TRANSFORMATION OF BRAIN DRAIN TO BRAIN GAIN: INCENTIVES TO ATTRACT TALENTED WORKFORCE

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ABSTRACT

The key for the future of any country, firm or group lies in the talent, skills, experience, knowledge and capabilities of its people. Migration of human capital resource on an international level depicts the impact on the developing country having its highly educated individuals migrating to developed countries known as “Brain Drain.” Therefore, evaluation of short-term and long-term talent needs and impacts on any country is critical. This paper aims to complement the existing theoretical brain drain and brain gain literature, focusing on the interaction between investment in education, training, healthcare and government to attract highly talented individuals to a developing a country. The migration study is inclusive of the analysis of the highly talented resources that have committed to or are planning to resettle in their developing native countries after investing in themselves through education. The motivational factors of these highly talented individuals are evaluated to determine key needs and drives attracting these individuals back to China from a developed country (aka. reserve migration).
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1 INTRODUCTION

1.1 Background

Brain drain has been a major concern for developing and emerging countries over the past few decades. During the 1950s and early 1960s, the term “brain drain” became popularized due to concerns displayed by British Royals who were seeing a number of highly skilled professionals migrating from developing countries to developed countries. Highly skilled professionals were noticed to be making this transition to the developed country. In the 1960s, this trend continued as educated individuals in pursuit of higher education moved to the United States and European countries. By the 1970s, the brain drain equated to the movement of highly skilled individuals to North America and Europe. Ahmad (2004) stated in 1979, the World Health Organization (WHO) issued a report detailing a “40-country study on the magnitude and flow of health professionals, whose findings suggested that close to 90% of all migrating physicians were moving to just five countries: Australia, Canada, the Federal Republic of Germany, the United Kingdom, and the United States” (p. 797). In an article the Migration Policy Institute Journal, author Lowell (2003) states, “the "New Economy" of the 1990s brought the issue to the fore as the developed world competed for workers in information technology and communications from the developing world” (para.1). As a result, brain drain lead to a decline in economic growth and development, human capital and financial loss, brain gain, brain circulation, in some developing countries.

Brain drain is also referred as “focused migration” or “human capital flight”. The concept “human capital flight” may be more appropriate as Z, (2013) states, “because it resembles the case of capital flight in which mass migration of financial capital is involved” (p. 1). In the early 1960s Theodore W. Schultz, an economic Nobel Prize winner, recognized the impact of human capital on the economy. According to Schultz, human capital consists of the accumulation of knowledge, skills, abilities and investments, which led to an individual and a country’s maximization of wealth. As Alfred Marshall (1920) once said, “The most valuable of all capital is that invested in human beings” (para.8).

Until the early 1970s, the concept brain gain or reserve migration was an unheard of concept. This recent phenomenon is changing migration patterns, economic growth, and knowledge and information flow as more and more individuals are relocating to developed and emerging nations rather than remaining in developing countries. The migration pattern and theories that once existed are no longer applicable as the world is focusing to attract and leverage brain gain capabilities in developing and emerging countries. According to report by Frost and Sullivan, the world is experiencing a new pattern wherein the individuals will be relocating to developing nations to fill vacancies (para. 4). Not only will this migration pattern include individuals relocating to their country of origin but also individuals from a developed country moving to a developing country. These individuals will be relocating to countries for various reasons such as better career opportunities, family support, and lifestyle. No longer can firms and countries ignore the cost associated with losing a highly skilled and educated workforce, as the world seems to grow ever smaller and the movement of individuals is increasingly easier. It is critical to understand as the value of human capital as ‘brain drain’ or ‘human capital flight’ is the consequence, which may limit the growth, development, and wealth of countries and individuals in developing countries, particularly China.
1.2 Overview of the study

This study is divided into six chapters. The first chapter provides an overview of the problem, objectives and governmental programs focused on brain gain. The second chapter focuses on the methodology used in this study. The third chapter evaluates the theoretical frame of human capital and brain drain, gain and circulation. The fourth chapter discusses the case of China and its aggressive reverse migration efforts. Through the chapters, literature will demonstrate that by linking methodology, theoretical frame and Chinese talent recruitment programs and it is possible to analyze factors leading to brain drain and types of investments required to gain human capital for economic growth. The fifth chapter presents the findings and the results of the study conducted during from June 15th - August 15th. The sixth chapter concludes the study with a discussion on the results.

1.3 Purpose of the study

Given the importance of the international flow of China’s human talent in the past few recent decades, it is critical to investigate the incentives and motivations that drive individuals whom have or are planning to relocate to China. The central aim of this study is to investigate the following:

1. What incentives motivate Chinese nationals to relocate back home?

2. Does investment in education lead to increase an income opportunities?

3. What policies and programs encourage the return of students, alumni and professionals to China after foreign education, training, or work experience?

4. What incentives provided by talent recruitment programs allocated by the Chinese government are critical to students to relocate back home?

The purpose of the present study is to analyze the motivational incentives evaluated by Chinese nationals who are planning to relocate to China or have already relocated to China. The impact of Human Capital Theory on these individuals’ decisions and motivations. In addition, analyze the talent recruitment programs to determine which programs are successful in the promotion of relocation. Through the analysis of individual demographics, incentives and programs, it is possible to understand what factors influence talented individuals to return back home. In addition, this study will use the concept of the “Diaspora Option” to explain how China’s national strategy is not only limited to brain gain through relocation of Chinese nationals or foreign nationals but also it seeks to promote development of certain economic sectors through collaboration between without requiring individuals relocate to China. With the support of a theoretical foundation, the hypothesis is while highly skilled individuals are offered high financial incentives from China, family and happiness are the key motivational factors, which drive individuals to relocate back to China.

1.4 Study Limitations and Assumptions of the Study

There are some generalized limitations to this study. The study is limited to:
Motivational factors of students, alumni and professionals who have or planning to relocate to China from elite institution of higher learning i.e. Georgetown University, ESADE University, University of Virginia, George Mason University, UC Berkeley, UC Los Angeles.

The talent recruitment programs established by the Chinese government to relocate Chinese nationals and foreign nationals to China.

This study is based on a small and unique sample of participants who have or are planning to relocate to China, thus present a challenge in providing an overview of the entire population.

Participants are aware of needs and satisfaction of their partner and can answer questions on their partner’s behalf.

It is assumed that the participants relocated to China voluntarily.

The data is self-reported data and therefore it might not be 100% truthful and may present cultural, memory or other types of bias.

1.5 Problem Discussion

To explore relevance and importance of human capital, it is essential to analyze the factors that lead to human capital flight. According to Cornachione (2010), the key factors of Human Capital Theory (HCT) are, “investments in education and training are the most relevant types of investments in human capital” (p. 31). HCT recognizes the rise and fall of individuals, families and countries is based on the potential income and growth based on investment in the education, training and health. In addition to HCT, Akin L. Mabogunje introduced the Migration System Theory, which draws a two-way link between migration and development as information flows with between country of origin and current immigrant location also known as brain circulation. Haas (2008) defined the theory as a “migration system as a set of places linked by flows and counter-flows of people, goods, services, and information, which tend to facilitate further exchange, including migration, between the places” (p. 25).

1.6 Population of the study

This study is based on 52 students and professionals who are planning to or have relocated to China after completing higher studies (Bachelors, Associates, Master’s and/or Doctoral) from Georgetown University, ESADE University, University of Virginia, George Mason University, UC Berkeley, University of California, Los Angeles, and various organizations. Participants include females and males with the age range of 20 and above. Marital status include single, in a relationship but not married and married with children or without children. In addition, the study considers whether the participants are Chinese nationals or foreign nationals. This study will also observe the relationships between these students and professionals, their partners, in addition to what factors motivate individuals to relocate to China. This study will also analyze the relationship between factors, which motivate the individuals to move to China, and the incentives offered by Chinese government programs as well. These highly educated participants represent an excellent opportunity to investigate brain drain, brain gain, and brain circulation and potential economic growth for China.
1.7 Methodology

This chapter provides a description of the strategy employed and the approach and procedures used for this study. First, the strategy used to identify participants and approach is explained. Second, quantitative data is collected several methods of such as online surveys. Third, a description of the data collection using primary and secondary sources is presented followed by the process of data analysis and its explanation. This chapter leads into theoretical framework used throughout this study.

1.8 The Research Strategy and Approach

This research covers fifty-two Chinese professionals who are planning to or have moved to China. There are three types of candidates included in this survey:

1. Professionals who have graduated from a university in the United States, Spain or other developed countries

2. Students planning to relocate to China after graduation from universities in the United States, European or other country’s universities outside of China

3. Alumni who have graduated from a universities in the United States, Spain or other countries outside of China

In all three cases, the incentives considered by participants are analyzed. It is assumed that the candidates relocated to China voluntarily.

Associated Universities Survey Participants:

- Georgetown University, Washington, D.C.
- University of Virginia, Charlottesville, Virginia
- George Mason University, Fairfax, Virginia
- University of California Berkeley, Berkeley, California
- University of California, Los Angeles, Los Angeles, California
- Escuela Superior de Administración y Dirección de Empresa University, Barcelona, Spain

Associated Local Organization Survey Participants:

- Forte Foundation, Washington, D.C.
- USCPFA – DC Metro Area Chapter, Washington, D.C.
- Chinese Rockville Group, Rockville, Maryland

1.9 Research Type

In this study, the empirical investigation utilized is quantitative research. Empirical quantitative research entails the collection of numerical data and empirical observation in order to establish a relationship between the data. This data will show both inferred and implied correlations between incentives and factors considered by participants when considering relocating to China.
1.10 Data Collection Methods

Open-ended survey was utilized for data collection was open-ended surveys. Several distribution channels were used to conduct this survey method such as direct emails, Facebook posts, LinkedIn posts, alumni chapter newsletters, local organizations and referrals from acquaintances in China, the United States, Spain and other countries. The survey was conducted online between June 15th – August 15th. Subsequently the technique of ‘snowballing’ was utilized to identify potential candidates who met the following criteria: Chinese individuals who plan to or have relocated to China. Snowballing technique is used to identify rare and limited subgroups (Chinese nationals who are planning to/ have relocated back to China) of the population.

1.11 Primary and secondary data overview

For the purpose of this study, two sets of data are explored. The primary data set is collected from surveys conducted at Georgetown University, University of Virginia (UVA), George Mason University (GMU), University of California Berkeley (UC Berkeley), University of California, Los Angeles (UCLA), Escuela Superior de Administración y Dirección de Empresa (ESADE) University, Forte Foundation, and USCPFA – DC Metro Area Chapter. This data will aid in identifying different motivational factors such economic opportunity, education, and childcare as possible motives for the return of immigrants. In addition, the study will analyze the relationship between the characteristics of students, alumni and professionals as such age, education, and marital status are analyzed to determine if these characteristics are linked to motivational factors. Several studies including King and Newbold (2007) identify years of immigration, age and education as key determinants of return of migration.

The secondary data set is collected through published materials including books, research and articles and journal publications. Data and information from international organizations and government websites was also used. The secondary data will provide the theoretical foundation analyze the empirical findings of the study.

2 THEORETICAL FRAME

2.1 Human Capital

In the early 1960s, the concept of human capital gained acknowledgement from economists. Human capital refers to the lifelong effort, motivation and investment towards education and training to improve skills, production, and consumption. Through investment in different elements, the utilization of human capital can lead to increase economic growth. Theodore W. Schultz (1972), one of the founders of HTC defines human capital as an economic concept, in a form of capital for future earning and/or future satisfaction (p.1). The Organization for Economic Co-operation and Development (OECD) (2001), defines human capital as acquiring “cognitive skills and explicit knowledge, a broader notion of human capital, including attributes, more adequately reflects how various non-cognitive
skills and other attributes contribute to well-being and can be influenced and changed by the external environment including learning” (p.1).

2.2 The human capital theory

In 1776, ‘Wealth of Nations’ author Adam Smith emphasized the role of “commercial society” rather than economics alone and factors, which constitute ‘investments’ in human beings, creating the basis for science of human capital. In 1969, Johann H. von Thü argued that concept of ‘capital’ applied to individuals did not degrade him/her or impair his/her freedom and dignity. Over the past few centuries, two schools of thought on human capital theory have been identified. One school of thought emphasizes the difference between capital (resources) and human beings, while the other school of thought views human beings as capital themselves.

Several decades later Gary S. Becker, Jacob Mincer, and Theodore W. Schultz pioneered the idea of human capital. In Schultz’s (1961) “Investment in Human Capital” paper, human capital theory is defined as skills and knowledge attained by individuals through education and training as a significant factor in economic growth, thereby increasing their employability, income potential and productivity (p.2). According to Becker (2008), “Schooling, a computer training course, expenditures on medical care, and lectures on the virtues of punctuality and honesty are also capital. That is because they raise earnings, improve health, or add to a person’s good habits over much of his lifetime” (para.2). Opponents of human capital believe investment in human capital requires deliberate inputs in education, health care (including physical capabilities, cognitive function, disabilities and mental health), training and ability to adapt to a changing environment. Proponent’s state investment in capital equates to investment in physical capital and investment in human capital, which has shown to lead to economic growth, success and increased productivity.

While today many economists believe investment in humans can lead to economic growth, a few critics have strong reservations concerning the human capital theory. Among the critics Schugurensky (2002) argues, several factors hinder human capital theory such as the theory assumes: individuals have the motivational drive to educate themselves, human capital is considered as an investment in the future, more training leads to improved work skills, formal education plays critical role in the development of human capital and training leads to higher employability and higher pay (para.8). While some studies suggest that, there is a positive correlation between level of education of a population, skills, growth of capitalist and GDP of a country.

2.3 Types of investments in human capital.

Laborers become capitalists from acquisition of knowledge and skills through investments, leading to economic return. Schultz (1972) identified investment in human capital in several categories including (1) higher education (2) training and learning (3) preschool learning activities (4) migration (5) healthcare (6) information and (7) investment in children (p. 4). According to Vadim (2011) along with education and health, investment in mobility (transportation) should be considered when planning to transform a poverty-stricken developing country to an economically strong country (para.21). These investments become the critical factors in the success of individuals and nations.
2.4 Return on human capital.

A critical key to economic growth is investment in human capital. Individuals, firms and governments need to understand the relationship between education and training and human capital in order to justify the time and money invested and value of output as result. According to Schultz states, economic value can be attained, “this knowledge and skill are in great part the product of investment and, combined with other human investment, predominantly account for the productive superiority of the technically advanced countries. To omit them in studying economic growth is like trying to explain Soviet ideology without Marx” (p. 1). The value of education can be seen as one study found that a one-year increase in the average education of a nation’s workforce increases the output per worker by between five and 15 percent (Barro & Sala-i-Martin, 1997). In Askari (2011) study, “The Role of Education in Building Individual Human Capital: How Do Professionals Look at It?” the study finds that not only good education is key to guarantee a better future but also level and power in social connections can be a determinant in an individual’s success (p. 6) supporting one of the core elements of human capital theory of establishing the environment to succeed.

In 2013 report by World Economic Forum, a study was conducted to evaluate a country’s capability to leverage its advantage human capital to gain competitive economies. The report accessed a country’s investment across several pillars in education, health and wellness, workforce and employment and enabling environment to create the Human Capital Index. In Zahidi, et al. (2013), China ranked 43rd in overall human capital index, including 58th in education, 65th in health and wellness, 26th in workforce and employment, and 47th in enabling environment (p. 17). Surprisingly, China ranked the highest in the overall index in the Brazil, Russia, India, China, and South Africa (BRICS) emerging national economies group. The report states, “China’s overall scores are boosted by good performance on the Talent sub–pillar of indicators, such as the Attraction and Retention of talent” (p. 17). China’s ongoing efforts are proving to excellent investment in improvement in human capital index ranking.

Data collected from the World Bank and the Human Capital Index report depicts correlation between the amount of investments in education, healthcare, workforce and environment score to the rate of GPD per capita (figure 1).

![Figure 1: 2013 - Relationship between Human Capital Index and GDP per Capita](source: Figure is part of “Human Capital Report 2013” by Zahidi, et al, 2013, United Nations Development Programme (UNDP), pp.29)
Therefore, to transform a country, a country it needs to invest and leverage its human capital efficiently and effectively in order to generate returns for the individuals involved as well for the economy. Due to scarcity of talented workforce, countries need to plan strategies on how to limit brain drain, create reserve migration, and attract and build a highly skilled workforces that will stabilize and promote economic growth.

3 THE THREAT OF BRAIN DRAIN

3.1 Definition of brain drain.

Over the past few decades, brain drain has been a large part of migration studies. According to Beine et al. (2008) brain drain is defined as “the international transfer of resources in the form of human capital and mainly applies to the migration of relatively highly educated individuals from developing to developed” (p. 1). The International Organization of Migration (IOM) (2013) defines ‘brain drain’ as “emigration of trained and talented persons from the country of origin to another country, resulting in a depletion of skills in the former” (p. 209). Brain drain literature assumes that a main reason relocate individual to developing countries is due to earning higher wages.

According to studies conducted by Grubel and Scott, 1966; Bhagwati and Hamada, 1974; McCulloch and Yellen, 1977, a range of positive effects from brain drain include remittances, return migration with additional skills acquired abroad, creation of scientific and business networks. And a series of recent papers by Mountford, 1997; Vidal, 1998; Beine et al. 2001 suggest since higher level of education abroad leads to higher expected return on human capital therefore, the sending country induces more people to invest in education in the home country and can expected high return on human capital (p. 1). Government’s decision to take steps to create programs, which promote education and invest in human capital, will be one way to counter the environmental conditions for brain drain and detrimental impacts of brain drain on economic growth.

3.2 Conditions for brain drain

Several conditions are required for the term “brain drain” to apply to a country. According to Lowell (2003), there are few conditions are required for brain drain to occur including, “first, there must be a significant loss of the highly educated population. Second, adverse economic consequences must follow” (para.2). In addition, brain drain can occur not only when highly skilled individuals emigrate to developed countries due to better career opportunities, but also when individuals who want to pursue higher education abroad or individuals who want to continue staying in the developed country rather than returning to their home country.

3.3 Factors leading to brain drain

Various factors contribute to brain drain. Some studies Zelena (2004) and Shinn, (2002) suggest unfavorable working conditions, lack of academic freedom and political persecution and intolerance are a few reasons why individuals refuse to relocate back to their home country (p. 184) (para.18). Demirdijan (2013) argues political instability, lack of
opportunities, unemployment, personal conflicts and lack of healthcare, are reasons why brain drain occurs (para.3). According to Docquier (2013), brain drain occurs due to poverty, lack of economic growth and freedom, political repression, and discrimination (p. 3). The conditions under which a country gains or losses are dependent upon if appropriate policy responses to the brain drain are established to meet the goals and needs of the country.

A critical factor leading to migration is happiness. While happiness may rank below safety, freedom or poverty at times, it remains a critical factor considered by individuals daily. Polgreen & Simpson (2010) study finds aggregated happiness of a country affects international migration. The study also finds that happiness has a U-shaped association with emigration rates, “people from very happy countries are likely to emigrate, as are people from very unhappy countries. However, people from countries in the middle of the happiness distribution are less likely to emigrant” (p. 25). Data from the World Value Survey (WVS) 1981-2004 shows that, some of happiest countries are Columbia, Tanzania, and El Salvador even though they are some of the wealthy countries. To consider brain drain factors such political instability, freedom and wages without taking in account happiness is perhaps a misguided endeavor.

3.4 Why countries promote brain drain

In the past few decades, while many countries are actively trying to reduce brain drain, some countries actively promote brain drain. According to the World Bank report, Romero (2013), some countries such as Pakistan and India promote emigration of skilled workers by providing individuals legal aid, financial aid, housing and self-employment to reach their destination countries (p. 177). Beine, Docquier and Rapoport (2008) research shows that some developing countries such as Brazil, China and India benefit from the migration of skilled workers (p. 18). One of the reasons some countries have more incentives to promote skilled emigration because it directly affects the remittance sent by emigrant skilled workers. According to Romero (2013), “[t]he government promotes skilled emigration, even when the brain drain does not benefit the source economy. This situation reflects the fact that the remittances sent by emigrant skilled workers are higher than the income they would produce if they stayed in the source economy. Therefore, the government mitigates the fall in per capita income that follows the brain drain by encouraging emigration among those who are more productive abroad” (p. 177). Given that the goal for some counties is to promote brain drain, some of the countries have debated the utility of investment in education, training, healthcare, and welfare rather than in promoting the emigration of skilled workers since the goal is to push skilled workers to their destination countries in order to receive benefits from them such as remittances.

3.5 The effects of brain drain

Over the years, brain drain has received a negative reputation due to the state in which a country is left once highly skilled workers leave the country. Brain drain can create shortages of talented people in specific fields, as well as loss of investment and skills. However, the impact of the brain drain on a source country’s welfare, development and growth can be beneficial. Many positive factors of brain drain have been realized over by the years that origin country, individuals who emigrate and individuals who remain in the origin country.
3.5.1 Remittances

Remittances are the most prominent contribution of immigration to their homes countries, families and friends. China is one of the top countries to receive remittances. According to the World Bank (2014), China was second largest recipient of $60 billion remittances (para.4). The high flow of incoming financial support resulting from brain drain is a strong motivating factor to continue to promote emigration of skilled and educated citizens. According to the World Bank, Migration and Remittances Team (2014), remittances are expected to rise from $112 billion in 2013 to $150 billion in 2016 in East Asia and Pacific (p. 14). Remittances are and will continue to be a key source of external resource flow for developing and emerging countries until a solution is identified to remove or limit the financial dependency on international immigrants. Countries require a constant balance between remittances and brain drain a long-term plan for in order to maintain and invest in high-skilled and high-performing workforce, transform brain drain to brain gain, sustain and grow a robust knowledge and innovation-based economy.

3.5.2 Investment in trade and direct foreign investment

Along with remittance, highly skilled immigrants are often are involved in trade and foreign direct investment. In the case of China Zweig & Wang (2013) study finds, “[d]omestic market, which offers significant returns to technology transfer, has encouraged many people to return, or at least, set up shop back home and travel back and forth” (p. 4). Many Chinese nationals have reported living in China to start their entrepreneurial efforts for a short time period and returning once it has been established. Gibson & McKenzie (2010) of the World Bank noted, “the experience of India, Taiwanese, Chinese information technology firms has been used to suggest that a highly skilled diaspora can use their knowledge of the destination country to lower cost of transaction a countries, and that emigrant can provide venture capital for start new firms” (p. 18). Investment and trade is one great example of how highly skilled immigrants and brain drain is having a positive impact on the developing and emerging countries.

3.5.3 Education

Over the years, theoretical analysis suggests that migration of highly skilled workforce can foster investment in education. Mountfod (1997), Vildal (1998) and Beine et al. (2011) suggest that brain drain ultimately contribute to human capital formation in the sending countries. Beine, Docquier, & Rapoport (2008) argue, “since the return to education is higher abroad, migration prospects can raise the expected return to human capital and induce more people to invest in education at home” (p. 2). The raise of human capital is dependent on the amount and the type of investment made by governments and the motivation level of individuals to increase human capital through higher education and training.

Beine, Docquier, & Rapoport (2008), study also finds by “doubling the emigration rate of the highly skilled induces a 5% increase in human capital formation among the native population (residents and emigrants together)” (p. 2) Thus, not only China is a ‘winner’ in the game of human capital gain/loss associated with brain drain but also China creates
modest gains to offset the losses by the brain drain. According to Beine, Docquier, & Rapoport (2008), “brain drain generates a 3% increase in the total number of skilled workers living in the developing world” (p. 14). As a result, the pessimistic view of brain drain should no longer be singularly accepted. Instead, the focus should be shifted towards strategies to leverage brain gain in order to promote innovation and growth.

3.5.4 Brain Circulation

Brain circulation is one of the most common results of brain drain. Baldassar & Merla (2013) define brain circulation is defined as “[k]nowledge can be transferred across distance between people regardless of where they reside” (p. 46). Newland, Agunlas, & Terrazas (2008) define, circular migration or brain circulation as "a continuing, long-term and fluid movement of people among countries that occupy what is increasingly recognized as a single economic space" (p. 1). It is circular expansion on the concept of brain gain. While brain drain and brain gain are considered one-way flow, brain circulation involves flows of knowledge, skills, technology in a two-way flow.

Although it is difficult to place a monetary value on knowledge transfer some research on types of information transferred among individuals across borders has been conducted. According to Gibson & McKenzie (2010) study, the most common form of knowledge involved discussing opportunities to study and work abroad with someone in their home country, advising, and providing tourism information to individuals who plan to visit their homes country (p. 19). Similarly, Fu (2014) noted Chinese scientists attended conferences and lectures and participated in collaborative research and projects as a way to serve “the country without returning to the country” (p. 207). Although the amount of interaction and monetary value has not been assessed, brain circulation provides an access to resources, wealth, and global knowledge unlike before to individuals and countries. The old ‘brain drain’ and ‘brain gain’ concept has evolved to brain circulation.

The OECD Science, Technology and Industry Scoreboard (2013) report identifies changes in science, technology, innovation across various industries, countries and other leading economies to determine the impact of brain circulation. It examines the mobility of researchers who move across institutions, at home or abroad contributing to the dissemination of scientific, technological, and innovative knowledge. According to the report, in 2011, China was second largest producers of scientific publications and one of the top economies to attract high number of research from abroad exceeding the impact of outflow of researchers leaving the country. While the quality (highly cited) documents is lagging, China continues its pursuit to become a leader of international research network. Since publication of this report in 2013, “Chinese publications co-authored with US-based institutions increased from nearly 2,000 in 1998 to more than 22,000” (p. 14). Scientific researchers are rapidly becoming more mobile and collaborative among institutions and organizations as mean to achieve their personal and professionals goals (OECD, 2013). Mobile scientific researchers are one of the biggest groups influencing a majority of economies. The OECD 2013 report finds scientific research is shifting from individuals to factions as more scientists collaborate and share expertise and knowledge with others across borders. The focus is causality between scientific publication and international scientific collaboration. Report results suggest there is, “positive relationship between measures of scientific research collaboration and impact” (OECD, 2013, p. 60). An excellent example of brain circulation.
Figure 2 below represents a country’s share of articles as result of international collaboration. The value presents the relationship of an individual’s article’s average against normalizes impact (world average impact). The normalized impact is “ratio between the average number of citations received by the documents published by a specific unit (country, institution and author) and the world average of citations of the same time period, document type and subject area” (OECD, 2013, p. 60).

According to data, between 2003-2011 China is second largest producers of scientific publications and BRICS is the second largest economy producing scientific publications. I.e. China has a normalized impact score of 0.7, which means the unit is cited 30% below the world average. The United States on the other hand has a normalized impact score of 1.5 meaning the unit is cited 50% above world average. Not only does this data helps to support on-going efforts by governments to support innovation, science and technology through research and publications but also by helping to identify methods and steps to promote brain circulation across various fields (OECD, 2013).

3.5.5 The diaspora option

Traditionally, most countries focus on restricting brain drain, retaining highly skilled and attracting highly talented workforce. However, there is another option. The diaspora option describes the process and policies taken to ensure emigrants are contributing to
technological, scientific, economic developments in their country of origin in order to attain economic growth and development without necessarily having individuals relocate to the country of origin (Séguin, State, Singer, & Daar, p. 78). Diaspora option should play higher significance in the development strategies to transfer knowledge, skills and innovation by immigrants. This concept would ease the financial burden or market strength required for the country on providing housing, healthcare and facilities. For example, in 2011, the Chinese government implemented a policy to pull talented individuals to ‘serve the nation’ (wei guo fuwu), even if they did not plan to ‘return to the nation’ (hui guo fuwu). China asked individuals to participate in seven developmental activities from engaging in cooperative research in China to establishing enterprises in China (ZWEIG, Fung, & Donglin, 2008). According to Zweig, Fung, & Hun (2008) an estimated 25% of mainlanders currently working abroad are ‘serving the country’ in one form or another (p. 5). In addition, access to more Information and communications Technology (ICT) has enabled generations of Chinese nationals to connect, collaborate and support China. The ICT has enabled China to leverage its diaspora strategies such as the 1992 Chinese Student Protection Act, which granted permanent residence status to Chinese students and scholars (Grossman, p. 7). China exhibits a tremendous involvement towards taking advantage of talented Chinese foreign workforce overseas, and it needs to continue to be aggressive in engaging diaspora talent before Chinese nationals individuals lose motivation ‘to serve the nation’ (wei guo fuwu).

One way to attract talent is use the double base model. The “double base model” concept is defined as individuals living abroad with a position in their country of origin and in their country of residence (Zweig, Fung, & Hun, p. 16). Zweig, Fung, & Hun (2008) state this model can be applied to the diaspora talent: for example, a Chinese national professor holds the deputy director position at the research center at Berkeley, as well the director position at Nanjing University’s International Earth Sciences Systems Research Centre in China. Through collaborate relationship the diaspora professor was able to identify new research opportunities, as well as establish new international standards in a field for China. China exhibits remarkable efforts to promote its talent recruitment programs worldwide, and with planning, it will continue to identify new methods additional improvement to encourage the best and the brightest to create collaborations across different countries and sectors.

3.5.6 Loss of skilled individuals

One of the negative results of brain drain is the loss of the best and the brightest, which may lead to diminished growth prospects for developing and emerging nations. Chaichian (2012) notes one of the most common critiques, “is its negative and often disastrous outcomes for the sending country while the host nation rips all the benefits not only in terms of utilizing the skills and educational talents, but also the costs involved in educating each student on both sides” (p. 26). In addition, governments lose future taxes on the income individuals would have generated in their developing home countries. Some developing countries are hesitant to invest in education, as data shows that resident will be immigrating to more developed country after achieving the education level they desire. As many countries intensify their efforts to attract and retain highly talented individuals in field of health, science and technology, these countries needs to develop strategies to leverage the beneficial impacts of brain drain and translate them to brain gain.
3.5.7 Future outlook

As previously stated, brain drain is not always harmful for a country or its economy. Whether a country wins or loses is dependent on a country specific factors, such as the country’s level of education and development including characteristics such as population, age, race, ethnicity, geographic location, size and languages. Although policies and programs are placed to restrict migration in order to reduce the loss of highly skilled individuals, governments should evaluate the positive impacts of remittances, education, foreign investment and brain circulation on the economy. In addition, the government should create programs, which incentivize highly educated people to remain in the country rather than individuals investing in themselves in hopes of leaving the country. Without addressing issues for immigrants, local brain drain will continue and could accelerate.

4 BRAIN DRAIN TO BRAIN GAIN

Brain gain or reserve migration or reserve brain drain is a recent phenomenon with particularly interesting consequences in poor and developing countries. Beine, Docquier, & Rapoport (2009) term ‘brain gain’ is defined as “migration prospects can raise the expected return to human capital and thus foster education investment at home” (p. 2). Not only does physical attributes such as wealth and technology migrate with the individual but also their knowledge and skills. Some countries such as India, South Korea, China and Taiwan are actively recruiting highly skilled workforce in order to tap into the knowledge, skills and wealth the individual possesses for economic growth.

Beine, Docquier, & Rapoport (2008), argue that ‘brain drain’ can more than compensated by ‘brain grain’ if the opportunities for skilled workers to emigrate to rich and developing countries create an incentive for more individuals to become educated in poor and developing countries. Unlike some governments who are hesitant to actively or passively facilitate the flow of human talent, the Chinese government has taken an active role to recruit and foster increased market opportunities and confidence of entrepreneurs living abroad. For example, Rahman (2010), “The Chinese government established special zones where the returnees receive facilities including assistance in setting up a business venture, waiver of business tax in high tech industry, tax-free import of material and other incentives” (p. 156) and in return hire locals to support programs and facilities.

4.1 Policy responses to brain gain

Over the years, the phenomenon of brain drain has heavily influenced policies and programs in many countries. Today, it is critical that countries adapt various policies and programs to retain and attract highly skilled workforce to return home. In this section, several policies and programs, proposed by Lindsay Lowell (2002) are redirected from brain drain to brain gain:

1. Return Policies: a group of policies directly affecting the movement of people, who have immigrated to other countries. Incentives vary depending on the country. For example,
tax breaks offered by the Chinese government to individuals and organizations to establish organizations or conduct scientific and innovative research in the “Special Talent Zones”.

2. **Restriction Policies**: a group of barriers directly affecting the movement of people, specifically by the destination country to protect domestic workers from competition and to control the influx of immigrants. For an example Lowell (2002), Australia “hosts several thousand twenty-year-olds who are permitted to work for up to a year, after which they are required to return” (p. 7).

3. **Recruitment Policies**: a group of policies established to attract highly talented foreigners to offset losses in skilled personnel, or to Lowell (2002) “gain a national advantage in the competition for occupations in global shortage” (p. 8). For example, the Chinese government established Thousand Foreign Experts program to pull scientists and leading experts in science and technology in order to transform the nation to be worldwide innovative leaders.

4. **Reparation for loss policies**: policies established to compensate the source country for the loss of human capital either through developed countries or through taxes. A difficult task as Lowell (2002) found, “[o]nly Korea, which ran contracted temporary labour programs for low to skilled workers in the Middle East in the 1970s, succeeded” (p. 11) while other programs have failed entirely.

5. **Resourcing**: a group of policies such as “diaspora options” relying on expatriate to participate in knowledge transfer and brain circulation program and activities. For example, attending conferences, lectures and collaborate events, etc. to circulate knowledge.

6. **Retention Policies**: a group of policies focuses on retaining highly skilled workforce through education or incentive programs. For example, Lowell (2002) in order to prevent loss of postdoctoral scientists, Germany offers scholars to foreign scientists who establish group in Germany (p. 16).

Policymakers tend to apply a mix of policies and programs in order to meet governmental goals however, two critical policies and programs which government should focus on are one, retaining highly educated workforce and two, recruiting talented individuals (expatriate and foreigners).

### 4.2 Example of Restriction migration policy hindering.

In a study conducted by research at Duke University, New York University, and Harvard University called “Intellectual Property, the Immigration Backlog, and a Reverse Brain-Drain” researchers shows that reserve migration is occurring in the United States due to number of limited visa entries into the United States. According to Wadhwa, Jasso, Rissing, Gereffi, & Freeman (2014) research, there is disproportion between the high demand for entry into the United States by skilled workers and the entry limit of the United States. As a results “imbalances creates the potential for sizeable reserve brain-drain from the United States to the skilled workers’ home countries” (p. 1). Although each country implements migration restriction policies and programs to balance the needs and goals of the nation, this is one of example where such policies are hindering the country.
4.3 Push And Pull Approach

Without highly skilled workforce to grow the economy and meet the needs of the individuals, the pull of a developed country will become strong. The concept of migration push-and pull, focuses on the polar factors motivating migrants oscillate. The OECD (2010) defined the push-and pull approach as “factors driving the migration of personnel broadly coincide with those that apply to highly skilled workers in general” (p. 5). The push aspect usually involves factors of scarcity of opportunities or conditions in the socio-economic versus the pull factors that exist in more developed countries. The OECD (2010) states, “strong form of network theory that postulates that other pull factors and policies are almost beside the point; that migrants will come as long as they are not actively barred from doing so” (p. 123). According to the OECD report in 2013, in the next few years developing countries will see decrease in population especially in China and increase in outflows of immigrants, while some OECD countries such as China almost doubling investment in education in order to sustain the economy and workforce. Therefore, countries need to actively recruit large number of highly skilled individuals to surpasses or at least equal to number of high of migrants today to sustain its economy. In addition, immigration policies and program should be implemented to retain highly skilled individuals such as doctors, engineers, and scientists and these individuals affect others directly and will have stronger impact on the economy if these individuals relocated to another country.

5 CASE STUDY OF CHINA

The United States is the top host country in the world with over 760,000 international students. According Institute of International Education (IIE) (2013), the top five sender countries in 2013 are China, India, South Korea, Saudi Arabia and Canada. Between 2012 and 2013, China sent over 235,000 students to the United States; this included over 100,000 graduate students, over 90,000 undergraduate students, and over 14,000 Optional Practical Training (OPT) students. Among international doctoral recipients in the United States in 2012, 4,217 were Chinese doctoral students. While the number of doctoral students studying in the United States is increasing, there is a steady decline in number of students, who are planning to remain in the United States after graduation. For example, in 2006, 90% of doctoral students intended to stay in the United States. However, in 2012, 82.6% students intended to stay in the United States (Open Door Data International Students: Academic Level and Place of Origin, 2013). That is a decline from 4,238 doctoral students planning to stay in the United States in 2006, to 3,483 doctoral students planning to stay in 2012. Several factors push individual to relocate to and its unique economy.

China is different from most developing countries. The International Monetary Fund (IMF) (2013) considers China a part of an “emerging market and developing economy”. The needs of emerging nations and developing countries vary. Therefore, China presents a challenge to investigate what incentives motivate students, alumni and professionals to relocate to an emerging nation, rather than remaining or in a developed nation.
5.1 Attracting Talent Programs Overcoming the void

Over the past 30 years, China has faced unprecedented levels of growth however; it is facing paradoxical position due to talent shortage. While China is known for its cheap labor, low cost and high manufacturing and infrastructure projects such as the high-speed train, it is lacking talented workforce in innovation, R&D, Healthcare, and Arts, etc. sectors. According to HuiYao (2014), Director General of Center for China and Globalization, Vice Chairman of China Talent Research Society of Ministry of Human Resources & Social Security in China and Senior Visiting Fellow at Harvard Kennedy School, “by 2010, China had sent a total number of 1.9 million students to study abroad and 630,000 of them had returned home”(para.14). To resolve the talented human capital deficit and to attain economic and social development, China joined global leaders to compete for talented resources by developing talent recruitment programs and policies.

According to the Center of China & Globalization presentation of “Bringing in International Talent” (2012), China began its recruitment efforts with the Hundred Person Program in 1994, led by Spring Light Program in 1997, Cheung Kong Scholars Programme in 1998 to Thousand Talent Program in 2008. To attract talent Huiyao (2010) reported Premier Wen Jiabao stated, “We will increase spending on talent projects and launch a series of initiatives to offer talent-favorable policies in households, medical care and the education of children” (p. 10). To gain higher competitive edge, China took a step further by developing training high level and high skilled talent in pursuit of economic growth and development. According to Liyan & Jing (2012), researchers at Samsung Economic Research Institute, “Plans are underway for 1200 education facilities – or ‘talent incubators’ – for training technicians to be built in major cities by 2020” (para. 8).

5.2 Medium and long-term talent development plan

<table>
<thead>
<tr>
<th>National Talent Development Key Indicator Target</th>
<th>Unit</th>
<th>2008</th>
<th>2015</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total No. of Talent</td>
<td>Ten Thousand</td>
<td>11385</td>
<td>15625</td>
<td>18025</td>
</tr>
<tr>
<td>Ratio of R&amp;D talent in Labor Force</td>
<td>Person/10000</td>
<td>24.8</td>
<td>33</td>
<td>43</td>
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<tr>
<td>Ratio of High Skilled Talents in Labor Force</td>
<td>%</td>
<td>24.4</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>Ratio of Labor Force who Have Higher Education</td>
<td>%</td>
<td>9.2</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Ratio of Human Capital Investment of GDP</td>
<td>%</td>
<td>10.75</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>Contribute Rate Talent</td>
<td>%</td>
<td>18.9</td>
<td>32</td>
<td>35</td>
</tr>
</tbody>
</table>

Table 1: National Talent Development Key Indicator Target
The data is derived from “National long-term talent development program (2010-2020) by The Central People’s Government of the People’s Republic of China.
In 2010, China launched an ambitious talent cultivation plan, called the National Medium-and Long-term Talent Development Plan (2010–2020), to attract and develop highly skilled workforce within the next 10 years. The comprehensive plan outlines the vital importance of human capital to economic growth, and sustainability over the next few decades. The plan Long-term Talent Development Plan (2010) goals include by 2020 to grow talented resource group from 18 billion to 114 billion, raise the proportion of talent resources by 16% of human resource proportion and increase human capital investment to 15% of the GDP (p. 15). China is determined to transform itself from a manufacturing hub to an innovative and creative global hub through its investments in human capital. According to Liyan & Jing (2012), researchers at Samsung Economic Research Institute one of the China’s, “goal is to transform Chinese firms into multinationals ranking among the world’s top companies and develop soft power” (para.1). Table 7 lists the national development goals of the Committee of the Communist Party of China (CPC) between 2008-2020.

5.3 Human capital and talent

The past 20 years, China began showing signs of recognizing the value of human capital and talent, when it first begun its talent recruitment program. The term “talent” can be defined in various ways from the ability to do something very well to having a unique ability. The Central People’s Government of the People’s Republic of China National Long-term Talent Development Plan (2010) defines the term as “a certain expertise or specialized skills, creative work and contribute to human society, human resource capacity and higher quality workers” (para. 3). China has come to recognize the importance on developing talent to the growing economy, the Chinese government has created several recruitment programs offering a wide range of incentives to Chinese nationals and foreign to move to China in order to transform the nation.

5.4 1,000 talent program

In 2008, the CPC was faced with the daunting challenge of transforming and sustaining unprecedented level of growth. In order to resolve these challenges the CPC implemented a plan to recruit overseas talented personnel in order to achieve critical technological breakthroughs, create an atmosphere for innovation, develop high-tech industries and foster entrepreneurship. The Thousand Talents Program or the Recruitment Program of Global Experts program was initiated to target foreign nationals and overseas Chinese studying abroad and encourages them to relocate to China within 5-10 years (para. 1). The China Attracting Global Talent (2010) reports the goal of the program is to recruit 2,000 top talented individuals to lead the nation to advancement in various industries. The Central Coordination Group (n.d.) primary focus of this program is: “innovation in key national projects, key disciplines and laboratories, the central enterprises and State-owned commercial financial institutions, mainly in high-tech industry development zones, such as various parks, and a focus on support for the introduction of a number of breakthroughs in key technologies able to develop high-tech industries and emerging disciplines of strategic scientists and leading talent returning (China) innovation and entrepreneurship” (para. 1).

In order to meet long-term and short-term developmental goals, the program is designed to attract two different types of applicants. The 1000 Talents Program article long-term part of
the project attracts candidates, with PHD degree granted by an overseas education institution under the age of 55, who have published academic articles in scholarly journals. While the short-term part of the project is called, “Thousand Young Talent Program” (2011) attracts PHD candidates from abroad under the age of 40. “Thousands plans to introduce The Recruitment Program of Global Experts” and “China attracting global talent: One Thousand Talents Scheme” (2010) professionals selected in the program are offered the following incentives:

1. 1 million Yuan
2. Healthcare
3. Pension Benefits
4. Permanent residence status
5. Schooling for children

5.4.1 1,000 young talent program

Xin (2011) in December 2011, the Thousand Young Talent Program (Xin, 2011), as a subprogram of 1,000 Talent Program was launched (p. 10). According to China’s central authorities (2010) and Xin (2011) this program aims to attract 400 of the best and the brightest under the age of 40 to engage in the areas of natural sciences and/or engineering technology. According to The International Poverty Reduction Center in China (IPRCC) (2010) and Xin (2011), candidates need to meet the following requirements:

1. Hold doctorate degree(s) from prestigious overseas universities
2. Greater than 3 years of research experience with teaching or research position(s) from top overseas universities
3. Hold Full time position in China

Xin (2011) identified some of the incentives offered to qualified candidates are:

1. 500,000 Yuan to cover living subsidies
2. 1 to 3 million Yuan for scientific research up to 3 years

5.4.2 Thousand foreign experts

In 2011, the "Recruitment Program of Foreign Experts" the Thousand Foreign Experts Program is a subprogram of 1,000 Talent Program launched to attract 500-1,000 talented foreign professionals. The State Administration of Foreign Experts Affairs the aim of the program is to attract “strategic scientists, leading experts in science and technology, or internationalized innovative teams capable of achieving critical technological breakthroughs, advancing the high-tech industries and promoting new disciplines” (Work China RECRUITMENT PROGRAM OF FOREIGN EXPERTS). According to The State
Administration of Foreign Experts Affairs, candidates must meet the following requirements:

1. Must hold a doctorate degree
2. Must be under the age of 65
3. Must be in expert in technical, managerial or entrepreneurial
4. Must work in China at least three consecutive years with no less than 9 months each year

Some of the benefits offer this program offers include:

1. 1 million Yuan subsidy
2. 3-5 million Yuan for scientific research experts
3. Subsidy for housing, food, relocation and education of children
4. Healthcare, retirement, medical and injury insurance
5. Permanent residence status
6. Recognition as a “State Specially Recruited Expert”

5.4.3 10,000 Talent Plan

Zin (2014) reported in 2012, the Chinese government created the 10,000 plan – a talent program designed to recruit talented professionals in the field of science and technology. China launched “fresh talent program” (2012) aimed to recruit 8,000 talented individuals with high achievements in science and technology and 2,000 talented individuals under the age of 35 with excellent potential in research and technology innovation (para. 3). The program is being jointly carried out by the CPC, the Ministry of Human Resources and Social Security, Ministry of Science and Technology and other various government departments to ensure the program helps to promote innovation, research and economic growth as China transforms itself. Some of the incentives (2013) offered to candidates include 1 million Yuan to conduct research and policy and services support from the CPC (para. 5). This is one of multiple programs offered by the Chinese government to cultivate human capital from recruitment to development.

5.4.4 Special Talent Zones

Along with talent programs to attract high-skilled workforce, the Chinese government has begun to incubators to develop its own innovative talent. The “National Outline for Medium and Long-term Talents Development Plan (2010-2020)” states, “Encourage local and
industry to build up reform experimental zones for talents management in line with the related international system” resulting in greater economic influential towards advancement. This program allows government officials to create preferential policies for high-end innovative talented professionals in varies industry from technology to research. Xie (2011) identified some of incentives including, “simplified procedures for investment and trade settlement, reduced tariffs on imported educational and R&D equipment, facilitation of medical care and entry-exit services, direct subsidies to high quality professional returning from overseas, and provision of low-cost housing”. Not only is China recruiting talent but it also is creating environment for entrepreneurs, scientist, and researchers workforce to transform from China from a manufacturer to a worldwide innovator.

5.5 Empirical Findings and Analysis

By 2000, Beine, Docquier, & Rapoport (2008), reported there were 20 million highly skilled immigrants (i.e., foreign-born workers with tertiary schooling) living in the OECD member countries, a 63.7% increase in ten years against only a 14.4% increase for unskilled immigrants (p. 1). The United Nations Department of Economic and Social Affairs (UN-DESA) and OCED (2013) world migration report states, “about 30% of all migrants in the OECD area were highly educated and one-fifth of them were originating from India, China or the Philippines” (p. 1).

One of the main goals of Chinese government is to attract highly educated and skilled individuals in order to promote growth and become a world leader in innovation. Through the analysis of the incentives, it is possible to get a better understanding of forces that influence educated individuals to return to a developing country or to remain abroad at a developed country. This chapter highlights the incentives that helped to attract 52 individuals to China over the past few decades. These individuals invested in themselves, transforming themselves into human capital itself to support their goals and support China’s effort for further advancement in the global market.

5.6 Survey Conducted

A survey was conducted to identify the motivational factors of Chinese nationals who are or have planned to relocate back to China. This survey was filtered to identify individuals who through motivation and deliberate input invested towards education to improve skills and seek future satisfactions and earnings. Along with determining relocation motivational factors, the pull and investment of talent recruitment program by the Chinese government, this survey will also analyze if the investment in higher education, one of the seven categories of human capital investment identified by Shultz (1972) leads to increase in effective income and better career once individual’s return to back to China. As Mountfod (1997), Vildal (1998) and Beine et al. (2011) suggest the raise of human is dependent on the amount and type of investment made by individuals and government. The below survey questionnaire provides glimpse into the targeted question asked of these individuals to identify the level of education, career, income and transportation as factors considered to make a determination of this study.
5.6.1 Study Questionnaire

Individual Questions

1. What is your name? (Optional)

2. What is your age?*
   20-25  26-30  31-35  36-40  41-45  46-50  51 or Older

3. Which country do you reside?
   China  Spain  United States  Other

4. What is your current education level (include any programs that you're still a part of)?*
   High School  Associate Degree/Vocational/Technical Certification  Bachelor's Degree  Master's Degree  Doctorate Degree

5. Are you Chinese national?*
   Yes  No

6. Are you in relationship?* (If yes, please also answer questions 22-27)
   Yes  No

7. Are you married?*
   Yes  No

8. Do you have children?* (If yes, please also answer questions 28-30)
   Yes  No

9. Do you plan to relocate to China?* (Choose NA, if you have are already in the process of moving to China)
   Yes  No  NA

10. Have you already/partially relocated to China?*
    Yes  No

11. When did/will you relocate?*

12. Did you work prior to relocation to China?*
    Yes  No
13. After relocation, do you plan to work or are you currently working in China?*
   Yes          No

14. Is childcare better in China than previous country of residence?*
   Yes          No

15. Do/will you have better career opportunities in China than your previous country of residence?*
   Yes          No

16. Is/will your effective income be higher in China than your previous country of residence?*
   Yes          No

17. Do/will you feel safer in China than your previous country of residence?*
   Yes          No

18. Do/will you believe you have more amenities in China than your previous country of residence?*
   Yes          No

19. Do/will you have more access to transportation in China than your previous country of residence?*
   Yes          No

20. Which of the following programs helped/will help in your relocation?*

   1,000 Thousand Young Talents Plan
   Thousand Foreign Talents Plan
   Special Talent Zone
   Ten Thousand Talent Plan
   Other
   None of the above

21. Please provide an email address, in case of further questions. (Optional)
   Yes          No

   If you are in a relationship, please answer the questions below:

22. Is your partner Chinese national?*
   Yes          No

23. When did/will your partner relocate?*


24. Did your partner work prior to relocation to China?*
   Yes          No

25. After relocation, does your partner plan to work or is your partner currently working in China?*
   Yes          No
26. Does your partner have better career opportunities in China than the previous country of residence?*

Yes
No

27. Is/will your partner’s effective income be higher in China than the previous country of residence?*

Yes
No

If you have children, please answer the questions below:

28. Is at least one child in China?*

Yes
No

29. Did/will your children relocate?*

Yes
No

30. When did/will your children relocate?*


* Questions requiring a response

5.7 Age

Of the 52 qualified candidates, 38% of them were between the ages of 26-30, 29% were in between age of 31-35, and 17% were between ages of 20-25 (see figure 3). None of the participants were above the age of 50 at the time of this study. At the time of this study, there is a strong correlation between the age of participants and the education level of participants as discussed later in figure 5.
5.8 Education

Of the 52 qualified candidates, 17% of population was on track or had a Bachelors degree, 46% of the candidates were currently or had completed a Master’s degree, and 19% of them held or were on track for Doctorate degree (see figure 4). Interestingly, no participants were
attending or completing any Associate / Vocational / Technical degrees at the time of this study. Based on the data, with age, the education level of participants also increased as well (see figure 5). A further breakdown shows candidates who held or were on track for Bachelor’s degree 44% of them were between the age of 20-25, for Master’s degree 46% of them were between the age of 26-30, and for Doctorate degree 42% of them between ages of 31-35. Although the percentage between Master’s degree and Doctorate degree seems to decrease, the pattern presented in figure 5 shows with age, education level of individuals seem to increase as well.

**Figure 5**

**Age and Education Comparison**

![Figure 5: Age and Education comparison](image)

In the U.S. doctoral recipients returning to South Korea study Lee & Dongbin (2010), education is reported as, “a U.S. doctorate served as symbolic good investment that was anticipated to pay off upon entering the job market” (p. 635). A degree from the United States of America or European universities could open doors for candidates, which were not possible before. In addition, this study also finds that some participants believed that quality of education in the United States and South Korea was comparable (p. 635). So why travel half way around the world to study and why are the firms hiring these individuals? Maybe it’s because organizations believe individuals need international exposure along with perseverance and dedication, which the individuals shows by investing in their education overseas to be successful in the job market. In addition, with age and time, educated individuals are more likely to mature, grow and expand their knowledge and skills thus increasing the chances the organizations will be successful if these individuals are hired.
5.9 Marital status.

<table>
<thead>
<tr>
<th>Individuals</th>
<th>Of 52 Qualified Participants:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>15</td>
</tr>
<tr>
<td>In a relationship but not married</td>
<td>12</td>
</tr>
<tr>
<td>Married</td>
<td>37</td>
</tr>
<tr>
<td>In relationship but not married</td>
<td>25</td>
</tr>
<tr>
<td>Partners</td>
<td></td>
</tr>
<tr>
<td>In relationship with Chinese a partner</td>
<td>24</td>
</tr>
<tr>
<td>Married with a Chinese partner</td>
<td>24</td>
</tr>
<tr>
<td></td>
<td>In relationship without Chinese a partner</td>
</tr>
<tr>
<td></td>
<td>Married but not with a Chinese partner</td>
</tr>
</tbody>
</table>

Table 2: Marital Status

Of the 52 participants, 28% are single, 71% in a relationship (married and individuals in a relationship but not married) and 48% of the individuals in a relationship are married. In this study, in relationship and marriage is inclusive as times as some participate are in a relationship and married while other are in relationship but not married. Those in a relationship with a Chinese partner (female or male) are the same participants as the ones who are married with a Chinese partner. In addition, in both cases only one participant has a foreign national partner. Lastly, individuals who are in a relationship but not married represent 23% of the entire population. Through the study, we examine how marital status along and education and age effects the effects an individual behavior and the motivational factors considered when planning relocation to China.

5.10 Individuals with children

For families with children, one of the key factor to consider when relocation is impact on the children. Most parents consider their children needs, adaptability to a new environment, and safety and security among other categories when evaluating prospects of relocation. Of the 52 participants, 28% of the participants had children and 71% of participants did not have children. Single individuals with children represent 7% of the single individual’s population, while married individuals with children represent 56% of the married population as shown in Figure 6. It was intriguing to learn that individuals who are in a relationship with children and individuals who are married with children are inclusive of each other representing 27% of the population; no participants had children while in a relationship but not married had children. Only one participant was a single parent not in a relationship, with a Chinese national child. In addition, among married individuals only 12% of them had at least one child born in China.
5.11 Relocation timeframe

Relocation time periods represent one of the most interesting findings. Of the 52 qualified participants, 40% are planning to move during 2016-2020, 37% planned / moved during 2011-2015 and 12% moved between 2006-2010 to China (Figure 7). The data shows each time an individual moved their partner’s relocation period, and their children’s relocation period would be same as the individuals’ relocation timeframe. Only one case is recorded in which the individuals and partner’s relocation timeframe matches however the children’s relocation timeframe did not match. In addition, the data excludes partners who were not planning to move and partners who are currently living in China. From the data, it can be inferred that most families prefer to relocate together rather each individual relocating at different timeframes. Surprisingly, the same pattern emerged for individuals who are in relationship but are not married. Majority of the individuals moved at the same timeframe as their partner’s relocation to China. This excludes partners who were not planning to move and partners who are currently living in China.
5.12 Work experience

This study evaluates if an individual and partner worked prior to relocation, and if both continued to work after relocation to China. In addition, data is analyzed to determine if individuals can financially sustain himself or herself once he/she relocated to China. Of the 52 individuals, 63% of the individuals worked prior to relocation, including 13% singles and 33% married. Couples with children who worked prior to relocation represent 21% of the entire population, while only one case an individual who is not married and not in relationship has children is noted. This individual worked prior to relocation and he/she plans/works after relocation to China. This single case of an individual, who is not in a relationship and not married and has a child, is an outlier. After relocation, 90% of the individual planned or already worked in China, including 25% singles and 46% married. The number also jumps as well for married couples with children from 21% working prior to relocation to 27% of them working after relocation to China. The same pattern emerges when evaluating a partner’s relocation history. Of the 52 individuals, 44% of them reported their partners working prior to relocation. However, the number increased significantly to 62% reporting their partner is working after relocation to China (Figure 8). In addition, prior to relocation an individuals and partner worked represented 42% of the population however after relocation an individual and partner who plan/work in China represent 60% of the population. Only in one case, both an individual and partner do not plan/work in after relocation to China. In addition, in five cases represent .001% of population, where an individual who worked prior to relocation and after relocation has a partner who does not plan/work in China although the partner worked prior to relocation. Most, importantly all of the married individuals with children, who worked prior to relocation, also plan/work in China after relocation. Based on results on the work history, it can be inferred that individual need additional income to sustain a personal lifestyle in China.
5.13 Childcare advantages in China

Childcare is one of critical factors a parent considers when making life changing decisions, which affect their children. Of the 52 individuals surveyed, 58% of them believed that childcare is not better in China. This includes 19% singles and 25% married who believe childcare is not better in China than their previous country of residence. A breakdown as shown in Figure 9, shows that 67% of the singles and 52% of the married individuals do not believe childcare is better in China. However, 64% of the married individuals with children believe childcare is better in China than previous country of residence. Although the percentage is lower, married individuals with children might have a greater insight to childcare programs and facilities due to their needs to identify and utilize a childcare program(s) for their children. These parents might have evaluated numerous factors such as the quality of the childcare facility and programs, the location, the hours of operations, the flexibility of childcare coordinators, and the types of programs offered in the childcare facilities, etc. While it might be logical to support the findings and results of couples with children who have gone through the childcare process, there is still an overwhelming 58% of population who believe that childcare is not better in China.
One of the biggest reasons individuals remain abroad is the lack of career opportunities in the home country at times. However, in this study, more individuals reported better career opportunities in China than their previous country of residence. Of the 52 individuals, 83% of the individuals reported having a better career opportunity in China including 80% of the singles and 88% of married couples (Figure 10). Individuals with partners reported, 54% of their partners having better career opportunity in China (Figure 10). Of the 29 individuals with partners, 41% reported their partner is planning to move between 2016-2020 and 38% reported their partner is planning to move or already moved between 2011-2015. In addition, 88% of the married individuals and 86% of the married individuals with children reported having better career opportunities in China. While the married couples believed, 80% of their partner’s will/have better career in China than their previous country of residence.
There is strong correlation between the level of education and receiving better career in China than previous country of residence. Of the 83% of the individuals reported having a better career opportunity in China than previous country of residence, 12% reported education level of bachelor’s degree, 49% reported education level of master’s degree and 40% reported education level of doctorate degree. An individual’s investment in themselves in order to attain a valuable education seems to increase their likelihood of achieving better future career, as shown in Figure 11. This finding supports the Human Capital Theory, which identifies investment in higher education as one of the human capital investment categories made by individuals or government can lead to growth and satisfaction. In addition, it answers the question does investment in education lead to increase in greater income opportunities.
In addition, there is also strong correlation between age, education and career. Of the 83% of the individuals reported having a better career opportunity in China. Table 4 displays the breakdown by education and age.

**Table 4**

**Age, Education and Better Career Correlation**

<table>
<thead>
<tr>
<th></th>
<th>Bachelors</th>
<th>Master’s</th>
<th>Doctorate</th>
</tr>
</thead>
<tbody>
<tr>
<td>% total</td>
<td>12%</td>
<td>49%</td>
<td>40%</td>
</tr>
<tr>
<td>Age Range</td>
<td>20-35</td>
<td>20-35</td>
<td>26-45</td>
</tr>
<tr>
<td>Majority age range</td>
<td>26-30</td>
<td>26-30</td>
<td>31-35</td>
</tr>
<tr>
<td>% of majority age range</td>
<td>60%</td>
<td>50%</td>
<td>41%</td>
</tr>
</tbody>
</table>

Table 3: Age, Education and Better Career Correlation

5.15 Individual’s increase in income effectiveness

Most individuals seek higher wages however; the effectiveness of income should be taken into account. Higher income might be result of high investment in education and training.
and thereby, enabling higher ability to compete in the international market but higher income does not necessary always equate to the same value. This study evaluates the effective of income rather the amount of higher income. Accordingly, 52% of participants believe they have higher effective income in China than previous country of residence. A breakdown includes 47% of singles, 52% of married and 50% of married individuals with children as shown in Figure 12. The number of married individual with children who believe the effective income is higher in China is the same as those who do not believe the effectiveness of income is higher in China. In addition, there is only 4% difference between the number of individuals who believe they have higher effective income in China than those who do not.

The same pattern emerges as partner’s effective income higher in China data is analyzed. Although 37% of believe their partner’s effect income is higher in China, there is only 6% difference or three cases between individuals who do not believe their partner’s effect income is higher in China. In addition, the number of married individual who believe their partner’s effective income is higher in China is the same as those who do not believe their partner’s effectiveness of income is higher in China. One reason could be due to growth and inflation, items cost more therefore individuals have to work more to generate the same amount of income to have the same effect. As the study shows earlier, the number of

![Figure 12: Individual’s Increases Income Effectiveness in China](image)

individuals who worked once relocating to China increased dramatically.
5.16 Sense of safety and security in China

A major factor professionals consider is level of safety and security in living environment. Most individuals value security as Wytenbach (2010) study identified, “[it is more important to have a safe place to live, with little violence that guarantees a better family life’”. “[Jobs and security have to go hand and hand. It is not important [...] to have a job when security is missing” (p. 52). Of the 52 individuals, 71% of feel safer in China than previous country of residence, including 53% of singles and 80% of married individuals. In study conducted by Fu 2008, one participant responded started, “Living in China is still full of uncertainty and risk. Having settled in Canada with a stable career and easy life, I don’t feel like taking that risk. It’s foolish to give up what I have hard earned and enjoyed” (Fu, 2014). Therefore, increasing the wages and investment in education and health of individuals in less developed countries cannot be the only factors that would reduce talented individual migration.

5.17 More amenities in China

Along with financial incentives, individuals look towards the government to support daily lives including local amenities such as high-quality housing, global brand, transportation, international school, and healthcare. Most professional abroad have become accustomed to some of the amenities therefore these might one to factors considered when evaluating relocation. Of the 52 participants, 69% of them believe more amenities are offered in China. In addition, 73% of singles, 66% of individuals in a relationship, and 68% of the married individuals believe they have access to more amenities in China.

5.18 More accessible transportation in China

Transportation is critical factors in our daily lives from using personal cars to public transportation to get to work, restaurants, home, etc. The 52 participants reacted highly to this factor, as 77% of them believe they have more access to transportation in China than their previous country of residence. Figure 13 depicts the percentage of individuals (single, single with children, married and married with children) evaluated having more access to transportation in China as part of their daily lives.
5.19 Relocation programs and alternatives

This study also evaluates what programs, if any assisted participants to relocate to China. A surprising finding is an overwhelming number of participants (77%) relocated to China without assistance programs. The assumption is the cost of migration was supplied by the returnees, family or friends. Figure 14 provides a breakdown of programs used when relocating to China:

![More Accessible Transportation in China](image)
A deeper analysis into the talent recruitment plan leads to believe incentives offered in the programs might not be ranked a highest factor considered during relocation. Only 15% of the individuals reported being part of the Chinese government’s talent recruitment programs. Xin (2011), majority of the participants recruited under the Thousand Young Talent program, which offers participants 500,000 Yuan to cover living subsidies and 1 to 3 million Yuan for scientific research up to 3 years (p. 10), however it seems the financial factor is not ranked the highest factor considered when relocating. While 75% or (6/8) of the participants reported having better careers in China and only 50% or (4/8) participants believed their effective income was higher in China than previous country of residence. However, 88% or (7/8) of participants ranked feeling more safe in China, 75% or (6/8) of them believe they have/will more amenities in China and 75% (6/8) of them believe they have/will access to more transportation in China. Given the limited number of participants, this study only shows a glimpse into the Chinese government talent recruitment programs. It is not conclusive to determine if these talent programs offer effective or ineffective incentives to recruit talented individuals to relocate to China. Given the limitations, future research will help to identify critical aspects of these programs from education to income.
Education is not only an important part of economic development of a nation but also an investment in human capital. Since participants invest time, money and energy to pursue their educational programs, leveraging their skills and knowledge is one of the best ways to succeed. Through the development of highly talented people, governments are able to create programs, facilities, and jobs in order to grow the economy. China has been investing greatly in creating recruitment programs to attract highly skilled individuals with a wide range of backgrounds to lead and transform its country to a world leader in innovation. However, even with and without assistance programs, individuals are returning home.

**Figure 15**

*Talent Recruitment Programs and Education*

<table>
<thead>
<tr>
<th>Motivational Incentives</th>
<th>Chinese government talent recruitment programs</th>
<th>Thousand Young Talent Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>Better Career</td>
<td>75%</td>
<td>80%</td>
</tr>
<tr>
<td>Higher effective income in China</td>
<td>50%</td>
<td>60%</td>
</tr>
<tr>
<td>Feel more safe in China</td>
<td>88%</td>
<td>75%</td>
</tr>
<tr>
<td>More amenities in China</td>
<td>75%</td>
<td>75%</td>
</tr>
<tr>
<td>Access to more transportation in China</td>
<td>75%</td>
<td>80%</td>
</tr>
</tbody>
</table>

*Note: Data is based on 52 qualified participants.*

Table 4: Motivational Incentives and Talent Program Correlation
Although majority of the participants returned home without joining any assistance programs, 12% of the doctorate professionals and 4% of the bachelor professionals were part of the Chinese government’s talent recruitment programs as shown in Figure 15. Interestingly, no participants with master’s degree reported being part of talent recruitment programs. Figure 16 below depicts the overall ranking of incentives that helped the 52 participants.

![Figure 16: Incentives Ranking](image)

The results of this study shows participant’s value better career, more access to transportation and safety as the top three reasons, which factored during/future relocation to China rather than just financial incentives. More access to amenities evaluated close to sense of safety and security. In addition, least effective and valued incentive was better children as ranked last.

5.20 Data discussion

The majority of the students, alumni, professionals surveyed have relocated to China over the past few decades. Over the next few years, 40% of individuals from the United States and 6% from other countries surveyed plan on relocating to China. The study finds that the main motivation factor is the better career. Many factors can be contributing to better career such as having time to spend with family, making meaningful contribution to society, or recognizing a sense of identity. For example, Rahman (2010), “Just taking classes and
writing papers is not contribution to me, may be contribution but not a challenging work. Can’t do any change in society. What I realized that working to build up a international standard university in Bangladesh is much meaningful contribution” (p. 156). In addition, Chacko (2007) participants stated, “[e]xciting work, prospective for advancement and making a differences, a desire to return to their roots, hope for a lifestyle that allows more time with family and salaries that were commensurate with those in United States in terms of purchasing power” (p. 135).

Based on the research data it can be derived that individuals relocated to China not only for themselves but also for their partners. According to the participants, China provides better career opportunities for singles and married couples whom invested in themselves to gain Master’s and Doctorate degree in a safe environment. Survey data shows, education plays a key role in recruitment of highly skilled individuals for China’s brain gain efforts. Although more individuals reported working after relocation to China, high percentage of them also reported their partners having better career in China than previous country of residence. In addition, 52% reported having higher effective income in China. In the previous country of residence, individuals or their partners could not locate better career opportunities within proximity to their homes or preferred locations due to childcare, family responsibilities or transportation issues thus fewer individuals worked in their previous country of residence. In addition, once individuals especially parents located additional access to transportation, they were able to identify better career opportunities thus translating to more individuals working after relocating to China. Moreover, since 52% of individuals believe they have higher effective income in China, maybe this allows individuals to access more the transportation they desire, housing and healthcare the previous country of residence.

6 CONCLUSION

Brain drain was once and still is viewed negatively as it results in loss of skilled workforce. However, over the decades, brain drain has evolved to brain gain and brain circulation. Knowledge and skills are no longer located at remote locations instead they are transferred and circulated among scientists, entrepreneurs, and innovators. This study analyzes identify three things: (1) What incentives motivate Chinese nationals to relocate back home? (2) Does investment in education lead to increase an income opportunities? (3) What policies and program encourage the return of students, alumni and professionals? (4) And what incentives provided by talent recruitment programs by the Chinese government were critical to students to relocate back home? The data results point to the individuals having better careers in China, having more access to transportation in China and having higher sense of safety and security in China than the previous country of residence as top three motivational factors to relocate to China. While the top three motivational factors are key to migration of these individuals, many other factors contributed to these factors such as patriotism, family or lifestyle. One of major factors contributing to greater career opportunity in China is investment in education by individuals as Human Capital Theory suggests. As discussed earlier, 83% of participants in the study reported having better career in China and this includes 49% of participants with a Master’s degree and 40% of participants with Doctorate degree. Due to the limited number of participants, the conclusions of this study are restricted to this study and the participants of the study.

The results of this study provide a glimpse that China’s endeavors to recruit talented workforce has been largely successful for a few reasons. One, China is attracting highly skilled individuals with the promise of better career opportunities in China through its
policies and programs. Two, China is investing in its infrastructure including education, transportation and science to become a world leader in innovation and technology. Participants in the study noted having additional access to transportation and feeling more secure for themselves and for their families as few of the motivations to relocate to China. Three, China has established research incubators to develop human capital internally. Four, China readily grants permanent residence status to student, scholars and professionals through its policies. Therefore, China is on the path to accelerate its reserve migration. Lastly, due to the complexity and variability in outcomes further research needs to be conducted to create a comprehensive body on motivational factors of participants to relocate to China and effectiveness of the talent recruitment programs.
REFERENCES


UN-DESA & OECD. (2013). *World Migration in Figures*. UN-DESA & OECD.


