution of returnee entrepreneurs are much larger than for that of general returnees. Beijing has attracted many more returnee entrepreneurs than Shanghai whereas the number of general returnees is very close in the two cities. The reason for this unbalance lies partly in the different roles of these two cities. Details will be discussed in section 5.

**Figure 1. Distribution of returnee entrepreneurs in China**




Source: estimated by the author; see Table 1.

**Table 1. Distribution pattern of general returnee and returnee entrepreneurs in China**

| | *Haigui* 2003 | *Haigui* Entrepreneurs 2003 | *Haigui* 2008 | *Haigui* Entrepreneurs 2008 | Share in 2008(%) |
|---|---|---|---|---|---|
| Beijing | 40000 | 5000 | 80000 | 13443 | 34.2 |
| Tianjin | | 345 | 10000 | 800 | 2.0 |
| Hebei | 1500 | 69 | 3075 | 142 | 0.4 |
| Shanxi | 3000 | 100 | 4000 | 200 | 0.5 |
| InnerMongolia | 1331 | 26 | 2729 | 201 | 0.5 |
| Liaoning | | 380 | 24000 | 2863 | 7.3 |
| Jilin | | 210 | 3439 | 565 | 1.4 |
| Heilongjiang | | 146 | 6200 | 393 | 1.0 |
| Shanghai | 50000 | 4580 | 75000 | 7158 | 18.2 |
| Jiangsu | | 976 | 36000 | 1800 | 4.6 |
| Zhejiang | 3000 | 589 | 9646 | 1595 | 4.1 |
| Anhui | 3000 | 206 | 4000 | 547 | 1.4 |
| Fujian | 4000 | 344 | 8200 | 1613 | 4.1 |
| Jiangxi | | 31 | 508 | 135 | 0.3 |
| Shandong | 4000 | 448 | 9600 | 1115 | 2.8 |
| Henan | | 95 | 1556 | 255 | 0.6 |
| Hubei | | 330 | 5404 | 1100 | 2.8 |
| Hunan | 4000 | 157 | 8200 | 322 | 0.8 |
| Guangdong | 10000 | 866 | 24000 | 2079 | 5.3 |
| Guangxi | | 120 | 1966 | 89 | 0.2 |
| Hainan | 300 | 14 | 387 | 35 | 0.1 |
| Chongqing | | 40 | 3600 | 90 | 0.2 |
| Sichuan | 2600 | 231 | 5330 | 463 | 1.2 |
| Guizhou | | | 1100 | unknown | - |
| Yunnan | | 64 | 1049 | 148 | 0.4 |
| Tibet | | | | unknown | - |
| Shaanxi | | 390 | 6387 | 2000 | 5.1 |
| Gansu | 1000 | 54 | 2050 | 77 | 0.2 |
| Qinghai | | | 200 | unknown | - |
| Ningxia | | 11 | 176 | 34 | 0.1 |
| Xinjiang | 1800 | 20 | 3690 | 50 | 0.1 |

Source: Data in 2003 is from Exhibition of Chinese Returnees' Entrepreneurship Achievements held at Beijing in 2004. Data in 2008 is estimated from various data sources. Estimation processes of returnees and returnee entrepreneurs in 2008 can be found in Table 11 and Table 12, respectively, in the Appendix.

## 3. Literature review on the underlying factors of locational choice

## behavior

### 3.1. Economic factors

In the behavioral analysis framework, people make decisions based on the utility maximization process. Among the various factors affecting an individual's utility, economic considerations, as emphasized in neo-classical theory, are recognized as the most dominant reason for choice of migration destination. Neo-classical theory views a migrant as a producer, whose migration decision is to maximize the return from labor. This can be traced back to Sjaastad (1962), who divided the costs and returns of migration into "money" and "non-money" factors. The money returns of migration are an increment in a migrant's real earnings stream—in other words, the return to one's human capital, usually measured in income. The notion of migration for higher income prevails in the research on voluntary migration. In the case of entrepreneurs, their income is related to the profitability of the firms. Therefore, the economic factors discussed here are are those that affective to the performance of enterprises, such as market size, infrastructures, wage and land costs, as well as economic dynamics.

Observers have captured the attractiveness of the huge domestic market to returnee entrepreneurs (Wang, 2005). Thus, supposedly, they would look for a bigger local market. The market size is the GDP size adjusted according to the connections with other provinces. Extending the market accessibility index in in the works of Harris (1954), an index of market size (Cheng, 2007) was developed in the following formula:

$$M_i = GDP_i + \sum_{j=1, j\neq i}^{N} \frac{GDP_j}{Dist_{ij}^{\ 2}} - \sum_{j=1, j\neq i}^{N} \frac{GDP_i}{Dist_{ij}^{\ 2}}$$

where $M$ is the market size, and $Dist_{ij}$ is the railway distance between provincial capitals of province $i$ and $j$.

Infrastructure is measured by transportation density, which equals the total length of highway (km) divided by the area ($km^2$) of the province. Two kinds of costs are considered here: labor cost measured by the average wage level and land cost measured by the average housing price. Economic dynamics is defined as the average employment growth rate during the last 3 years. Here we propose:

**H1.** Returnee entrepreneurs tend to locate at places with larger market size (**H1a**), higher economic dynamics (**H1b**), ampler infrastructure (**H1c**) and lower cost (**H1d**).

### 3.2. Urban amenity

In addition to the identity of producer in the neo-classical theory, a migrant also has another identity, that is, as a consumer. This new identity affects a person's utility from choosing a location, through the revealing of the individual's preference of amenities. There are mainly two strands of literatures, focusing on natural and urban amenities separately. Natural amenities included temperate climate, dryness, and proximity to the coast, environmental beauty and so on (Ullman, 1954; Sjaastad, 1962; Glaeser et al., 1995; Glaeser et al., 2001). Artificial amenities in an urban setting have also been considered by researchers, which can be dated back to Tiebout (1957), who first implied a relationship of urban amenities with migration, arguing that people "vote with their feet" by choosing cities that provides better public goods. His followers find that talented migrants are increasingly attaching high values to amenities that lead to a more pleasant urban life, such as a variety of consumer services and goods, aesthetical and physical settings, good public

services, and speedy transportation to make the city accessible (Findlay and Rogerson, 1993; Glaeser, el al., 2001).

Among various urban amenities, the public-provided amenities, such as the availability of parks and recreational opportunities (museums, theatres, etc.), professional sports franchises, transportation networks, public education, and health care, are usually more of the attention of public policy makers, urban planners and city managers. The ongoing debates regarding the effect of publically provided urban amenities have not reached a solid conclusion. For example, studies in Germany have proved that publically provided goods, such as cultural offerings (Buettner and Janeba, 2009), health care and education (Fritsch, 2007) act as important attractions for talented people. Meanwhile, evidence also showed that, the provision of public facilities in health care, education, cultural and recreational amenities had only a minor, if any, impact on the presence of talent in seven European countries (Boschma and Fritsch, 2009).

The impacts of connections seem to differ across people and regions. More studies are necessary to reach a commonly applicable conclusion. Aimed at testing the effect of urban amenities on returnee entrepreneurs in the context of China, the following hypothesis is proposed in this study:

**H2.** Returnee entrepreneurs will locate at places with high level of urban amenities, such as cultural offerings (**H2a**), medical (**H2b**) and educational services (**H2c**).

## 3.3. Creative milieu

The latest debate on the place attractiveness to talent has shifted the focus to the creative milieu, especially in the studies on creative class – a group of talented people "who add economic value through their creativity" (Florida 2002, p. 68). Based on the rationale that resources not engaged in economic activity will not by themselves be a part of the growth process, this creative class theory highlights the importance of skills measured on an occupational basis, instead of those measured on educational basis traditionally emphasized in the human capital theory. Florida (2002) has brought new elements into the debate of place attractiveness. He argues that a city should be characterized with "3T" power - tolerance, technology and talent power - to attract the creative class. People with entrepreneurial creativity are among the core of this class and thus are supposed to be attracted to creative milieu.

***Tolerance***

This recognition of tolerance can be derived to the works of Jacobs (1961) who stressed the importance of a diversity of individuals. However, it is Florida who contributed to the economic development literature by introducing tolerance as a new answer to the question why some places are better able than others to generate, attract, and retain creative people. According to him, it is not (or not only) job opportunities or urban amenities that attract the creative class to a city (Florida and Gates, 2003). Competitive cities are those with "low barriers to entry" which are "known for diversity of thought and open-mindedness" (Florida, 2005, p.130), in his termination, the "tolerance".

In empirical studies, tolerance of a place is represented by the diversity of specific type of residents, like *gay, foreigner*, or *bohemian* (people who are engaged in cultural and artistic occupation, such as musicians, writers, performing artists, photographers, designers, fashion models and so on). The rationale is that these people are sensitive to social exclusion and a place without tolerance to new ideas would appeal unfriendly, resulting in pushing them out. *Gay* index is stressed to be one of the best proxies for tolerance (Inglehart and Norris, 2003; Inglehart and

Weltel, 2005). But due to the lack of data availability, its adoption is only limited in empirical studies in the U.S. (Florida, 2002). Studies in European countries frequently adopted the foreigner/ethnic index (Hansen and Niedomysl, 2009; Fritsch, 2007) and bohemian index (Boschma and Fritsch, 2009; Hansen and Niedomysl, 2009) as instead.

In Chinese context, it is difficult to use the above measurements of tolerance. Considering China has long restricted internal migration, Florida et al. (2008) proposed a substitute index of population diversity, which measures the share of the population who are from other provinces of the country, i.e. without local registered residence (i.e. *hukou*).

Besides population diversity, this study proposes an index of openness length to represent tolerance in China. As is widely known, China used to be a closed nation, where trade with the international world had been stopped for about three decades. Consequently, business ideas and culture generated in China are relatively closed and backward. The opening up began in 1978 and the Development Zone used to be the only window to do business with foreign countries and enjoy preferential policies, such as tax exemption, low rent, and so on. By connecting to the outside world, Chinese businesspersons learn about international society, including the standardization of acts as well as diluting the role of social relationships. Thus in general, more contacts with foreign countries indicate a more open and tolerant atmosphere. Hence, this study uses a new indicator - the length of time since the first national development zone was established - to measure the openness of a place.

Hence, we propose:

**H3.** Returnee entrepreneurs will choose places with high tolerance (**H3a**) and openness (**H3b**) to locate their firms.

***Technology power***

Studies have demonstrated that technology is the main source of productivity growth early in the 1950s (Solow, 1956). This view of seeing exogenous technological progress as the engine of long-run growth was later imbedded in the model by Romer (1986, 1990), who was the first that formulated an explicit growth model with technical progress resulting from deliberate actions taken by private agents who respond to market incentives. Technology power (innovation) is the outcome of creativity, and in turn could be a good indication of an environment inductive to creative industry. High-tech entrepreneurs are supposed to be interested in cities with higher technology power.

As the second indicator for creative milieu, technology can be measured either from the input side (such as R&D expenditures) or from the output side (in the form of patents). Someone argues that the output side is usually more reliable for regional growth in the sense that high input does not necessarily lead to high output (Florida et al., 2008). However, for entrepreneurs, the investment in R&D is supposed to be more important than the output. Both of the two indices are tested in our model.

Besides, for entrepreneurs, the high-tech agglomeration is also supposed to be important for returnees' companies. An index of high-tech share is adopted to test the role of technology in the industrial structure.

Hence, we propose:

**H3.** Returnee entrepreneurs will choose places with high technology power to locate their firms, which indicates higher R&D investment (**H3c**), higher technological output (**H3d**), higher high-tech agglomeration (**H3e**).

***Talent power***

Talent power is considered as another feature of a competitive city. The role of talent in economic growth has been identified in many existing studies (Lucas, 1988; Mellander and Florida, 2006). Subsequent studies based on the work of Baumol (1968) have improved our understanding of the role of qualified talent pool in relation to technology, technological innovation and entrepreneurship (Lee, et al., 2004; Acs and Armington, 2006; Audretsch, et al., 2005). Entrepreneurs, especially the founder of high-tech companies, may be interested in the talent power of a place for the concern of available labor stock.

Hence, we propose:

**H3.** Returnee entrepreneurs will choose places with high talent power to locate their firms (**H3f**).

## 3.4. Social connections

As mentioned above, Sjaastad (1962) divided the costs and returns of migration into "money" and "non-money" factors. He specified non-money factors, among which there are "psychic costs." Psychic costs represent the emotional costs of leaving one's familiar surroundings. Sjaastad's work contributed to the research on migration by offering the perspective that social relationships can affect one's utility and further influence on one's choice of location. This perspective is especially useful in interpreting the return migration from developed areas to less developed ones. For most people, adaption to being in an unfamiliar society costs extra energy, and getting close to familiar people could be an emotional comfort. Powdthave (2008) argued that people would settle for lower income[1] in the home country, even factoring out the consumption issue[2] because pecuniary losses will be compensated for by being close to relatives and friends. Dahl and Sorensen's (2009) study found that entrepreneurial talent in Denmark placed much more emphasis on being close to family and friends than on regional characteristics that might influence the performance of their ventures when deciding where to locate their businesses.

Thus, we hypothesize:

**H4**. The returnee entrepreneurs tend to locate firms at where they have social connections.

Besides emotional needs, there is another possible interpretation for the effect of social connections on the migrant's choice of destination. They can act as social capital resources and be beneficial for careers as suggested by Saxenian (2001), Benson-Rea and Rawlinson (2003). However, it is worth noting that whether a society with closer social networks would promote economic growth remains debatable. In the latest creative class theory proposed by Florida, the role of social capital was the opposite of making a city creative. He asserted that homogeneous communities that have strong ties among their members can have an adverse effect on growth, claiming that such environments often tend to suppress new ideas and creativity, and drive creative class out. Therefore, future potential cities are moving toward "places with looser networks and weaker ties" that "are more open to newcomers and thus promote novel combinations of resources and ideas" (Florida, 2004, p.31). In other words, a place with close social networks is the opposite of tolerant place. H4 should be the rejected when H3a and H3b is accepted, and vice versus.

---

[1] The income needs to be higher than a physiological minimum threshold (Reichlova, 2005).

[2] Consumption might be cheaper in the home country. The gap between purchasing power in the home and host countries might not be as huge as the income gap. However, consumption price differences are becoming smaller across countries. In a world under accelerating globalization and internationalization, consumer goods are spreading worldwide, with almost the same prices for cars, electronic appliances, daily commodities like clothes, shoes, and so on.

# 4. Methodology and Data

## 4.1. Methodology

In the discussion of "what makes a place attractive", a popular research method has been to rate the attractiveness of a place according to various aspects of performance, such as business climate, quality of life and so on (Rogerson, 1999; Malecki, 2004; McCann, 2004). Such ratings has been questioned by academia because there is seldom agreement on the variables to be included or the relative weight for achieving a proper measure of attractiveness (Rogerson, 1999). The arbitrariness could easily lead to criticism that it facilitates policies with problematic priorities (McCann, 2004).

Instead of rating, the migration perspective is considered as a more convincing method to study place attractiveness (Niedomysl, 2010). Macro data of migration has been popular in analyses due to the easy availability, but it has also been criticized for neglecting the differences of individuals. Taste heterogeneities of individuals were overlooked and people were averaged out in the aggregated information. Thus micro data has been more preferred by recent researchers. The discrete choice method (DCM), dealing with micro data, has been frequently used in empirical studies recently. DCM method 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 (Manski, 1977). To deal with a large alternative set, researchers have long been equipped with theoretical tools pioneered by McFadden's (1973, 1976), but the restrictions on the small number of alternatives has not been loosened until the dramatic improvement of computing technology took place.

In this study of locational choices, the alternatives are places. The utility of an individual $n$ that faces a choice set of $J$ places can be represented by the following formula:

$$U_{nj} = V_{nj} + \varepsilon_{nj} = x_{nj}\beta + z_n\gamma + \varepsilon_{nj};\ \ j \in J, n \in N\ , \tag{1}$$

where $U_{nj}$ is the utility that $n$th individual obtains by choosing $j$th alternative destination; $V_{nj}$ is the observed utility (also called representative utility); $x$ is a vector of destinations attributes; $z$ is a vector of personal attributes; $\varepsilon_{nj}$ is the stochastic utility, which remains unobserved; $\beta$ is a vector of alternative-specific coefficients; $\gamma$ is a vector of individual-specific coefficients; $J$ is the total number of alternatives; and $N$ is the total number of individuals.

The probability that individual $n$ chooses destination $j$ is the probability that the utility of destination $j$ exceeds that of all other destinations.

$$\begin{aligned} P_{nj} &= P(U_{nj} > U_{nk}), \forall k \quad \text{where } j,\ k \in J \ \text{ and } \ k \neq j \\ &= P(V_{nj} + \varepsilon_{nj}) > P(V_{nk} + \varepsilon_{nk}), \forall k \neq j \\ &= P(\varepsilon_{nk} - \varepsilon_{nj}) < P(V_{nj} - V_{nk}), \forall k \neq j\ . \end{aligned} \tag{2}$$

This probability is a cumulative distribution. Using the density $f(\varepsilon_n)$, this cumulative probability can be written as

$$P_{nj} = \int_{\varepsilon} I(\varepsilon_{nk} - \varepsilon_{nj} < V_{nj} - V_{nk}, \forall k \neq j) f(\varepsilon_n) d\varepsilon_n\ , \tag{3}$$

where $I(*)$ is the indicative function equal to 1 when the expression in parenthesis is true and 0 otherwise. The probability is essentially a multidimensional integral over the density of the unobserved portion of utility $f(\varepsilon_n)$. Depending on how the density function $f(\varepsilon_n)$ is specified, different DCMs can be obtained. The assumption about the distribution of the unobserved utility decides which DCM a researcher should use.

The commonly used standard logit model is derived under the assumption that $\varepsilon_n$ is independently and identically distributed with a type I extreme value distribution (also called Gumbel and type I extreme value distribution). This logit model has been widely used in the social sciences for its simplicity, but it has a strict restriction named IIA property. The independence placed on $\varepsilon_{nj}$ requires that for any individual, the ratio of choice probabilities of any two alternatives is independent from the utility of any other alternative. This implies that the odds ratio between any two alternatives should not change by the inclusion or exclusion of any other alternative, as shown by the following formula:

$$\frac{P_{ni}}{P_{nm}} = \frac{e^{V_{ni}} / \sum_j e^{V_{ni}}}{e^{V_{nm}} / \sum_j e^{V_{nm}}} = \frac{e^{V_{ni}}}{e^{V_{nm}}} = e^{V_{ni} - V_{nm}}, \tag{4}$$

The odds ratio of choosing $i$ and $m$ is irrelevant to any other $j$ for any $j \neq i$ or $j \neq m$. This property has been labeled the "independence from irrelevant alternatives (IIA)".

IIA property can be tested with Hausman's specification test. According to Hausman and McFadden (1984), if a subset of choice alternatives is irrelevant, it can be omitted from the sample without changing the remaining parameters systematically.

In the case of IIA property violated, to relax the IIA assumption, generalized extreme value (GEV) models have been invented such as the nested logit (NL), multinomial probit, and mixed logit models. GEV models assume that the error terms are distributed according to a generalized extreme value distribution. The most widely used member of the GEV family is the nested logit model. Daly (1978), McFadden (1978), and Williams (1977) separately proved that the nested logit model is consistent with utility maximization. Later, the nested logit model was widely used in the research on the choice of energy supplier (Train, 1986), transportation (Forinash and Koppelman, 1993), telephone service (Train et al., 1987), as well as residence (McFadden, 1978).

In NL analysis, the IIA assumption can be largely relaxed by grouping similar alternatives into nests. Suppose we have a decision tree on two levels, with $M$ optional nests at the upper level and a total of $J$ alternatives at the bottom level. The probability that alternative $j \in B_k$ was chosen is equal to the probability that nest $B_k$ is chosen multiplied by the probability that alternative $j$ is chosen given that an alternative in $B_k$ is chosen:

$$P_{nj} = P_{nB_k} \times P_{nj|B_k}, \tag{5}$$

where $P_{nj|Bk}$ is the conditional probability of choosing $j$ given that an alternative in nest $B_k$ is chosen, and $P_{nBk}$ is the marginal probability of choosing nest $B_k$. According to Train (2007), the probability that decision maker $n$ who wants to maximize his or her utility chooses the nest $B_k$ in the first level and alternative $j$ in the second level is

$$P_{nB_k j} = \frac{e^{z_n\gamma + \lambda_k I_{nk}}}{\sum_{l=1}^{K} e^{z_n\gamma + \lambda_l I_{nl}}} \times \frac{e^{x_{nj}\beta / \lambda_k}}{\sum_{j \in B_k} e^{x_{nj}\beta / \lambda_k}}, \tag{6}$$

where dissimilarity parameter $\lambda_k = \sqrt{1 - \rho_k}$ and $\rho_k$ denote the correlation in nest $k$. $I_{nk}$ is the inclusive value that links the two levels of the nested logit model by bringing information from the bottom level into the upper level. It is equal to $I_{nk} = \ln \sum_{j \in B_k} \exp(x_{nj}\beta / \lambda_k)$ .Essentially, $\lambda_k$ $I_{nk}$ captures the expected value of utility to individual $n$ of the alternatives available in nest $B_k$.

The equation (6) can also be written as:

$$P_{nj} = \frac{e^{V_{nj}/\lambda_k} (\sum_{j \in B_k} e^{V_{nj}/\lambda_k})^{\lambda_k - 1}}{\sum_{t=1}^{K} (\sum_{j \in B_l} e^{V_{nj}/\lambda_l})} . \quad (7)$$

Compared with a standard logit model, by using a NL model we obtain relaxation of the IIA assumption in two ways: (i) IIA over alternatives in each nest, and (ii) independence from irrelevant nests (IIN) over alternatives in different nests (Train, 2007). The results are estimated by maximum likelihood.

Although in NL, decision trees are often interpreted as implying that the highest-level decisions are made first, followed by decisions at lower levels, no such temporal ordering is necessarily implied (Henscher et al., 2005). Instead, NL models are appropriate because they have groups of alternatives that are similar to each other within the nest in unobserved ways; in other words, they are appropriate when there is a correlation for unobserved reasons between the alternatives in each nest but no correlation between alternatives in different nests.

## 4.2. Data sources

In this analysis, the data were generated from hand-collected information of individual returnee entrepreneurs. The sample entrepreneurs were drawn from various sources, including reward programs (both national and local), Returned Chinese Scholar Pioneer Yearbooks, other publications about returnees, websites of Start-up Parks for Returned Students, and so on. In other words, our samples are all returnee entrepreneurs who have caught intensive public attention. They are well known either for significant business success or for the high potential to change an industry significantly and promote local economic development. Therefore these samples represent the most successful or most potential of Chinese returnee entrepreneurs. By focusing on the best, this study offers highly valuable implications on talent attracting policies for local governments.

Based on information from the above resources, we first established a name list of returnee entrepreneurs, whose personal experience and individual attributes were then tracked by searching reports in newspapers, magazines, books and websites.

A returnee entrepreneur should meet the requirements of both returnee and entrepreneur. “Returnee (*haigui* in Chinese, i.e., 海归)” is the abbreviation of *haiwai guiguo liuxuesheng* (海外归国留学生 or student returnees from overseas). Later its definition expands to refer all the highly educated returnees who have at least a tertiary educational background and have been abroad for study, training, or work for at least one year.

Entrepreneurs are defined according to their position in a company. Specifically, only those in the position of CEO, general manager, chairperson of the board, and so on were considered as entrepreneurs under the rationale that only those people can make the final decision of where to locate the firm.

Starting up a company would with no doubt make the founder a qualified research object, but this is not a requirement. Those who took over an existing company are also recognized as entrepreneurs and are included in our dataset, because when he or she does so, it means he also accepts its location.

If an entrepreneur's business includes headquarters and branch companies, then his choice of destination choice was defined as where the headquarters are located.

If someone opened start-ups multiple times, his or her last choice was adopted. We assume that he or she had learned through trial and error, with regard to the location of the firm as well as many other factors. The last trial is assumed to be a mature decision after deep deliberation. If he or she had moved, the new place was taken into consideration. However, if he or she had just opened a branch company, the location would still be his prior choice.

A total of 798 samples were collected to establish the database. Returnee entrepreneurs have the following characteristics: mainly males in their 40s and early 50s with an average of 46.8; high degrees of education; an average of 10.3 years of experience abroad.

The alternative set includes 30 Chinese mainland provinces (Tibet is excluded from the alternative set for the lack of information about returnees). The number of samples in each province is proportional to the actual number of returnee samples estimated in section 2. It was assumed that when choosing one's return destination, each individual (sample) selected a location in one of 30 provinces. Values were assigned to the variables describing the sample's alternative sets (30 provinces) according to the year when the choice of destination was made. To illustrate, if a returnee was looking for a place to locate his company in 2000, then he chose from 30 provinces with variables in 2000.Since the period ranges from 1991 to 2008 for 18 years, the total number of available provinces amounts to 30*18.

## 4.3. Variables and nested decision tree of alternative province

The variables include both place attributes of alternative provinces and personal attributions of the samples. Detailed descriptions for the former are listed in Table 2 and the latter in Table 3. Statistical summaries are shown in Table 4.

In this research, a normal logit model was first applied. However, the results of the Hausman-McFadden test showed that the IIA property does not hold for all 30 alternative provinces. Thus we need to use NL model instead. There are different ways to specify one's decision tree in a NL model. After grouping alternative provinces in different ways, decision tree in Figure 2 was decided because it can offer the most comprehensive information from the results among other decision trees that can pass the IIA test. It passed the initial LR-test for the IIA test, which means they perform better than the logit model before the nests were constructed. In this nested tree structure, nine nests are firstly defined, each of which involves one coastal province. The nest is named after the province it includes. Thus, nine coastal nests are primarily defined, which are Beijing, Shanghai, Liaoning, Tianjin, Shandong, Jiangsu, Zhejiang, Fujian and Guangdong. Then, inland provinces are divided into two nests. The first nest is named "inland_a" group which involves Anhui, Jilin, Shaanxi, Hubei and Sichuan, which are relatively popular in inland. The second nest is denoted as "inland_b" nest which involves all the rest nineteen provinces.

**Table 2. Descriptions and sources of place variables**

| Categories | Variables | Description | Sources |
|---|---|---|---|
| Economic factors | Market size | the logarithm of national market size (million RMB) | *Statistical Yearbook of China* (NBS, various year) |
| | Infrastructure | provincial transportation density | |
| | Cost | the logarithm of provincial average housing price per square meter(RMB) plus average wage level(RMB) | |
| | Economic dynamics | average employment growth rate during the past 3 years | |
| Amenities | Medical services | the logarithm of the number of doctors per 10000 population | |
| | Education services | the logarithm of the number of teachers in Middle and Elementary Schools per 10000 population | |
| | Culture offerings | the number of art performance troupes per million population | |
| Creative milieu | Talent | the percentage of people with college or higher level education background within the population over 15 years old | |
| | (Tolerance) Population diversity | the percentage of residents without local *hukou* (registered residence status) among the total population | |
| | (Tolerance) Openness length | the time period from when the first national-level development zones up to 2009 | CADZ(www.cadz.org.cn/en) |
| | (Technology) Innovation index | the number of patents per 10000 population | http://www.sipo.gov.cn/ |
| | (Technology) R&D investment | the percentage of R&D investment in the industry output (%) | *China Statististical Yearbook on High Technology Industry* (NBS, various year) |
| | (Technology) High-tech index | the share of high tech industry output in the total industry output (100%) | |
| Social connections | Birthplace | =1, if the alternative province is one's birth place; =0 otherwise | hand collected |
| | Studied-place | =1, if the individual has ever studied (for tertiary education or higher) in the alternative province; =0 otherwise | |
| | Worked-place | =1, if the individual has ever worked in the alternative province; =0 otherwise | |
| Policy | Preferential policy | the number of *haigui* start-up parks in each province | *Returned Chinese Scholars Pioneer Yearbook* (CSCSE, various year) |

**Table 3. Description of personal variables**

| Variables | Description | Sources |
|---|---|---|
| Gender | 1=male, 0=female | hand collected |
| Ln_age | the logarithm of one's age in year 2011 | |
| Degree | one's highest degree. doctor degree =3, master degree=2, bachlor degree =1 | |
| Ln_timeabroad | the logarithm of the number of years one has stayed road (plus 1) | |
| Life abroad | =1 if one has a life abroad (in the way that have a foreign nationality or Permanent Residence status, or have an occupation abroad) | |
| Exp_diploma | =1, if one has obtained a diploma from universities abroad | |
| Exp_enterprise | =1, if one has work experience in enterprises abroad | |
| Exp_research | =1, if one has work experience in research institutes or universities abroad | |
| Exp_startup | =1, if one has experience of starting up a comnapy abroad | |
| If_NorthAmerica | = 1, if the individual has resided in countries of North America; =0 otherwise. The member countries mentioned in our case database include United States, Canada, Cuba. | |
| If_AsianOceania | = 1, if the individual has resided in countries of Asia; =0 otherwise. The member countries mentioned in our case database include Australia and New Zealand. Japan, Korea, Singapore, China Taiwan, China Hong Kong, China Macau, India, too, Indonesia, Cyprus, Philippines, Vietnam, and Malaysia. | |
| If_Europe | = 1, if the individual has resided in countries of Europe; =0 otherwise. The member countries mentioned in our case database include Netherlands, Greece, Finland, Norway, Scotland, Russia, Spain, Hungary, Austria, France, Britain, Germany, Belgium, Ireland, Switzerland, Italy, Denmark, Czech Republic, Scotland, Ukraine, Wales, as well as the name of the continent Europe. | |

**Table 4. Statistical summaries**

| Variable | Obs[(1)] | Mean | Std. Dev. | Min | Max | Cases [(2)] |
|---|---|---|---|---|---|---|
| Market Size | 24738 | 8.106 | 1.156 | 3.419 | 10.584 | |
| Infrastructure | 24738 | 0.483 | 0.383 | 0.016 | 2.513 | |
| Cost | 24738 | 9.670 | 0.572 | 7.637 | 11.244 | |
| Economic dynamics | 24738 | 1.015 | 0.021 | 0.940 | 1.129 | |
| Medical services | 24738 | 2.801 | 0.293 | 2.245 | 3.881 | |
| Education services | 24738 | 4.447 | 0.300 | 3.158 | 5.383 | |
| Cultural offerings | 24738 | 2.926 | 3.046 | 0.632 | 23.689 | |
| Population diversity | 24738 | 0.085 | 0.070 | 0.000 | 0.455 | |
| Openness length | 24738 | 18.323 | 4.941 | 8 | 25 | |
| Talent | 24738 | 0.068 | 0.050 | 0.001 | 0.326 | |
| R&D investment | 24738 | 0.103 | 0.134 | 0 | 0.980 | |
| Innovation index | 24738 | 1.320 | 2.196 | 0.004 | 18.172 | |
| High-tech index | 24738 | 0.092 | 0.082 | 0.004 | 0.379 | |
| Preferential policy | 24738 | 2.897 | 4.809 | 0 | 30 | |
| Birth place | 24738 | 0.021 | 0.145 | 0 | 1 | |
| Studied-place | 24738 | 0.032 | 0.177 | 0 | 1 | |
| Worked-place | 24738 | 0.015 | 0.122 | 0 | 1 | |
| Gender | 24738 | 0.935 | 0.247 | 0 | 1 | |
| Ln_age | 21452 | 3.834 | 0.153 | 3.296 | 4.357 | 692 |
| Degree | 24521 | 2.579 | 0.587 | 1 | 3 | 791 |
| Ln_timeabroad | 23064 | 2.274 | 0.589 | 0.693 | 4.025 | 744 |
| lifeabroad | 24738 | 0.252 | 0.434 | 0 | 1 | 798 |
| exp_diploma | 23901 | 0.785 | 0.411 | 0 | 1 | 771 |
| exp_enterpise | 24738 | 0.568 | 0.495 | 0 | 1 | 798 |
| exp_startup | 24738 | 0.188 | 0.391 | 0 | 1 | 798 |
| exp_research | 24738 | 0.310 | 0.462 | 0 | 1 | 798 |
| If_NorthAmerica | 24738 | 0.675 | 0.468 | 0 | 1 | 798 |
| If_AsiaOceania | 24738 | 0.209 | 0.407 | 0 | 1 | 798 |
| If_Europe | 24738 | 0.192 | 0.394 | 0 | 1 | 798 |

Note (1): The model takes each case's choice on each alternative as one observation. Since there are 30 provinces, there are 30 observations for each case. The total number of observations is the number of cases multiplied by 30.

Note (2): The numbers of cases are listed in the last column,. There are 798 cases; the variable with missing values will have less than 798 cases.

**Figure 2. Specification of returnee entrepreneurs' decision tree**


Note: The number behind each province shows the number of cases

# 5. Results and Discussion

## 5.1. Influence of the place variables

***Economic factors***

Economic factors are very decisive in the locational choices of returnee entrepreneurs. Economic dynamics, represented by the average increasing rate of employment opportunities, along with market size, were found strongly effective in locational choice behavior. These results prove that returnee entrepreneurs are attracted to return to China by the big market (H1a) and the dynamic economy (H1b).

The hypothesis with lower cost (H1d) is rejected by the evidence. Instead, the effects of costs were found positive (although not always significant), which means returnee entrepreneurs prefer areas with higher cost. This is because other economic conditions are so beneficial that they can compensate for the high cost. Moreover, the cost level is still quite low compared to that in developed countries. Therefore, the entrepreneurs do not need to circumvent high cost regions. Another reason is that high costs indicate a better entrepreneurial environment, including a high level of talent and high consumptive power of the market. However, these correlations are not direct enough to be revealed in the regression results.

***Amenities***

The results show that cultural offerings were unrelated or negatively related to locational choice and do not support H2a. One possible explanation is that returnee entrepreneurs are more focused on businesses and not interested in cultural enjoyments. That's in consistence with the evidence that they are highly concerned with the factors closely related to success, such as market sizes and economic dynamics. Therefore cultural activities may not be among their top priorities. Also, the other explanation might be that they are a highly mobile population and can enjoy cultural amenities at the international level. Looking at the details of the samples, in a very conservative estimate, more than 25% of returnee entrepreneurs still maintain a life abroad (permanent status or nationality in a foreign country, business abroad, family members living abroad etc.). They can access cultural resources in international society, so they appear indifferent to cultural offerings in Chinese provinces. A city or a province with poor cultural offerings would not dampen their enthusiasm to start their venture there.

As to public services like medical and educational services (H2b, H2c), they were found to be a positive influences on locational choice (although only sometimes significant). In fact, returnee entrepreneurs, especially those as good as our samples, enjoy amenities at the international level, which extends from cultural offerings to medical and educational services. The truth that more than a quarter of our samples commute across national borders would largely explain why the level of public services in China does not matter much. However, for the rest who have returned fully along with their family members to China, public services would still affect their locational choices.

***Social connections (and tolerance)***

Social connections were found to have strong positive effect on locational choice. The coefficients for the three types of connections are in the following order: birthplace > work place > study place. This suggests that social connections to a familiar place do attract returnee

entrepreneurs to locate there. The ties to one's birthplace are the most influential factors of the three types, with work place next and college city third.

It is worth noting that when the variables of social connections are included, our model cannot satisfy the IIA assumption. The results of other variables are obtained from a model without social connection variables. The explanation might be that places cannot be properly grouped by social connections. For example, provinces can be categorized into economically developed and undeveloped groups, but they cannot be divided into birthplace or non-birthplace groups for multiple individuals.

The reliance on social connections and the insignificant results of tolerance together forms the strongest results in this paper. It forms a new observation which does not align with Florida's creative class theory, because a society that relies on social networks is the opposite of a tolerant milieu. While creative class in Western society are attracted to tolerant, open, loose-connected places, our research subjects of returnee entrepreneurs does not behave in the same way. Reasons lie in the cultural differences between China and Western society. Compared with the Western world, Asian countries, including China, have much closer social relationships. Western countries have experienced the rise in popularity of artificial networking via the internet, such as Facebook, Twitter, and so on, which might be interpreted as replacing Asian's human connections and resulting in looser social connections. Also, in an emerging economy like China, from the nation to individual citizens, too much focus has been placed on economic growth. Individual idiosyncrasies are usually ignored or sacrificed, and tolerance is not of people's priority. Returnees should also have been affected by this cultural background. They may not have chosen returning to the home country if they do cherish tolerance.

Based on the individual choice behavior perspective, this study tries to fit tolerance into the framework of utility. There are two possible ways how tolerance can affect the utility of a decision maker: as psychological comfort of learning about edged and cool stuff, or as catalyst which increases the probability to meet some random inspiring people. Neither of the above way affects returnee entrepreneurs, who put high priority on business success instead of learning about edged things, and who get to know people helpful for their business through social networks instead of some random ways.

Therefore, we can conclude that people on the employer side of creative class are not attracted to creative milieu in China. Whether the employees would follow the same behavior pattern or not still remains left for further studies.

***Preferential policies***

This paper also tests the hypothesis that preferential policies attract returnee entrepreneurs to locate there. Astonishingly, results show that the answer is no. The coefficient of the index is negative although not significant. The variable describing preferential policies is represented by the number of start-up parks in a specific year. The non-significant results show that the mere construction of a park has little effect. There have been criticisms about government resources not being used effectively and that they are focused wrongly. Many start-up parks are no more than property management agencies. Government funds have been distributed evenly in same small amounts to eligible companies because there is not an effective method to screen the potential of business plans and companies (Wang, 2010).

## 5.2. Relationship between personal attributes and locational choice

Personal characteristics of the returnee entrepreneurs were also found to affect one's locational choices. By testing the effects of personal information, this study has empirically proved that different places tend to attract specific kinds of individuals. The way to observe impact of personal attributes requires comparing with a base, which was decided to be Shanghai in this analysis. All other provinces are compared with Shanghai. Here we draw two groups out to look at the detailed results.

***Comparing Beijing, Guangdong and Shanghai***

First we looked at the three most developed Chinese provinces: Beijing, Guangdong and Shanghai. The results were shown in Table 5 as follows.

**Table 5. Comparison between Beijing, Guangdong and Shanghai**

| Personal Attributes | Comparison results |
|---|---|
| Degree | Guangdong>Shanghai>Beijing |
| Age | Beijing≫ Shanghai>Guangdong |
| Time period being abroad | Shanghai≫ Beijing, Shanghai>Guangdong |
| Having stayed in North America | Shanghai>Beijing, Shanghai≫ Guangdong |
| Having stayed in Asia and Oceania | Guangdong>Shanghai>Beijing |
| Having stayed in Europe | Beijing>Shanghai>Guangdong |
| Experience of foreign diploma | Beijing>Shanghai>Guangdong |
| Experience in enterprises abroad | Shanghai>Beijing, Shanghai≫ Guangdong |
| Experience in research institutes abroad | Beijing>Shanghai, Guangdong>Shanghai |
| Experience of starting up abroad | Beijing>Shanghai, Guangdong>Shanghai |

Note: only the mark "≫" indicates a significant result. The mark ">" indicates a weak tendency, which is not statistically significant.

Beijing, Shanghai, and Guangdong are three of the most developed regions in China, where the connection with international world is quite strong and favored by returnee entrepreneurs. It is necessary to examine them more closely to understand why the numbers of returnee entrepreneurs differ among these three provinces.

The results show that Beijing appears to attract older returnees and those who stayed abroad for shorter periods. These two attributes may indicate more social capital in China. Table 6 shows that among the three provinces, returnee entrepreneurs with social connections in Beijing are more likely to return to Beijing. Higher proportions of people think that connections with Beijing as available resources. As the capital of China, Beijing has the advantage of political authority. People in Bejing can get closer to the country's policy makers and are more sensitive to the latest movements in their industries. Some are even invited to participate in setting standards for new industries. They can also obtain information more quickly if there is policy or financial support from the government. Being close to the political center has become a tacitly understood attraction among Beijing returnee entrepreneurs.

**Table 6. The utilization of social connections with Beijing, Shanghai, and Guangdong**

(unit: persons)

| Province | Samples | birth place(bp) | | | worked place(wp) | | | studied place(sp) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | bp | bp&rd[1] | (bp&rd)/bp% | wp | wp&rd | (wp&rd)/wp% | sp | sp&rd | (sp&rd)/sp% |
| Beijing | 269 | 63 | 51 | **81.0** | 118 | 80 | **67.8** | 259 | 142 | **54.8** |
| Shanghai | 144 | 31 | 23 | **74.2** | 51 | 26 | **51.0** | 74 | 38 | **51.4** |
| Guangdong | 42 | 12 | 4 | **33.3** | 28 | 6 | **21.4** | 25 | 8 | **32.0** |

Note[1]: "rd"=the number of samples choosing the province in the first row as returned destination;

"bp"=the number of samples who was born in the province in the first row;

"wp"=the number of samples who had worked in the province in the first row

"sp"=the number of samples who had studied in universities in the province in the first row;

"bp&rd"= the number of samples who had the province in the first row as both birthplace and returned destination. "wp&rd" and "sp&rd" follows the same naming principle.

Table 6 shows that returnee entrepreneurs tend to use their social relationships in Beijing if they have the resources. This does not mean that Beijing is not attractive to people without connections there. Table 7 shows that of all Beijing returnee entrepreneurs, less than 20% were born there and less than 30% had worked there previously. However, over half had studied there. If we look at the rest who had no study experience in Beijing, only 13% have social connections (9.3% had worked in Beijing; 4.8% were born there; 1.1% were born there and also had worked there). Only about 35% of returnee in Beijing are newcomers to the city and have no connections in Beijing. These data show that most returnee entrepreneurs attracted to Beijing had studied there previously.

The share of people with social connections is lower in Shanghai and Guangdong (see Table 7). Comparatively, returnee entrepreneurs in these two provinces rely less on social relationships than those in Beijing.

**Table 7. The share of returnee entrepreneurs with social connections (unit: persons)**

| Province | Samples | birth place(bp) | | worked place(wp) | | studied place(sp) | |
|---|---|---|---|---|---|---|---|
| | | bp&rd[1] | (bp&rd)/samples % | wp&rd | (wp&rd)/samples % | sp&rd | (sp&rd)/samples % |
| Beijing | 269 | 51 | **19.0** | 80 | **29.7** | 142 | **52.8** |
| Shanghai | 144 | 23 | **16.0** | 26 | **18.1** | 38 | **26.4** |
| Guangdong | 42 | 4 | **9.5** | 6 | **14.3** | 8 | **19.0** |

Note[1]: rd=the number of samples choosing the province in the first row as returned destination

Compared with Beijing, fewer Shanghai returnees have social connections there (see Table 7), although social ties in Shanghai are still largely valued (see Table 6). Regarding other personal information, Shanghai clearly attracts returnee returning from North America and those with work experience in enterprises abroad.

As China's financial center where the biggest stock exchange board in mainland China located (the other one is in Shenzhen), Shanghai has extended its influence to the international financial

and business world. Thus, it has attracted many multinational companies to locate their headquarters there. These internationally active companies have hired many returnee employees. That is why, compared with Beijing, Shanghai has a similar number of general returnee but much fewer returnee entrepreneurs. However, these companies also cultivate a market economy environment which is quite similar to that in the Western world. Therefore, returnee entrepreneurs, especially those back from the US where the spirit of entrepreneurship is vigorous and active, find a similar environment in Shanghai, such as effective management, less reliance on kinsmanship, more reliance on ability, and a more active capital market (i.e., more venture capital).

Among the three provinces, Guangdong has the most open business environment and the lowest dependence on social connections. As the entrance to the more open economy Hong Kong, Guangdong was the first mainland province to be influenced by the capitalist market. Many economic system reforms were initiated and tested in Guangdong before expanding to other provinces. For example, Guangdong was the first province to practice market supply instead of planned supply. Thus, Guangdong has cultivated a vibrant market economy with the least government intervention. As a result of this pursuit of "small government" administration, Guangdong has not offer systematic and intensive support policies as do other provinces. Consequently, returnee entrepreneurs have not favored Guangdong. Furthermore, although the active market economy in Guangdong has bred a large number of private enterprises, many of them highly capable of imitating products in the market. In reality, some even do not hesitate to do so. The requirements of intellectual property protection are not stringent enough in Guangdong and thus prevent high-tech entrepreneurs from locating there. In addition, compared with Beijing and Shanghai, Guangdong has a weaker foundation of tertiary education. The universities are not as good and they are less numerous than in the other two cities. Thus, Guangdong may have sent fewer students abroad because former generations of students were restricted by going abroad at their own expense. At that time, only good universities have the networks and resources to send students abroad and there are less good universities in Guangdong, compared with Beijing and Shanghai. This fact has largely hampered the attraction of returnee entrepreneurs in Guangdong province heretofore.

The comparison between three most developed coastal provinces highlights Beijing's attractiveness as a political center and higher-education center, with which the social connections are extremely valuable. Other provinces can hardly compete with it. This implies that government favorable treatments including investment and information need to be distributed more fairly.

***Comparing inland provinces and Shanghai***

As demonstrated in the nested tree structure in Figure 2, inland provinces were divided into two nests, one is relatively popular (denoted by "inland_a") and the other is unpopular (denoted by "inland_b"). The results of comparing them with Shanghai were as follows.

The "inland_a" provinces were found unattractive to returnee entrepreneurs with higher degrees, longer experience abroad, working experience in foreign enterprises, and those returned from North America. The "inland_b" provinces were also found unattractive, especially to those who had resided in North America and those who had work experience abroad. There are not much significant results showing the kinds of returnee entrepreneurs that are more likely to go to inland provinces. These evidences suggest that inland provinces have little advantage over Shanghai.

The only significant result in favor of inland provinces is that entrepreneurs with higher degrees

are more likely to go to "inland_a" provinces than Shanghai. Inland provinces still place a high emphasis on high degrees, especially diplomas obtained abroad, while in Shanghai, ability is important. Hence, returnees with work experience in enterprises abroad find better career opportunities in Shanghai. Although degree works as an easy assessment of people's ability, in the long term, inland local governments still need to screen potential entrepreneurs on the profitability of their business plans and managerial skills instead of on high educational qualifications.

**Table 8. Comparison between inland provinces and Shanghai**

| Personal Attributes | Comparision results |
|---|---|
| Degree | "inland_a"≫ Shanghai, "inland_b">Shanghai |
| Age | Shanghai>"inland_a", Shanghai>"inland_b" |
| Time period being abroad | Shanghai≫ "inland_a", Shanghai>"inland_b" |
| Having stayed in North America | Shanghai≫ "inland_a", Shanghai≫ "inland_b" |
| Having stayed in Asia and Oceania | "inland_a">Shanghai>"inland_b" |
| Having stayed in Europe | "inland_a">Shanghai>"inland_b" |
| Experience of foreign diploma | "inland_a">Shanghai>"inland_b" |
| Experience in enterprises abroad | Shanghai≫ "inland_a", Shanghai≫ "inland_b" |
| Experience in research institutes abroad | "inland_b">Shanghai>"inland_a" |
| Experience of starting up abroad | Shanghai>"inland_a", Shanghai>"inland_b" |

Note: only the mark "≫" indicates a significant relationship. The mark ">" indicates a weak tendency, which is not statistically significant.

**Table 9. Regression results**

| Place variables | Personal variables included | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ln_age, Degree, Ln_timeabroad | | | | | | If_NorthAmerica, If_AsiaOceania, If_Europe | | | | | | exp_diploma, exp_enterprise, exp_startup, exp_research | | | | | |
| Population diversity | - | - | | | | | - | - | | | | | - | - | | | | |
| Openness length | - | | | | | | -(***) | | | | | | -(***) | | | | | |
| Talent | | | + | | | | | | +(**) | | | | | | +(*) | | | |
| R&D investment | | | | +(**) | | | | | | +(***) | | | | | | +(***) | | |
| Innovation index | | | | - | | | | | | -(*) | | | | | | - | | |
| High-tech index | | | | | +(***) | | | | | | +(**) | | | | | | +(**) | |
| Preferential policy | | | | | | - | | | | | | -(**) | | | | | | -(**) |
| Cost | + | +(*) | + | +(*) | + | +(**) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(**) | +(***) | +(**) | +(***) |
| Economic dynamics | +(**) | +(***) | +(**) | + | +(**) | +(***) | +(**) | +(***) | +(**) | + | +(***) | +(***) | +(**) | +(***) | +(**) | + | +(***) | +(***) |
| Market size | +(*) | +(*) | + | +(**) | +(**) | +(**) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) |
| Infrastructure | - | - | - | - | - | + | +(*) | +(*) | + | + | + | + | + | + | + | + | + | + |
| Cultural offerings | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Medical services | +(*) | + | + | +(*) | + | +(*) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) | +(***) |
| Educational services | + | + | + | +(*) | +(***) | + | + | +(*) | +(**) | +(**) | +(*) | + | + | + | +(*) | + | +(*) | + |
| IIA assumption satisfied? | | | | | | | | no | no | no | no | no | | no | no | no | no | no |

*** 0.01significance,**0.05significande,*0.1significance.

The collinearity is no larger than 0.7 and is considered acceptable.

**Table 10-1. Collinearity diagnosis (1)**

| | Pop ~di vers ity | Ope nne ss~ | Tal ent | R& D~t | Inn ovat ion | Hig h-te ch | Pref eren tial ~ | Cos t | Eco ~dy nam ics | Mar ket size | Infr astr uctu re | Cult ural ~ | Me dica l~ | Edu cati on~ | Birt hpla ce | Stu died ~ | Wo rke d~ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Population Diversity | 1.000 | | | | | | | | | | | | | | | | |
| Openness_length | 0.244 | 1.000 | | | | | | | | | | | | | | | |
| Talent | 0.762 | 0.137 | 1.000 | | | | | | | | | | | | | | |
| R&D_investment | 0.433 | -0.053 | 0.402 | 1.000 | | | | | | | | | | | | | |
| Innovation index | 0.743 | 0.264 | 0.742 | 0.392 | 1.000 | | | | | | | | | | | | |
| High-tech index | 0.659 | 0.186 | 0.529 | 0.707 | 0.572 | 1.000 | | | | | | | | | | | |
| Preferential policy | 0.551 | 0.334 | 0.537 | 0.310 | 0.670 | 0.447 | 1.000 | | | | | | | | | | |
| Cost | 0.466 | 0.045 | 0.570 | 0.215 | 0.572 | 0.347 | 0.478 | 1.000 | | | | | | | | | |
| Economic dynamics | 0.384 | -0.039 | 0.412 | 0.241 | 0.470 | 0.270 | 0.422 | 0.464 | 1.000 | | | | | | | | |
| Market size | 0.364 | 0.647 | 0.309 | 0.252 | 0.447 | 0.221 | 0.549 | 0.434 | 0.165 | 1.000 | | | | | | | |
| Infrastructure | 0.500 | 0.398 | 0.547 | 0.263 | 0.699 | 0.420 | 0.583 | 0.563 | 0.335 | 0.606 | 1.000 | | | | | | |
| Cultural offerings | -0.131 | -0.450 | -0.121 | -0.166 | -0.085 | 0.028 | -0.170 | 0.154 | 0.107 | -0.505 | -0.245 | 1.000 | | | | | |
| Medical services | 0.490 | 0.007 | 0.673 | 0.181 | 0.432 | 0.305 | 0.223 | 0.193 | 0.039 | -0.042 | 0.164 | 0.142 | 1.000 | | | | |
| Education services | -0.134 | -0.133 | -0.083 | -0.167 | -0.210 | -0.265 | -0.209 | -0.059 | -0.090 | -0.188 | -0.045 | 0.069 | -0.007 | 1.000 | | | |
| Birthplace | 0.065 | 0.038 | 0.058 | 0.057 | 0.054 | 0.061 | 0.080 | 0.013 | 0.016 | 0.075 | 0.050 | -0.042 | 0.043 | -0.036 | 1.000 | | |
| Studied-place | 0.224 | 0.035 | 0.253 | 0.173 | 0.190 | 0.201 | 0.183 | 0.089 | 0.106 | 0.087 | 0.126 | -0.047 | 0.196 | -0.062 | 0.345 | 1.000 | |
| Worked-place | 0.175 | 0.038 | 0.187 | 0.133 | 0.159 | 0.160 | 0.120 | 0.072 | 0.089 | 0.064 | 0.107 | -0.023 | 0.140 | -0.043 | 0.254 | 0.376 | 1.000 |

**Table 10-2. Collinearity diagnosis (2)**

| | Ln_age | Ln_time abroad | Degree | Life abroad | exp_diplomoma | exp_entreprise | exp_startup | exp_research | If_North America | If_Asia Oceania | If_Europo |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Ln_age | 1.000 | | | | | | | | | | |
| Ln_timeabroad | 0.357 | 1.000 | | | | | | | | | |
| Degree | 0.290 | 0.306 | 1.000 | | | | | | | | |
| Life abroad | 0.076 | 0.214 | 0.070 | 1.000 | | | | | | | |
| exp_diplomoma | -0.040 | 0.335 | 0.191 | 0.005 | 1.000 | | | | | | |
| exp_entreprise | 0.004 | 0.299 | -0.034 | 0.004 | 0.068 | 1.000 | | | | | |
| exp_startup | 0.027 | 0.208 | 0.002 | 0.244 | 0.099 | -0.070 | 1.000 | | | | |
| exp_research | 0.181 | 0.152 | 0.359 | 0.058 | -0.133 | -0.321 | -0.142 | 1.000 | | | |
| If_NorthAmerica | 0.051 | 0.256 | 0.052 | 0.146 | 0.014 | 0.143 | 0.128 | 0.066 | 1.000 | | |
| If_AsiaOceania | 0.090 | 0.001 | -0.037 | -0.007 | -0.046 | -0.026 | -0.058 | -0.022 | -0.454 | 1.000 | |
| If_Europe | -0.064 | -0.149 | 0.061 | -0.069 | 0.035 | -0.090 | -0.082 | -0.004 | -0.484 | -0.162 | 1.000 |

# 6. Conclusions

Returnee entrepreneurs have the following characteristics: mainly males in their 40s and early 50s with an average of 46.8; high degrees of education; an average of 10.3 years of experience abroad. Their distribution inside the country is extremely uneven. Similar to the distribution pattern of general returnee, returnee entrepreneurs are concentrated in coastal developed provinces. Beijing and Shanghai have the most returnee entrepreneurs and Beijing largely exceeds Shanghai.

The locational choices of returnee entrepreneurs are largely affected by economic factors related to the success of enterprises, such as market size and economic dynamics. They are also attracted to high technology power, to be specific, by R&D investment and high-tech industry agglomeration, rather than the technological output.

Social connections also have a strong effect to attract returnee entrepreneurs. Along with the evidence that tolerance indices measured of population diversity and length of open up are not influential to locational choice behavior, a tentative conclusion can be made that entrepreneurs does not pursue a creative milieu in China. This conclusion is important to guide the further studies on creative class, indicating the need to distinguish the employers from the employees of creative class. Whether other members of creative class react in the same way still needs further test.

Besides the above results to guide incentive policies, the results of personal attributes can also enlighten the policy makers. Inland provinces are not favored by most returnee entrepreneurs. The only obvious results are the tendency to attract returnees with high degrees or diplomas obtained overseas. This might suggest that inland provinces need to reduce the emphasis on higher degrees and shift the focus to actual profitability of business plans. This suggestion presents a challenge to the government's ability to identify potential entrepreneurs.

## References


Acs, Z. J. and Armington, C. (2006). *Entrepreneurship, geography, and American economic growth*. New York: Cambridge University Press.

Audretsch, D. B., Keilbach, M. C. and Lehmann, E. E. (2006). *Entrepreneurship and economic growth*. New York: Oxford University Press.

Audretsch, D. B., Lehmann, E. E. and Warning, S. (2005). University spillovers and new firm location. *Research Policy*, Vol.34, No.7: pp.1113-1122.

Bartik, T. J. (1985). Business location decisions in the United States: Estimates of the effects of unionization, taxes, and other characteristics of states. *Journal of Business and Economic Statistics*, Vol.3, No.1: pp.14-22.

Baumol, W. (1968). Entrepreneurship in economic theory. *The American Economic Review*, Vol.58, No.2: pp.64-71.

Benson-Rea, M. and Rawlinson, S. (2003). Highly skilled and business migrants: Information processes and settlement outcomes. *International Migration*, Vol.41, No.2: pp.59-79.

Boschma, R. A. and Fritsch, M. (2009). Creative class and regional growth: empirical evidence from seven European countries. *Economic Geography*, Vol.85, No.4: pp.391-423.

Buettner, T. and Janeba, E. (2009). City competition for the creative class. *Working Paper, Ifo* Institute for Economic Research, mimeo.

Carlton, D. W. (1983). The location and employment choices of new firms: an econometric model with discrete and continuous endogenous variables. *The Review of Economics and Statistics*, Vol.65, No.3: pp.440-449.

Cheng, S. (2007). Structure of firm location choices: an examination of Japanese greenfield investment in China. *Asian Economic Journal*, Vol.21, No.1: pp.47-73.

Chinese Service Centre for Scholarly Exchange (CSCSE) of MOE, Torch High Technology Industry Development Centre of MOST and Technological Service center of Beijing Overseas Talents Center (BOTC) (various year). *Returned Chinese scholars pioneer yearbook*. Beijing: China Financial and Economic Publishing House.[Translated from Chinese, 教育部留学服务中心,科技部火炬高技术产业开发中心,北京海外学人科技服务中心编(各年份).「中国留学人员创业年鉴」, 北京：中国财政经济出版社]

Coughlin, C. C., Terza, J. V. and Arromdee, V. (1991). State characteristics and the location of foreign direct investment within the United States. *The Review of Economics and Statistics*, Vol. 73, No.4: pp.675-683.

Dai, Eerbiao (Nov. 2006). *New Migration and Economic Growth in China: From Brain Drain to Brain Circulation*. Kitakyushu, Japan: International Centre for the Study of East Asian Development. [Translated from Japanese **戴二彪（2006 年 11 月）. 新移民と中国の経済発展―頭脳流出から頭脳循環へ. 日本北九州，国際東アジア研究センター.**]

Dai, Ou and Liu, Xiaohui (2009). Returnee entrepreneurs and firm performance in Chinese high-technology industries. *International Business Review*, Vol.18, No.4: pp.373-386.

Dahl, M. S. and Sorenson, O. (2009). The embedded entrepreneur. *European Management Review*, Vol.6, No.3: pp.172-181.

Daly, A. (1978). Improved multiple choice models. In Hensher, D. and Dalvi, M. (eds.) *Determinants of travel choice*. Sussex: Saxion House.

Figueiredo, O., Guimarães, P. and Woodward, D. (2002). Home-field advantage: location decisions of Portuguese entrepreneurs. *Journal of Urban Economics*, Vol.52, No.2:pp. 341-361.

Findlay, A. and R. Rogerson, (1993). Migration, places and quality of life: voting with their feet, in: Champion, A. (Ed.) *Population Matters*, pp. 33-49. London: Paul Chapman.

Florida, R. L. (2002). *The rise of the creative class*. New York, NY: Basic Books.

Florida, R. L. (2004). *The rise of the creative class (Revised paperback)*. New York, NY: Basic Books.

Florida, R. L. (2005). *Cities and the creative class*. New York: Routledge.

Florida, R. L. and Gates, G. (2003). Technology and tolerance: the importance of diversity to high-technology growth. In: Clark, T. N. (ed.) *The City as an Entertainment Machine (Research in Urban Policy, Volume 9)*, Emerald Group Publishing Limited, pp.199-219.

Florida, R. L., Mallander C. and Stolarick, K. (2008). Inside the black box of regional development: human capital, the creative class and tolerance. *Journal of Economic Geography*, Vol.8, No.5: pp.615-649.

Forinash C. and Koppelman, F. (1993). Application and interpretation of nested logit models of intercity mode choice. *Transportation Research Record*, Vol.1413: pp.98-106.

Fritsch, M. (2007). The geography and the effect of creative people in Germany. *Jena Economic Research Papers*, No.2007-01: pp.1-32.

Glaeser, E. L. and Kerr, W. R. (2009). Local Industrial Conditions and Entrepreneurship: How Much of the Spatial Distribution Can We Explain? *Journal of Economics and Management Strategy*, Vol.18, No.3: pp.623-663.

Glaeser, E. L., Kolko, J. and Saiz, A. (2001). Consumer city. *Journal of Economic Geography*, Vol.1, No.1: pp.27-50.

Glaeser, E. L., Scheinkman J. A. and Shleifer, A. (1995). Economic growth in a cross-section of cities. *Journal of Monetary Economics*, Vol.36, No.1: pp.117-144.

Guimaraes, P., Figueiredo, O. and Woodward, D. (2000). Agglomeration and the location of foreign direct investment in Portugal. *Journal of Urban Economics*, Vol.47, No.1: pp.115-135.

Hansen, H. K. and Niedomysl, T. (2009). Migration of the creative class: evidence from Sweden. *Journal of Economic Geography*, Vol.9, No.2: pp.191-206.

Harris, C. D. (1954). The market as a factor in the localization of industry in the United States.

*Annals of the Association of American Geographers*, Vol.44, No.4: pp.314-348.

Hart, D. (2003). Entrepreneurship policy: what it is and where it came from. In D. Hart (Ed.), *The emergence of entrepreneurship policy. governance, start-ups and growth in the US knowledge economy* (pp. 3-19). Cambridge: Cambridge University Press.

Hausman, J. A. and McFadden, D. L. (1984). Specification tests for the multinomial logit model. *Econometrica*, Vol.52, No.5: pp.1219-1240.

Hayter, R. (1997). *The dynamics of industrial location: the factory, the firm, and the production system*. New York: Wiley.

Henscher, D. A., Rose, J. M. and Greene, W. H. (2005). *Applied choice analysis: a primer*. New York: Cambridge University Press.

Inglehart, R. and Norris, P. (2003). *Rising tide*. New York, Cambridge: Cambridge University Press.

Inglehart, R. and Weltel, C. (2005). *Modernization, cultural change and democracy*. New York, Cambridge: Cambridge University Press.

Jacobs, J. (1961). *The death and life of great American cities*. New York: Random House.

Kolympiris, C., Kalaitzandonakes, N. and Miller, D. J. (2011). Spatial collocation and venture capital in the U.S. biotechnology industry. *Research Policy*, Vol.40, No.9: pp.1188-1199.

Lee, S. Y., Florida, R. and Acs, Z. J. (2004). Creativity and entrepreneurship: A regional analysis of new firm formation. *Regional Studies*, Vol.38, No.8: pp.879-91.

Li, Tairan and Florida, R. (2006). *Talent, technological innovation, and economic growth in China*. Retrieved on July 3, 2007.
Available at: http://creativeclass.com/rfcgdb/articles/China%20report.pdf.

Lucas, R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics*, Vol. 22, No.1: pp.3-42.

Malecki, E. J. (2004). Jockeying for position: what it means and why it matters to regional development policy when places compete. *Regional Studies*, Vol.38, No.9: pp.1101-1120.

Manski, C. F. (1977). The structure of random utility models. *Theory and Decision*, Vol.8, No.3: pp.229-254.

McCann, E. J. (2004). "Best places": interurban competition, quality of life and popular media discourse. *Urban Studies*, Vol.41, No.10: pp.1909-1929.

McFadden, D. (1973). Conditional logit analysis of qualitative choice behavior. In: Zarembka, P. (ed.) *Frontier in economitrics*. New York: Academic Press.

McFadden, D. (1976). Quantal choice analysis: a survey. *Annals of Economics and Social Measurement*, Vol.5, No.4: pp.363-390.

McFadden, D. (1978). Modeling the choice of residential location. In: Karlqvist, A., Lundqvist, L., Snichars, F. and Weibull, J. (eds.) *Spatial interaction theory and planning models*, Amsterdam: North-Holland, pp.105-142.

Mellander, C. and Florida, R. (2006). *Human capital or the creative class – Explaining regional development in Sweden*. KTH/CESIS Working Paper Series in Economics and Institutions of Innovation. Stockholm: KTH Centre of Excellence for Science and Innovation Studies.

National Bureau of Statistics (NBS) (various year). *Statistical yearbook of China*. Beijing: China Statistics Press. [Translated from Chinese 国家统计局(各年份).*中国统计年鉴*,北京:中国统计出版社.]

NBS, National Development and Reform Commission of China (NDRC) and Ministry of Science and Technology of China (MOST) (various year). *China statististical yearbook on high technology industry* Beijing: China Statistics Press. [Translated from Chinese 国家统计局,国家发展和改革委员会,科学技术部编(各年份).*中国高科技产业统计年鉴*.北京:中国统计出版社.]

Niedomysl, T. (2010). Towards a conceptual framework of place attractiveness: a migration perspective. *Geograpiska Annasler: Series B, Human Geography*, Vol.92: pp.97-109.

Qian, Haifeng (2010). Talent, creativity and regional economic performance: The case of China. *The Annals of Regional Science*, Vol.45, No.1: pp.133-156.

Powdthavee, N. (2008). Putting a price tag on friends, relatives, and neighbours: using surveys of life satisfaction to value social relationships. J*ournal of Socio-Economics*, Vol.37, No.4: pp.1459-1480.

Rogerson, R. J. (1999). Quality of life and city competitiveness. *Urban Studies*, Vol.36, No.5-6: pp.969-985.

Romer, P. M. (1986). Increasing returns and long-run growth. *Journal of Political Economy*, Vol.94, No.5: pp.1002-1037.

Romer, P. M. (1990). Endogenous technological change. *Journal of Political Economy*, Vol.98, No.5: pp.S71-S102.

Saxenian, A. (2001). Silicon Valley's new immigrant entrepreneurs. *Working Paper No.15*. San Diego, Center for Comparative Immigration Studies, University of California.

Sjaastad, L. A. (1962). The costs and returns of human migration. *The Journal of Political Economy*, Vol.70, No.5: pp.80-93.

Solow, R. M. (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economics*, Vol.70, No.1: pp.65-94.

Tiebout, C. (1956). A pure theory of local expenditures. *Journal of Political Economy*, Vol.64: pp.416-425.

Train, K. E. (1986). *Qualitative choice analysis*. Cambridge, MA: MIT Press.

Train, K. E., McFadden, D. and Ben-Akiva, M. (1987). The demand for local telephone service: a fully discrete model of residential calling patterns and service choice. *Rand Journal of Economics*, Vol.18, No.1: pp.109-123.

Ullman E. L. (1954). Amenities as a factor in regional growth. *Geographical Review*, Vol.44, No.1:

pp.119-132.

Wang, Huiyao (2005). *Pioneering in China: 50 haigui entrepreneur cases*. Beijing: Central Compilation and Translation Press. [Translated from Chinese 王耀辉(2005).*创业中国:海归精英 50 人*.北京:中央编译出版社.]

Wang, Huiyao (2010). *GEM promotes the SEMs' development*. Available at: http://www.ccg.org.cn/ccg/2010/0705/408.html.［Translated from Chinese 王耀辉(2010)*创业板有助中小型企业的发展*.来自中国与全球化研究中心网站：http://www.ccg.org.cn/ccg/2010/0705/408.html］

Wennekers, S. and Thurik, R. (1999). Linking entrepreneurship and economic growth, *Small Business Economics*, Vol.13, No.1: pp.27-55.

Williams, H. (1977). On the formation of travel demand models and economic evaluation measures of user benefits. *Economics and Planning A*, Vol.9, No.3: pp.285-344.

Wright, M., Liu, X., Buck, T. and Filatotchev, I. (2008). Returnee Entrepreneurs, Science Park Location Choice and Performance: An Analysis of High-Technology SMEs in China. *Entrepreneurship: Theory and Practice*, Vol.32, No.1: pp.131-155.

Zhang, Wei, and Fan, Wangbang (2006). Factor analysis on the formation regional differences in human capital. *Journal of Xi'an University of Post and Telecommunications*, Vol.11, No.6: pp. 36-82. [Translated from Chinese 张薇,范王榜(2006)人力资本区域差异形成因素分析.西安邮电学院学报,Vol.11, No.6: pp. 36-82.]

# Appendix

**Table 11. Information source or estimation method of *haigui* in 2008 (by province)**

| Province | $H_{2008}$ | Estimation method or source |
|---|---|---|
| Beijing | 80000 | From Returned Chinese Scholars Pioneer Yearbook (2009) |
| Tianjin | 5650*** | = $H_{2008Shanghai}$* ($HE_{2003Tianjin}$/ $HE_{2003Shanghai}$) |
| Hebei | 3075** | = $H_{2003Hebei}$*growth_rate_2008_to_2003 |
| Shanxi | 4000 | From Returned Chinese Scholars Pioneer Yearbook (2009) |
| Inner Mongolia | 2729** | = $H_{2003InnerMongolia}$*growth_rate_2008_to_2003 |
| Liaoning | 24000 | From Returned Chinese Scholars Pioneer Yearbook (2009) |
| Jilin | 3439*** | = $H_{2008Shanghai}$* ($HE_{2003Jilin}$/ $HE_{2003Shanghai}$) |
| Heilongjiang | 2391*** | = $H_{2008Shanghai}$* ($HE_{2003Heilongjiang}$/ $HE_{2003Shanghai}$) |
| Shanghai | 75000 | From Returned Chinese Scholars Pioneer Yearbook (2009) |
| Jiangsu | 33690* | = $H_{2007Jiangsu}$*growth_rate_2008_to_2007 |
| Zhejiang | 9646*** | = $H_{2008Shanghai}$* ($HE_{2003Zhejiang}$/ $HE_{2003Shanghai}$) |
| Anhui | 4000 | From Returned Chinese Scholars Pioneer Yearbook (2009) |
| Fujian | 8200** | = $H_{2003Fujian}$*growth_rate_2008_to_2003 |
| Jiangxi | 508*** | = $H_{2008Shanghai}$* ($HE_{2003Jiangxi}$/ $HE_{2003Shanghai}$) |
| Shandong | 8984* | = $H_{2007Shandong}$*growth_rate_2008_to_2007 |
| Henan | 1556*** | = $H_{2008Shanghai}$* ($HE_{2003Henan}$/ $HE_{2003Shanghai}$) |
| Hubei | 5404*** | = $H_{2008Shanghai}$* ($HE_{2003Hubei}$/ $HE_{2003Shanghai}$) |
| Hunan | 8200** | = $H_{2003Hunan}$*growth_rate_2008_to_2003 |
| Guangdong | 22460* | = $H_{2007Guangdong}$*growth_rate_2008_to_2007 |
| Guangxi | 1966*** | = $H_{2008Shanghai}$* ($HE_{2003Guangxi}$/ $HE_{2003Shanghai}$) |
| Hainan | 387 | From Returned Chinese Scholars Pioneer Yearbook (2009) |
| Chongqing | 3369 | From Returned Chinese Scholars Pioneer Yearbook (2009) |
| Sichuan | 5330** | = $H_{2003Sichuan}$*growth_rate_2008_to_2003 |
| Guizhou | 200 | From Returned Chinese Scholars Pioneer Yearbook (2009) |
| Yunnan | 1049*** | = $H_{2008Shanghai}$* ($HE_{2003Yunnan}$/ $HE_{2003Shanghai}$) |
| Tibet | N/A | |
| Shaanxi | 6387*** | = $H_{2008Shanghai}$* ($HE_{2003Shaanxi}$/ $HE_{2003Shanghai}$) |
| Gansu | 2050** | = $H_{2003Gansu}$*growth_rate_2008_to_2003 |
| Qinghai | 200 | From Returned Chinese Scholars Pioneer Yearbook (2009) |
| Ningxia | 176 | From Returned Chinese Scholars Pioneer Yearbook (2009) |
| Xinjiang | 3690** | = $H_{2003Xinjiang}$*growth_rate_2008_to_2003 |

Source: 2003 data is from the Exhibition of Chinese Returnees' Entrepreneurship Achievements (held at Beijing in 2004, by the PDC, MOP, MOE); data for 2007, 2008 are from Returned Chinese Scholars Pioneer Yearbook (2008, 2009).

Note (1): [n] represents data officially published data in major cities of the province.

Note (2): The estimation is done based on the following principles. The number in the latest year is of higher priority to be chosen as estimation base. Specifically, data in 2008 were firstly adopted, if it's not available, then estimation from 2007 will be used; for provinces still lack of data, estimation are made

based on data in 2003.

1) The numbers with superscript * are estimated from the published data of 2007. It is already known that the growth rates of returnees in 2008 comparing to 2007 are as follows: Beijing = 1.103, Shanghai = 1.143, China (national wide) = 1.123. Then, the average 1.123 is used to calculate
2) The numbers with superscript ** are estimated from the published data of 2003. It is already known that the growth rates of returnees in 2008 comparing to 2003 are as follows: average of provinces (with data available in both year) = 1.75, China (national wide) = 2.35. The mean value 2.05 is set as the growth value for the estimation.

   (Beside, the number of Sichuan province is actually data in Chengdu city.)

   (It is worth noting that Zhejiang's returnee number is 6150 after the 2 step's calculation, and turns out to be too low (especially comparing to its neighboring province Jiangsu). Thus the third step's result is adopted for Zhejiang provinces.)
3) After step 1) and 2), there are some provinces lacking of data. The third step is to estimate the numbers for them according to their proportion to Beijing and Shanghai, using entrepreneur data in 2003. It is found out that these results are usually underestimated, comparing to provinces with data already known. So the relatively higher number (proportional to Shanghai's data) is adopted to complete the final dataset. The result numbers are noted with superscript ***.

Guizhou's data is calculated by none of the previous 3 ways. According to unofficial data source (http://www.gyrc.com.cn/news/detail.asp?id=2675), there are about 200 returnees in Guizhou and this number is adopted. Tibet's data is also missing after the aforementioned 3 steps were done. Since *haigui001* database does not include returnees who currently reside there either, it reflects the fact that Tibet is rarely chosen by the *haigui*. Thus, case database will not contain cases in Tibet and it is dropped from the alternative set.

**Table 12. Information source or estimation method of returnee entrepreneurs in 2008**

| Province | $HE_{2008}$ | Estimation method or source |
|---|---|---|
| Beijing | 13443 | From Returned Chinese Scholars Pioneer Yearbook (2009) |
| Tianjin | 800 | $=HE_{2003Tianjin}*H_{2008Tianjin}/H_{2003Tianjin}$ |
| Hebei | 142 | $=HE_{2003Hebei}*H_{2008Hebei}/H_{2003Hebei}$ |
| Shanxi | 200 | 170=$H_{2007}$ in Taiyuan City;<br>233= $HE_{2003Shanxi}*H_{2009Shanxi}/H_{2003Shanxi;}$<br>200=$HC_{2009Shanxi}*( HE_{2003\ China} / HC_{2003\ China})$<br><$HE_{2008Shanxi}$ is estimated to be 200 - the relatively smaller data estimated for year 2009.> |
| InnerMongolia | 201 | = $HE_{2007IM}$ + ($HE_{2010\ IM}$- $HE_{2007IM}$)/(2010-2007) |
| Liaoning | 2863 | $=HC_{2008Liaoning}*( HE_{2003\ China} / HC_{2003\ China})$ |
| Jilin | 565 | <proportional to Beijing><br>= ( $HE_{2003Jilin}$/ $HE_{2003Jilin}$) * $HE_{2008Beijing}$ |
| Heilongjiang | 393 | <proportional to Beijing><br>= ( $HE_{2003Heilongjiang}$/ $HE_{2003Heilongjiang}$) * $HE_{2008Beijing}$ |
| Shanghai | 7158 | $=HC_{2008Shjanghai}*( HE_{2003\ China} / HC_{2003\ China})$ |
| Jiangsu | 1800 | From http://news.eastday.com/m/20080703/u1a3691486.html |
| Zhejiang | 1595 | $=HC_{2008Zhejiang}*( HE_{2003\ China} / HC_{2003\ China})$ |
| Anhui | 547 | $=HC_{2008Anhui}*( HE_{2003China}/ HC_{2003\ China})$<br><Underestimated, because *HC* is limited to companies in science parks.> |
| Fujian | 1613 | $=HC_{2008Xiamen}*( HE_{2003China}/ HC_{2003China})$<br><Underestimated, because *HC* is limited to companies in Xiamen. > |
| Jiangxi | 135 | = $HE_{2007Jiangxi}*H_{2008China}/H_{2007China}$ |
| Shandong | 1115 | 1076= $HE_{2008Shandong}*H_{2008China}/H_{2007China}$<br>1115=$HC_{2007Shandong}*( HE_{2003China}/ HC_{2003China})$<br><$HE_{2008Shandong}$ is estimated to be 1115. > |
| Henan | 255 | <proportional to Beijing><br>= ( $HE_{2003Henan}$/ $HE_{2003Jilin}$) * $HE_{2008Beijing}$ |
| Hubei | 1100 | From http://www.hbstd.gov.cn/html/2011_5_19_15_19_47_857.htm |
| Hunan | 322 | = $HE_{2003Hunan}*H_{2008Hunan}/H_{2003Hunan}$ |
| Guangdong | 2079 | = $HE_{2003Guangdong}*H_{2008Guangdong}/H_{2003Guangdong}$ |
| Guangxi | 89 | 89 = $HE_{2008Guilin}$+ $HE_{2008Nanning}$<br>From Returned Chinese Scholars Pioneer Yearbook (2009)<br><Underestimated> |
| Hainan | 35 | From Returned Chinese Scholars Pioneer Yearbook (2009) |
| Chongqing | 90 | From http://www.qalex.com/a/2009/68919-1.htm |
| Sichuan | 463 | = $HE_{2003Sichuan}*H_{2008Sichuan}/H_{2003Sichuan}$ |
| Guizhou | N/A | |
| Yunnan | 148 | $=HC_{2008Yunnan}*( HE_{2003China}/ HC_{2003China})$ |
| Tibet | N/A | |
| Shaanxi | 2000 | From Returned Chinese Scholars Pioneer Yearbook (2009)<br><Underestimated. The data only includes Xi'an.> |
| Gansu | 77 | 77=$HE_{2011Lanzhou}$<br>111= $HE_{2003Gansu}*H_{2008Gansu}/H_{2003Gansu.}$<br><77 is adopted.> |
| Qinghai | N/A | |
| Ningxia | 34 | From http://kfq.people.com.cn/GB/54918/55132/5803264.html<br><Underestimated. The data only includes *HE* in Ningxia until 2007.> |
| Xinjiang | 50 | From http://www.51ielts.com/c/2011-05-13/58602.html |

Note: *HE* – the number of *haigui* entrepreneurs; *H* – the number of *haigui*; *HC* – the number of *haigui* companies. Subscript 2003 and 2008 is used to indicate the year. The other subscript of province names is used to indicate the place.