

MIGRATION AND MOTIVATION: AN ANALYSIS OF MOTIVATION FOR RETURN TO
COUNTRY OF ORIGIN AMONG FOREIGN-TRAINED CHINESE PHDS

By

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ABSTRACT

MIGRATION AND MOTIVATION: AN ANALYSIS OF MOTIVATION FOR RETURN TO COUNTRY OF ORIGIN AMONG FOREIGN-TRAINED CHINESE PHDS

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Brain drain has been a much studied phenomenon. Its fundamental dynamic is the departure of highly talented individuals from developing economies for more developed economies. The assumption is that the primary motivation for brain drain is the pursuit of higher earnings. The effects of brain drain are more contested. Some contend that the effects are entirely negative, depriving developing countries of human capital and realized as well as unrealized income. Others argue that the effects are mixed, with substitutionary effects in educational systems in developing countries caused by the departure of the highly talented and the prospect of earnings-enhancing emigration. This position, called brain gain, claims that the departure of the highly talented actually incentivizes education and therefore more than makes up for the loss of the highly talented. Others point to the beneficial effects of diaspora communities, such as remittances and foreign direct investment in country of origin due to the presence of expatriates in the diaspora. Empirical evidence is mixed, showing strong negative effects for small countries but some positive and some negative effects for larger countries.

This study is focused on the effects of brain drain on higher education systems by examining the motivation for return among foreign trained PhDs. Brain drain affects the higher education sector disproportionately because it consists in its majority of the highly skilled. The effects of brain drain on higher education systems can be devastating. For that reason, the retention of the highly skilled in higher education systems becomes an important imperative for higher education systems, especially in developing countries. There has been a significant body

of research devoted to the question of why the highly talented leave their countries of origin – economic research, psychological research, and sociological research. There is relatively little research, however, on the reasons why the highly skilled return to their countries of origin. There is even less research on why scholars return to academic systems in their country of origin. This study seeks to fill that gap. This is a qualitative study that uses some quantitative methods in order to model the results. The qualitative portion is based on 36 in-depth, coded interviews with returned scholars working within the higher education system in the People's Republic of China. These 36 coded interviews rendered key insights into the reasons for return among these 36 returned scholars. I found that professional factors were the primary motivation, but nuanced by different values placed on personal factors, institutional factors, and sociological factors. I triangulated the results of this coding process by doing word count analysis, word tree analysis, and word cloud analysis. In the quantitative modeling of the data, I regressed several demographic variables against the four factors described above – professional, personal, institutional, and sociocultural – using a one-way ANOVA, to find whether there was significant variance in the influence of these four factors among different demographic groups. I found that there were several significant differences among the groups. The results of these two analyses – the qualitative and the quantitative – shows that the return decision is the result of an individualized value matrix that is used to evaluate the conditions in country of origin before making the decision to return. Depending on the weight assigned to each value, the decision to return, or not to return, is made. Using the results of the qualitative and quantitative portions of the dissertation, I model the findings in a microeconomic function describing the way in which the decision for return is made.

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Chapter 1

Introduction

It has long been known that intellectual talent gravitates toward centers of power and commerce. In fact, such “*nomadisme*” may be “*le premier creuset de l’innovation, qu’elle soit technique, politique ou économique*” [migration may be the primary crucible of innovation, be it in technology, politics, or economics] (Charlier & Moens, 2012, p. 185). Yet, while creating synergistic intellectual communities (Murphy, 2007), these flows of talent leave the peripheries depleted of much needed human capital (Galtung, 1971; Galtung & United Nations Conference on Trade and Development, 1979). This is especially true of higher education systems (Altbach, 2007b). Until the 1960’s, this outflow of talent was without a name. In 1963, the Royal Society of London was first employed the term “brain drain,” to describe the flight of European intellectuals, scholars, and scientists to North America in the aftermath of World War II (Beyer, 1972; Cervantes & Guellec, 2004). Since then, the term has been applied more broadly, especially to describe the movement of talent from the emerging economies to more developed economies (Beyer, 1972; W. Carrington & E. Detragiache, 1999; Cervantes & Guellec, 2004).

Brain drain presents a serious challenge, especially for higher education systems, which run on “brain power” (Altbach, 2007b). The movement of scholars away from emerging higher education systems and into more developed higher education systems would seem to expose emerging systems to irreparable harm. As I will explain below, however, the real impact of these flows is still under study and the evidence is mixed. Regardless of how “brain drain” affects developing countries, whether positively or negatively, there is no doubt that a “reverse brain drain,” that is, a return of expatriate scholars to country of origin, would undoubtedly enhance the quality and performance of higher education systems in developing countries (Tian, 2012).

Although the twin issues of brain drain and brain gain have received ample attention in both the theoretical and the empirical literature, reverse brain drain has received almost none. There is no clear indication, for example, whether or not such a return to country of origin is beneficial for the scholar, for the institutions of which they are a part, or for the countries to which they return. Intuitively, however, one might assume they are (thus also Tian, 2012). Nor are there many studies examining the decision-making process that brings scholars back to country of origin. The inner dynamics of these seemingly counter-intuitive decisions, at least from a rational choice perspective, is unknown. The purpose of this qualitative study is to fill in one niche in the broader issue of reverse brain drain – motivation for return among expatriate Chinese scholars. In this study I will analyze thirty-six semi-structured interviews in order to explore the motivation for voluntary return among foreign-trained Chinese PhDs who have returned to China to further their academic careers. The ultimate purpose of this exploration is to attempt to model in a utility function the decision making process among foreign trained Chinese PhD holders.

The Brain Drain Problem

As the pejorative nature of the term “brain drain” implies, the prevailing assumption is that its consequences are negative for socioeconomic growth, especially in developing countries. This assumption has been questioned in some quarters, pointing to economic growth in countries where “brain drain” had occurred. These studies highlight possibly ameliorating effects that may turn “brain drain” into “brain gain,” such as increased incentive to invest in human capital, both by individuals and states, large, unexpected pools of talent in the country of origin due to the uncertainty of emigration, increases in remittances to country of origin by successful scholars abroad, and the potential return of highly developed human capital at some future date (Clemens,

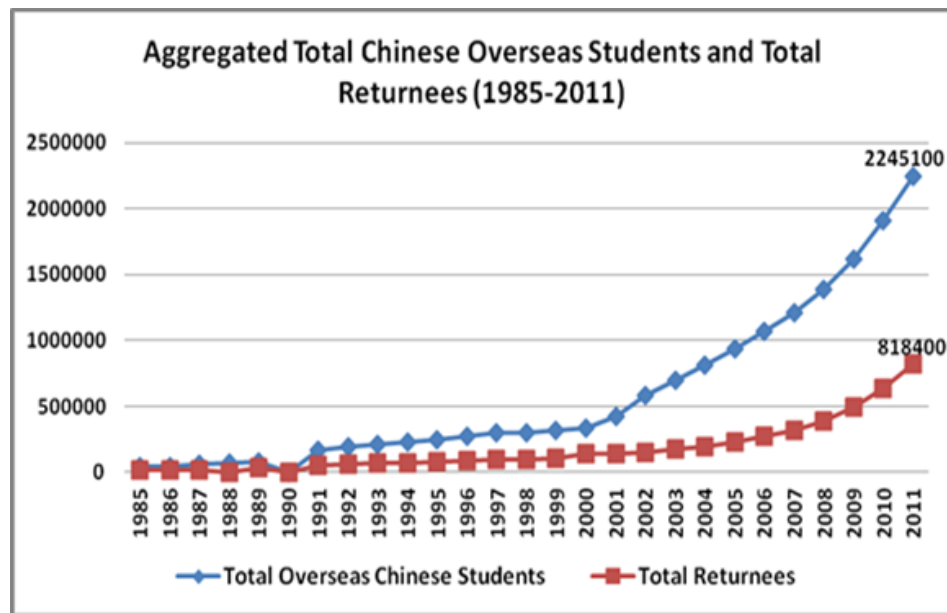
2009; Mountford, 1997; Stark, Helmenstein, & Prskawetz, 1997). Nevertheless, recent empirical studies have produced mixed results around the outcomes of “brain drain,” and “brain gain,” many of them showing a positive correlation between talent emigration and deteriorating economic conditions in the country of origin. In particular, a study by Rogers (2008), demonstrated that gains in economic growth accompanied growth in education only in those countries that showed low levels of skilled emigration, suggesting, in other words, that schooling only positively affects economic growth where most graduates remain in country. In spite of efforts to reframe the notion of brain drain as “brain gain” or “brain circulation” (Agrawal, Kapur, McHale, & Oettl, 2010; Commander, Kangasniemi, & Winters, 2004; Saxenian, 2005; The Brookings Institution, 2008; Thorn & Holm-Nielsen, 2008) in order to take into account the ambiguity of the notion of “return” by coining new terms like “brain adaptation” (Lee & Kim, 2009), or even policy initiatives to create a “reverse brain drain” (D. Zweig, 2006), empirical studies continue to show that the loss of the highly-skilled, including and especially scholarly talent, has a demonstrably negative correlation with economic growth and development, especially in smaller countries (L. C. Chen & Boufford, 2005; Dao, 2010; Fleisher, Li, & Zhao, 2010; J Gibson & McKenzie, 2010; Ha, Yi, & Zhang, 2009).

China and Brain Drain

The problem of talent migration is especially acute for China. Although the number of foreign-trained scholars returning to China is at an all-time high (H. Li, 2010; D. Zweig, 2006; D. Zweig, Chen, & Rosen, 1995), the number of students not only going overseas to study but staying overseas to build their careers continues to grow at a fast pace. From 1990, the year of the Tiananmen Square uprising, until 2011, the number of students studying abroad has increased by more than seven-fold while the number of returning scholars has increased by only

five-fold. At current rates, the talent gap will continue to widen (Cao, 2008; Ma, 2007; see Figure 1), although trends have clearly been improving for China in the last three years (2009-2011). This talent gap may not threaten the country's development, but may well deprive the country of the top-tier talent that would accelerate the process of development, especially when

Figure 1: Aggregated Total Chinese Overseas Students and Returnees; Source: Chinese Ministry of Education, compiled by Guo Yugui (Guo & Medendorp, 2012).

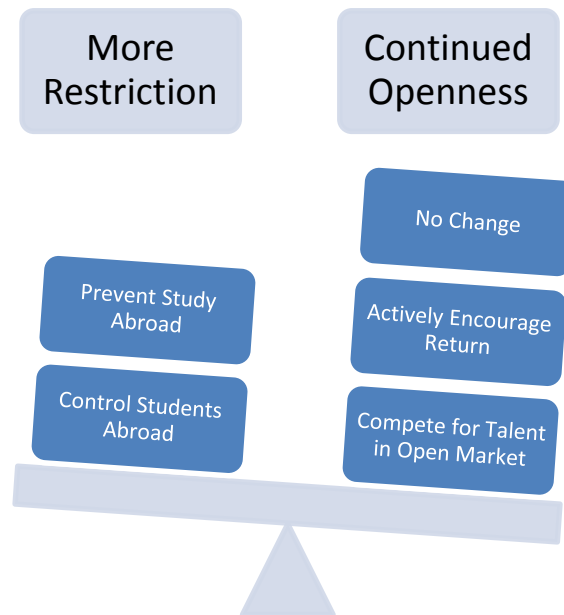


one considers how the development outcomes have been uneven for China, creating pockets of accelerated progress while leaving large portions of the country in an ongoing state of underdevelopment. This is driven in large part by the lack of top-tier scholars willing to work outside the development bubbles (Fleisher, et al., 2010). Regional universities tend to be of lower quality, with less qualified faculty. As a result, the brightest students migrate to larger cities and higher ranked institutions in order to take advantage of better educational opportunities, while students who do not qualify for such opportunities receive an inferior education (Wu and Song, 2012).

It is a common misconception that international training for Chinese scholars is a recent phenomenon. The Chinese government's recent efforts to encourage thousands of students to study overseas represent a historical continuity rather than a radical departure in modern China's cultural policy (Guo and Medendorp, 2012). For over a century, with the sole exception of the period from 1967 to 1974 when China dealt with the effects of the Cultural Revolution, Chinese students have been studying abroad, frequently in large numbers.

At the end of the Cultural Revolution, recognizing the role of human capital in the modernization of industry and infrastructure, Chinese Premier Deng Xiaoping repeatedly urged universities and the Ministry of Education to send more students for study abroad (Biao, 2003; Brazil. Secretaria Especial de Políticas de Promoção da Igualdade Racial., 2004; Cao, 2008; Ha, et al., 2009; Z. Wang, 2002; D. Zweig, 2006). In 1981, China enacted a landmark policy entitled "Temporary Regulations on Self-financed Overseas Education" (Biao, 2003, p. 29), allowing private citizens the opportunity for self-financed study abroad. The effect of this policy was minimal until the Tiananmen Square uprising. By the mid 1990's, the gap between exiting and returning students had grown to the point that China faced a critical shortage of human capital. By the mid 1990's, as the gap between exiting and returning students grew, China was faced several policy options: it could clamp down on the number of exiting students; it could attempt to exercise tighter control over those students who studied abroad forcing them to return upon completion of their studies; it could take no further action and hope that students would return on their own; it could allow for freedom of movement and do more to encourage students to return; or, it could allow for freedom of movement and take active steps to compete for Chinese talent in the open market place (see Figure 2). China chose the last approach by initiating a second important policy,

Figure 2: China's Policy Options

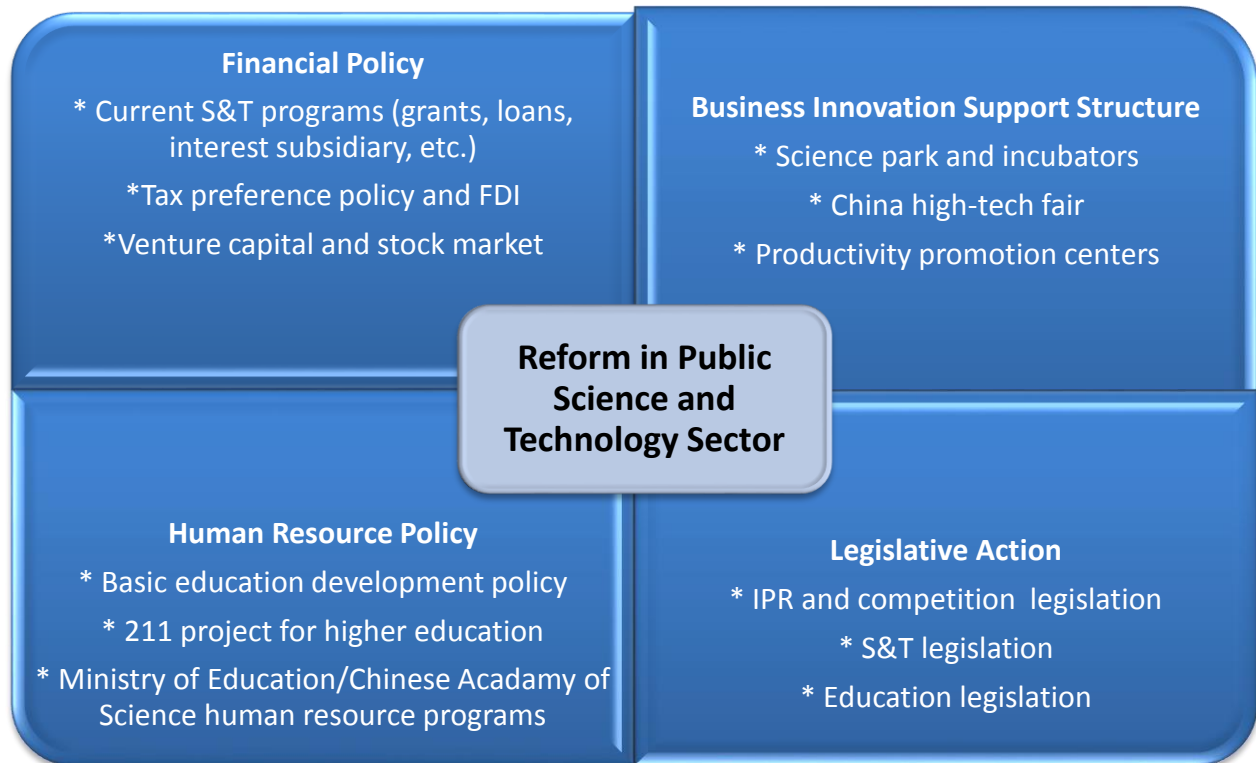


sometimes known as the “Twelve Words Approach,” which encapsulated China’s new approach to student flows in twelve succinct characters “*zhi-chi liu-xue, gu-li hui-guo, lai-qu zi-you*, which means “support study overseas, encourage returns, guarantee freedom of movement” (Biao, 2003, p. 29).

China’s response to the growing talent gap must be understood within the broader context of policy development pursuant to the Cultural Revolution. China’s overarching goal under the new national leadership was modernization for development (Brazil. Secretaria Especial de Políticas de Promoção da Igualdade Racial., 2004; Cao, 2008; Ha, et al., 2009; H. Li, 2010; D. Zweig, 2006). Faced with a serious shortage of young and middle-aged scientists, engineers, and professionals as well as a higher education and research sector in disarray after years of official neglect and in some cases repression, Chinese leadership understood that they lacked the human capital to reach their modernization goals in agriculture, industry, science and technology, and national defense (Biao, 2003; Cao, 2008; Ha, et al., 2009; H. Li, 2010; D. Zweig, 2006). In an effort to remedy the gap, China undertook a series of initiatives under the broad umbrella of an

Innovation Policy Framework (Huang, Amorim, Spinoglio, Gouveia, & Medina, 2004; see Figure 3). The policy framework sought to motivate creative initiative in four directions –

Figure 3: China's Innovation Policy Framework (Huang, et al., 2004)



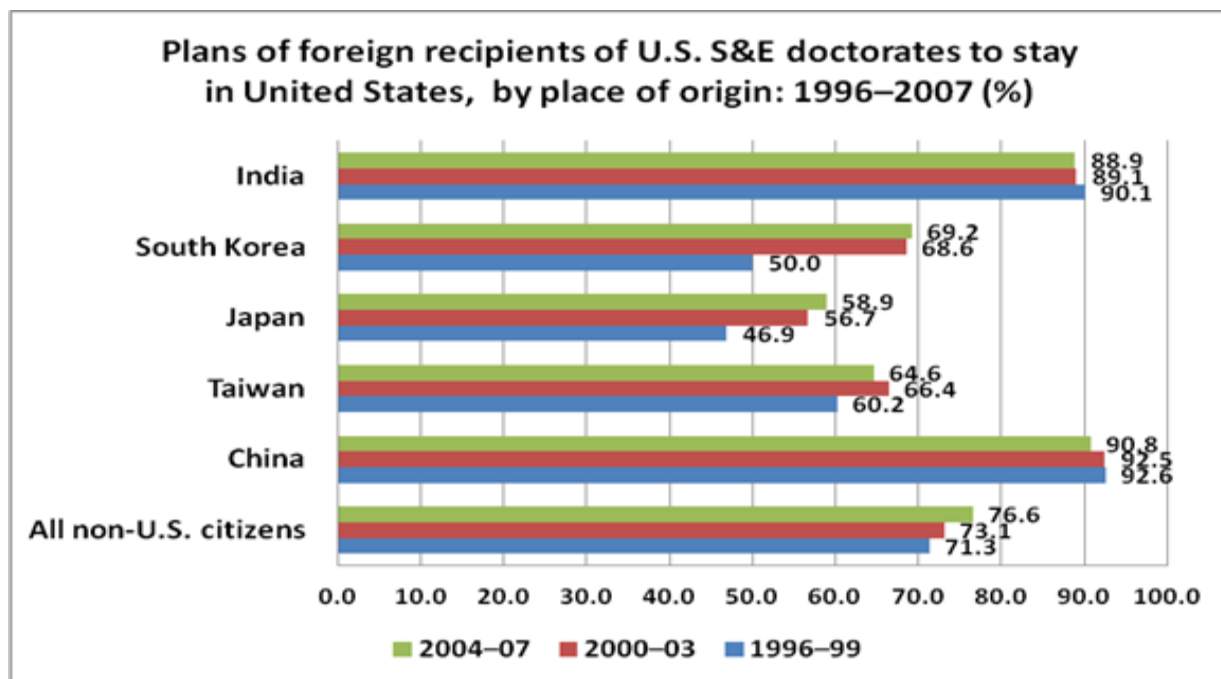
through fiscal policy, through a business innovation support structure, through legislative action, and through human resource development.

A key component of the human resource piece was the Knowledge Innovation Initiative (KII). Begun in 1998, the initiative set out to recruit Chinese scholars working in institutions overseas. A series of additional initiatives were spawned as part of the KII, namely, Engaging Outstanding Overseas Talents Program, Overseas Review Experts, Overseas Supervisors for Doctoral Candidates Program, Fund for Overseas Outstanding Scholars, Academic Seminars Program, Einstein Visiting Professorship, and the Distinguished Young Scholars Program (Cao, 2008; Cao & Suttmeier, 2001; Chinese Academy of Sciences, 2010). The overarching purpose of

KII is “to create a highly innovative research contingent” (Chinese Academy of Sciences, 2010). Young scholars were critical to this effort. As a result, China’s brain drain is more acute than most developing nations, but its response is more intentional as well, making it a good context in which to examine the motivation behind the return of Chinese scholars who have studied abroad.

The returned Chinese international students have been playing an important role in knowledge transfer that is critical to the Chinese modernization drive. In the past two decades from 1985 to 2011, about 2,245,100 Chinese students traveled to about 110 nations and regions for overseas study, and by the end of 2011 818,400 of them, 36.45 percent, had returned home, according to the China’s official reports (See Figure 1).

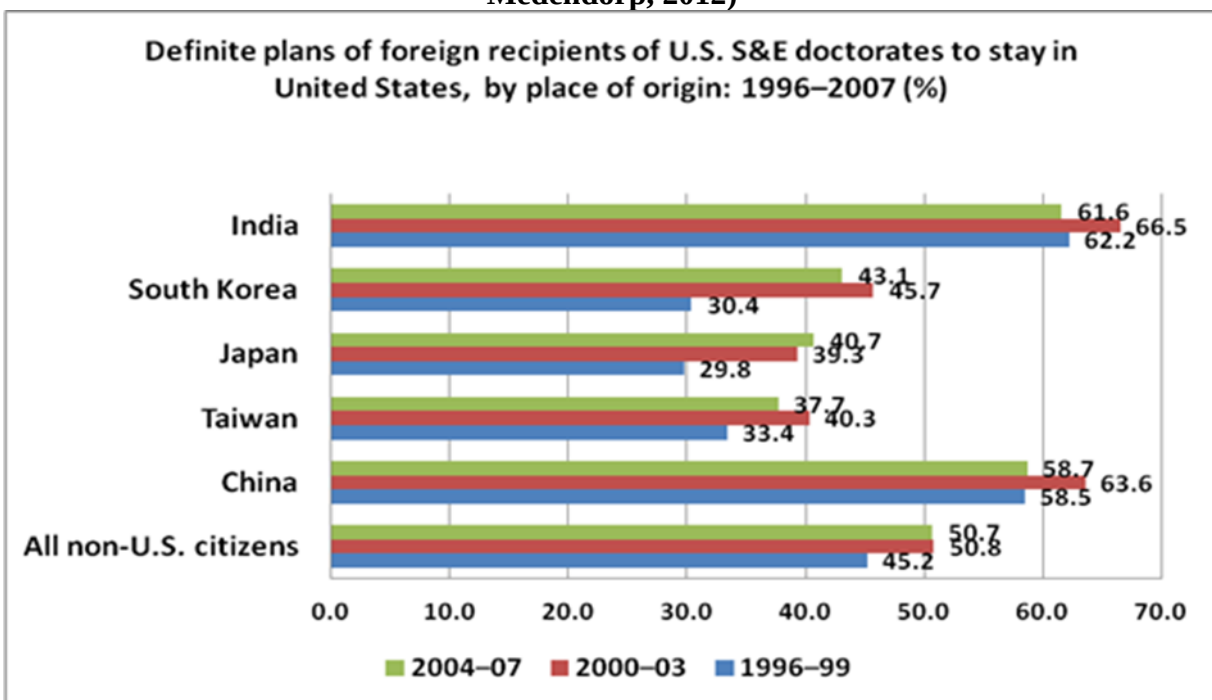
Figure 4: Source US National Science Foundation, compiled by Guo Yugui (Guo & Medendorp, 2012)



Among the Chinese overseas students, the largest number has been traveling to the United States, according to a number of reports. During the past 30 years, between 1980-81 and 2010-11, Chinese international students periodically took first place in comparison with those

from India and Japan. Since 2009, however, the number of Chinese students studying in US institutions has blossomed. According to the latest data of the Open Doors report, 157,558 Chinese international students were enrolled in US colleges and universities, 21.8 percent of total international students in the US, in 2010-2011 academic year. China is now the leading sender of international students to a number of nations, including the United States, the United Kingdom, Japan, Korea, Australia, New Zealand, Thailand, Malaysia, and Germany. The United States is currently the leading host country of Chinese international students (Guo and Medendorp, 2012).

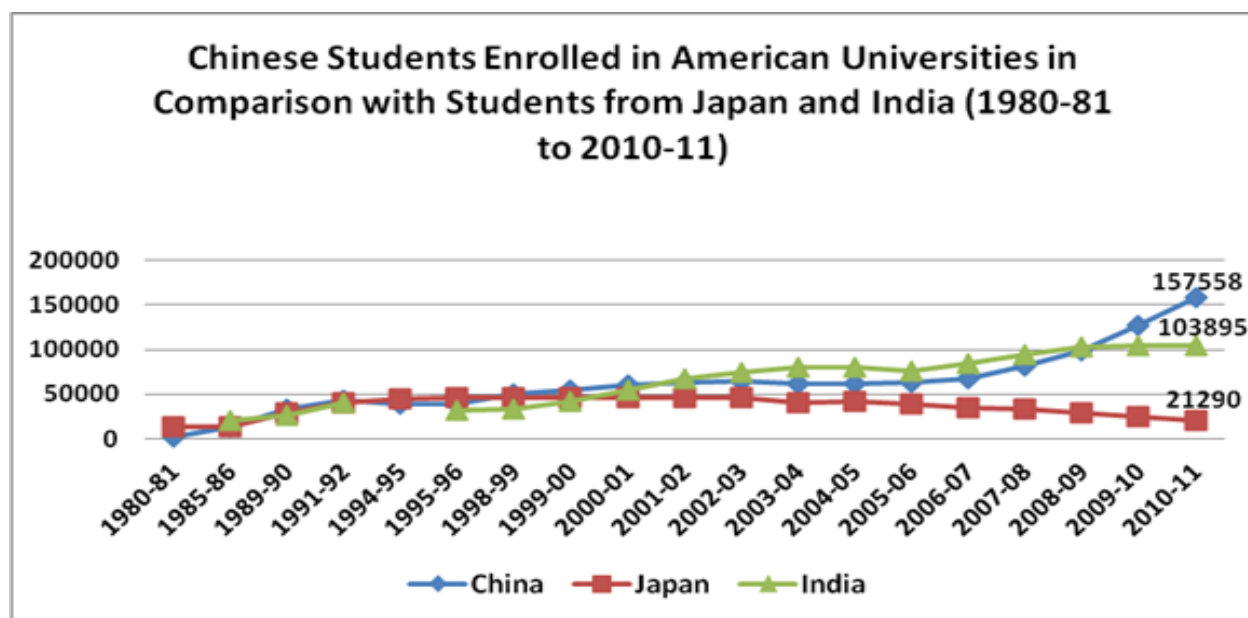
Figure 5: Source US National Science Foundation, compiled by Guo Yugui (Guo & Medendorp, 2012)



At least half of the Chinese overseas students are extending their stay or seeking permanent residency in foreign nations. According to data from the US National Science Foundation, for the period 1996-99, 2000-03, and 2004-07, over 90 percent of Chinese S&E doctoral recipients in U.S. universities had plans to remain in the United States (see Figure 4), and over half of them had firm plans to remain in the United States (see Figure 5). Not only are

these numbers astounding, they are especially critical for my research in that science and engineering PhDs represent the type of fodder from which higher education systems are built. Although no numbers are available for the intentions of doctoral graduates in the social sciences or the humanities, one would assume that their numbers would be lower since their skills would not be as transferable as science and engineering graduates. As a result, one must look with some caution on the gains that have been made in closing the gap between departing students and returning students, since the gains appear to be occurring on the low end rather than the high end of the human capital scale (Cao, 2008). It should be noted, however, that although the gaps are still unacceptably large, the numbers in both intentions to stay and definite plans to stay are both trending in the right direction.

Figure 6: Source Open Doors Report 2011 compiled by Guo Yugui (Guo & Medendorp, 2012)



Another study by Michael Finn at the Oak Ridge Institute for Science and Education in Tennessee in 2010 showed that more than nine in every ten students from China who gained a doctorate in the United States in 2002 in science and engineering were still in the country in

2007, the highest percentage from any foreign nation (Finn, Oak Ridge Institute for Science Education, & National Science Foundation Division of Science Resources Studies, 2010). This compares with 62% of all foreign-born PhD recipients for that year. This is in part due to the growing number of Chinese students studying in the US compared to other sending countries (see Figure 6).

China has had recent success in recruiting Chinese scholars working abroad. Although the number of scholars returning to China has increased (Cao, 2008; Cao & Suttmeier, 2001), and some studies recently have explored reasons for not returning (Cao, 2008; Cao & National University of Singapore East Asian Institute, 2004; Franzoni, Scellato, & Stephan, 2012; D. Zweig, 1997; D. Zweig, et al., 1995), little is known about why Chinese academics choose to return.

Moreover, China is not alone in its efforts to prevent the loss of intellectual talent. Developing countries around the world are struggling to attract expatriate scholars in a competitive global market. I will focus my attention on the effects of talent migration on the development of the higher education sector. Key to an effective higher education sector is the ability to attract and retain qualified faculty. As Ben Wildavsky has pointed out in his recent work, *The Great Brain Race*, the rankings-fueled drive toward world class status is also driving a parallel search for faculty (Wildavsky, 2010). The ability to attract and retain top-quality faculty feeds directly into ranking formulas and is causing top institutions to develop strategies for recruiting and retaining world class scholars (Altbach, 2007a; Balán, 2007; Richardson, McBey, & McKenna, 2006).

The Purpose, Rationale, and Significance of this Study

Understanding motivation for return, then, is critical for educational policy in developing countries. If good data can be made available to developing countries as they attempt to recapture lost intellectual talent, then good policy and more effective recruitment can follow. Oddly, however, there is very little available in the scholarly literature covering this important topic. Although there is a wealth of literature on labor migration (World Bank, 2011), the migration of the highly skilled (International Organization for Migration & United Nations, 2011; OECD, 2002), migration of scientists (Finn, et al., 2010), and migration of students (Institute for International Education, 2012; OECD, 2012), what is available on academic mobility, faculty mobility, and mobility of scholars is, as Ulrich Teichler put it back in 1996 “occasional, coincidental, sporadic, or episodic” (Teichler, 1996). The problem persisted, as Hoffmann noted over a decade later, when he described discussions of international faculty mobility as “*persistent and ‘old’ patterns of internationalization and international cooperation . . . such as student and research mobility, large-scale research collaboration and conventional export/import relations*” (2009, p. 348, emphasis original), but neglecting the more important issue of the academic migration.

Given the importance of these movements for the development of higher education systems, such a lack is surprising. In this study I hope to contribute significant information on motivation among expatriate scholars for leaving potential success in the academic systems of the developed world and returning to their developing countries of origin by interviewing 36 Chinese returned PhDs currently working in Chinese higher education. China is the point of observation because of its intentional efforts and success in recruiting such scholars, but the results will have broader implications for developing countries.

Definition of Key Terms

This, then, is a study of foreign trained Chinese scholars who have returned voluntarily to China in order to pursue their academic careers. In order carefully to circumscribe the meaning of each of these terms I provide here a description.

Chinese

By “Chinese” PhDs I mean Chinese scholars who were born and raised within the current geo-political boundaries of the Peoples’ Republic of China (excluding Hong Kong and Taiwan) and received their primary and secondary education within the Chinese education system (whether public or private), but have received their PhD from a foreign, i.e., non-Chinese, institution (regardless of where they have done their pre-doctoral work).

I have chosen Chinese scholars rather than scholars from another country or region simply because China, more than most developing countries, has experienced an acute brain drain at the high end (Cao, 2008), and because the Chinese government has established a series of programs for recruiting Chinese scholars working abroad under the umbrella of the Knowledge Innovation Initiative (Chinese Academy of Sciences, 2010). As a result, China has not only one of the highest emigration rates among the highly-skilled of any developing country, they also have one of the most intensive and intentional scholar recruitment programs.

Foreign-trained

By “foreign-trained” I mean studying in institutions that are geographically located outside of China and, therefore, not foreign institutions in China, either through branch campuses or some form of bilateral agreement with Chinese institutions. Although in-country foreign degrees are desirable and sought after in the Chinese context, such programs do not entail a decision to return. The purpose of focusing on foreign institutions is two-fold. First, I am

assuming that foreign degree holders have achieved a certain level of internationally marketable human capital that would, all other things being equal, give them an advantage in the international labor market. As will be seen in the analysis section, the vast majority of foreign-trained returning Chinese PhDs have received their degrees in top-tier institutions, most of them ranking in the top 500 in world university rankings. There were exceptions to this rule, but even in those few cases, we encountered that the mere presence in foreign institutions improved their marketability and provided them with employment opportunities that would most probably not have been available as a Chinese national degree holder (although this is a counter-factual argument).

The second reason for focusing on foreign-trained Chinese PhDs is that receiving a foreign doctoral degree will, necessarily, entail a decision to return. Regardless of whether one studies under government sponsorship, or whether the decision to return occurs prior to departure, the choices still remain for those who are residing in host countries and must be reaffirmed on a daily basis until one actually sets foot in the People's Republic of China again. In the same way, one could also say, their continuing presence in the Chinese higher education system entails a daily decision to remain.

PhD

There has been extensive work done in the fields of economics and labor migration on the flow of the highly skilled (Clemens, 2009). My interests, however, lie more specifically with strengthening the higher education sector in developing countries by attracting and retaining highly-skilled scholars as represented by PhDs. While it is undoubtedly the case that the accumulation of human capital adds to socio-economic growth regardless of the origin of that human capital (Alex, 1983; Arestis, Baddeley, McCombie, & Ebooks Corporation Limited.,

2007; Beine, Docquier, & Rappaport, 2008; Ciccone & Papaioannou, 2009; Di Maria & Lazarova, 2012; Savvides & Stengos, 2009), there are further advantages to attracting one's own home-grown talent, such as, the fact that such talent is more contextually integrated, culturally adept, and linguistically adapted. PhDs, especially those who are present in academic institutions, not only form an important part of this human capital, they are also the key to the formation of further human capital in the country of origin, since human capital is typically measured in years of schooling. The presence of a sufficiently skilled faculty cadre is one of the keys to producing and retaining PhDs within the national system. Students who earn their PhDs from foreign institutions are more likely to emigrate than those who receive their PhDs from national institutions (Rosenzweig, 2005). For that reason, I will focus on the problem of attracting and retaining native PhDs in their country of origin.

Those with Masters degrees who are working in higher education institutions could feasibly be taken into account as well, since, according to Shen, they 41.5% of higher education faculty in China (Shen, 2008). Since I am looking at the strengthening of the Chinese higher education system through human capital accumulation, however, my focus will be PhDs. The accumulation of higher education faculty with a less than terminal degree in their respective fields is not a viable long term strategy for higher education system development. In this study I will examine PhDs who have earned their PhD degree in a foreign institution and are currently working in Chinese academic institutions. By identifying "PhDs that have earned their degree in a foreign institution," and have chosen to "further their careers as scholars or researchers in a Chinese academic institution," I intend to restrict this study to those Chinese PhDs who are currently employed as researchers or faculty in institutions that are directly related to Chinese higher education. This will include independent research institutions in China that are not

affiliated with any specific academic institution, such as, for example, the Chinese Academy of the Sciences, since they engage not only in research, but in teaching and degree granting as well.

By “to further their careers” I mean to exclude those who are in China for short term projects, presentations, or consulting. I will look only at those who are currently under contract for at least one academic year and who express the intention to remain in China for the foreseeable future.

Voluntarily

By inserting the adverb “voluntarily,” I am excluding those who return due to contractual agreements either with the Chinese government or private institutions. This study is an attempt to examine the decision-making processes that bring Chinese PhDs back to China. As noted above, there is an element of voluntariness in the decision-making process even of those who are under written agreements, and there may be an element of coercion even among those who have no written obligations (for example, when family expectations weigh heavily in the decision making process), nevertheless, obligations that arise from expectations that are not legally binding are of a different nature and magnitude than obligations that have legal force and consequences. For that reason, in the description of the sample interviewees and again on the pre-interview questionnaire applied to the subjects, as well as during the in-depth interview, specific questions will be asked as to whether the subject returned due to written agreements or contracts.

Although it would seem counterintuitive not to recruit PhDs back to country of origin, the return of a scholar is not always advantageous either for the country of origin or for the returning scholar. Timing is essential. If working conditions are such that top-tier scientific minds are burdened with administrative or teaching duties that distract them from or dilute their research productivity, then neither the scholar nor the country of origin benefits. If conditions are such

that basic research becomes difficult or impossible, then the greatest contributions of top-tier scientists remain unexploited. If isolation cuts a top-tier thinker off from the scientific community generally or from the scientific conversation of peers, either through restrictions in travel or through lack of access to the internet or print media, then the best contributions of the scientist remain muted. If funding for research is irregular or non-existent, then even basic contribution remain unrealized (Wei, 2011; D. Zweig, et al., 1995). Examining the research questions within the context of the Chinese scholar recruitment model will provide policy-makers in developing countries everywhere important insight into what “works” in attracting top-tier scholars to country of origin.

Background of This Study

My interest in this topic was born of a lengthy career in university administration, consulting, and evaluation in several developing countries in Latin America and the Caribbean. As I traveled and worked with universities throughout Latin America and the Caribbean basin, I realized that universities in developing countries faced similar development issues. They are not unlike issues faced by all higher education institutions, but because of the special stress that developing economies put on the higher education system, there are certain dynamics that are unique to institutions in these developing economic zones.

Chief among the problems that I faced as an administrator, a problem that was shared by my colleagues in other like institutions, was that of retaining top academic talent. The power of the U.S., Canadian, and, to a lesser extent, European higher education markets to syphon off top talent was frustrating our efforts to build quality institutions. This is not just about scholar mobility, but has much broader and deeper implications in that these international centers of academic power frame the global academic discourse and set the global research agenda. As a

result, critical research issues for developing economies and societies often go unaddressed or receive less attention than their urgency might imply (Marginson & Rhoades, 2002).

Thus, I became interested in what types of combinations of national policies and institutional strategies might make it possible for top talent to stay in or return to developing countries? What would it take to cause a return migration of these bright minds to devote their time and attention to unresolved issues in their countries of origin, or even beyond that, for non-native academics to accept positions in these systems? Clearly it would have to be more than a purely economic equation, since salaries are never comparable. If the question is thus framed, there would be no hope of reversing these trends. But are academics, especially the brightest and the best, motivated by other than economic considerations when pursuing their careers? Anecdotally it seemed possible, as I met several top-notch researchers working throughout Latin America and the Caribbean. What made them different from others who had chosen to migrate to economically greener pastures?

Research questions

In order to explore these issues, I am posing the following research questions:

1. What motivates Chinese PhDs that have received their degrees in a foreign country to return to China to pursue their academic careers?
2. Of the four factors motivating return identified in previous studies (personal, professional, organizational, and socio-cultural), on which do returning scholars put more emphasis?
3. Do these emphases differ by age, gender, marital status, number of children, discipline or area of study? And if so, what patterns emerge?
4. How might this decision-making process be modeled in a utility function?

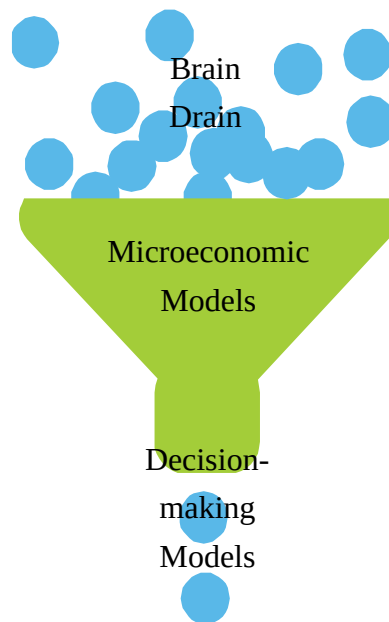
Each of these questions is intended to illuminate the motivation question among returning Chinese PhDs.

Chapter 2

Literature Review

The following review of the literature is intended to set the stage for the examination of motivation for return among foreign trained Chinese PhDs by linking the discussion of motivation for return to brain drain, brain gain, and human capital accumulation models and

Figure 7: Literature Review



evidence, microeconomic models and evidence, and decision-making models and evidence. The chapter can be seen as a funnel of sorts that will proceed from the general to the more specific (see Figure 7). I will approach these bodies of literature in that order.

Macroeconomic Models for the Negative Impact of Brain Drain

According to Michael Clemens (2009), the literature on the subject of the brain drain can be divided into three waves. The first wave, during the 60's and 70's, consisted primarily of theoretical literature based on economic models. It presumed that the emigration of human capital represented a loss, especially for developing countries. The primary research question

during this first wave was only the nature, extent, and depth of the negative impact on country of origin. The debate was launched by Herbert G. Grubel, of the University of Chicago, and Anthony D. Scott, of the University of British Columbia, who questioned the premise that “a country ‘loses’ by the emigration of highly skilled individuals is most nearly always valid when we consider the ‘country’ to be a nation state whose national objective is to maximize its military and economic power” (1966, p. 269). According to Grubel and Scott, this assumption fails on a two points: the “number” of persons available for military service is irrelevant in an age of technology and the usefulness of the highly skilled in military endeavor is questionable at best; and the economic well-being of a nation should not be measured by national output, but by per-capita income, which may or may not be affected by emigration.

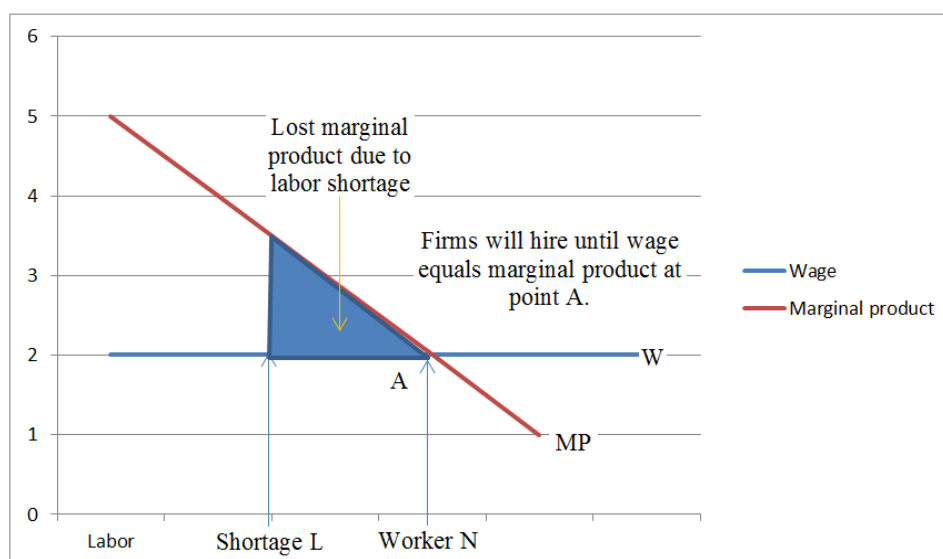
The authors go on to redefine the objective of a “country” as to maximize the collective welfare of an association of individuals (p. 269), the chief measure of which is per capita income. Under this definition, emigration could be justifiable if 1) the emigrating individual is able to perceive greater income as a result of emigration, and 2) the income of those who are left behind is not diminished. Using the Samuelson-Hicks model of movements of labor and capital, the authors demonstrate that “emigration imposes only short-run frictional costs to society which disappear in the long run” (p. 271). They also argue (unconvincingly, in my opinion) that the loss of tax revenue represented by an émigré is equal to or less than the reduction in public services surrendered by them (taking into account services for the individual and family members). But one has to question the reduced burden, for example, of large social services, such as police protection, or large infrastructural projects, such as roads, water, and sewer. Such would be needed regardless of presence or absence of the highly-skilled, meaning the costs for such projects would be distributed among a smaller base. The authors then dismiss the contribution of

individuals to development, saying that such advances are more attributable to professions than to individuals, and also discount the value of any genetic value that might be passed on to descendants, again, both questionable assumptions.

The authors conclude by giving the positive contributions of émigrés to their country of origin. They mention remittances, enhanced prestige of their home country due to their presence in their country of destination, upgrading in country of origin provoked by their departure, and the spillover effect of knowledge produced by émigrés in their country of destination, due to greater productivity (better research support and a more stimulating intellectual community), which indirectly also benefit their country of origin. Their conclusion is that although there are losses to country of origin, they are less, and less durable than previously thought.

Grubel's and Scott's article was contested by Aitken (1968) who pointed out two flaws in their reasoning. First, Aitken shows that the Grubel-Scott article calculates the income of

Figure 8: Lost Marginal Product Due to Loss of Higher Skilled Labor



remaining highly skilled workers both among the highly skilled and among the rest of the population, producing zero change in income. Aitken points out that emigration of skilled

workers “will not only reduce the income available to the remaining population, but it will also tend to redistribute income from unskilled labor to the remaining skilled workers. Hence emigration of the highly skilled reduces the income of the ‘poor’ and increases inequality of income” (p. 543). His argument here is based on the assumption that a reduced supply of highly skilled labor will increase wages among the highly skilled and in a two country model will thus proportionately reduce the wages of the unskilled. He also argues that income is not static, and that simply calculating income does not take into account possible investments and savings that would generate further income gains, not only for the individual, but for the country. Moreover, although émigrés can be replaced, Grubel and Scott did not calculate the opportunity cost from externalities lost from the departure of the original highly-skilled worker (i.e., social marginal products). Aitken also critiques the exclusion of college students that do not return as having no net effect on the national income (since they have never held a job). Aitken points out that only at the point of the n th worker does marginal product equal wage, meaning that all marginal product between the n th worker and the existing workforce is forgone as part of the potential national income. Where college students emigrate and do not return, the highly-skilled workforce becomes chronically diminished and rarely reaches the n th worker, meaning that marginal product is lost to emigration (see Figure 8).

In 1974, Jagdish Bhagwati, who would become a leading “brain drain” theorist, teamed with Koichi Hamada (both of MIT) to build on the then burgeoning literature. Like Aitken, they point out that even under the best of circumstances there would be an economic loss for those who are left behind, and they also point out (like Aitken) that the social marginal products are not included in the Grubel-Scott model. In addition, Bhagwati and Hamada point to lost investments in the education of the highly skilled that are not recuperated through taxation due to

their absence from the country. They also mention the uncounted value of remittances and ask whether the movement of highly skilled labor might not better be analyzed under international capital movement models. They then turn their attention to the unique plight of developing countries and ask whether a value theoretic model could be constructed which would take into account the nuances they described. They point to three issues that are not well managed by the value theoretic models: 1) income inequality will always drive highly educated elites to demand salaries comparable to their counterparts in the developed world; 2) these distorted wages then pull up even the lowest wages in institutions leading to further wage distortion; 3) wage distortion leads to a distortion in unemployment (much higher as a result); 4) the distorted wages creates a high “political” demand for education (as the only means of escaping grinding poverty) but often leads to masses of the educated unemployed creating educated slums in urban centers; 5) the demand for education leads to the accommodation of the newly educated in the education expenditures of the state, which leads to the proliferation of colleges, for example, and the lowering of standards (and thus also of quality) especially in higher education.

Bhagwati and Hamada work their way through five different equations intended to compensate for these deficiencies in the Grubel-Scott model and produce a result that is more sensitive to the inputs excluded from their model. The first model is what they call the “*our-Joneses-keeping-up-with-their-Joneses*” scenario. In this case, the country’s educated/skilled labor, through familiarity with the outside-world, demands and achieves an increase in its salary level. The second model is the “*keeping-up-with-our-Joneses*” scenario. In this case the rise in the wage of skilled labor leads to a sympathetic rise in the wage of unskilled labor. Model three is called the “*emigration-of-our-Joneses*” scenario. Here the emigration of skilled labor to higher-wage countries leads to an increase in the “expected” wage for skilled labor back home,

either as a result of a reduction in unemployment of skilled labor or as a result of pressure on domestic wage due to higher wages abroad. The final scenario is called “*the general case of emigration and rise of wages*.” In this case, the emigration of skilled labor is accompanied by a sympathetic rise in the domestic wage since emigration implies more integration of the professional markets for skilled labor internationally.

After modeling each one of these possible scenarios, the authors conclude that the departure of skilled workers has negative effects even if the skilled work conveys no positive externalities on others, and even if émigrés pay for their own education. As can be seen from the scenarios described above, they argue that the departure of the highly skilled leads to wage inflation at home, which in turn causes over-investment in education and high unemployment among the skilled, not to mention a sense of inadequacy among those who are “left behind.”

Macroeconomic Theoretical Models for the Mitigating Impact of Brain Gain

It seemed for a time that the definitive word had been spoken. This first wave of economic modeling was challenged, however, by two seminal articles, both of them engaging the new human capital accumulation theories that were at the time beginning to dominate the international development literature (Lucas, 1988) and were thus turning the focus of development efforts in the direction of education (Barro, 1989; Galor & Tsiddon, 1994; Galor & Zeira, 1993; Mankiw, Romer, & Weil, 1992b). One of the articles was by Stark, Helmenstein, and Prskawetz (1997) and the other by Mountford (1997). Both articles questioned the prevailing paradigm. This second wave could be called the “new economics of the brain drain” (Clemens, 2009, p. 5). Stark, Helmenstein, and Prskawetz, a trio of economists, challenged the Bhagwati-Hamada model on theoretical grounds. They introduce the concept of “brain gain,” which they define as “a positive difference between the post-migration and the pre-migration

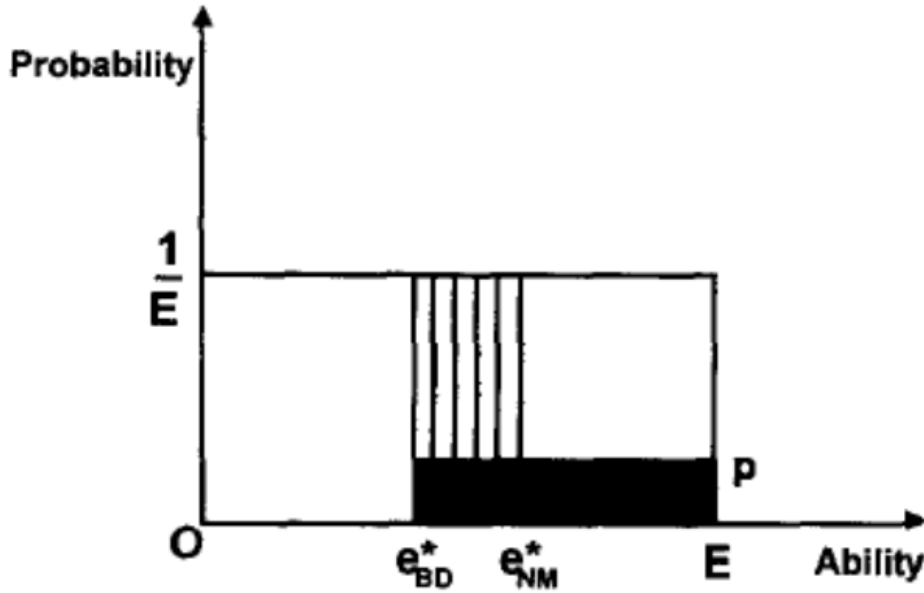
average levels of human capital in the *H* country” (p. 233). They “question the inevitability of this received wisdom” because, “higher prospective returns to skills in a foreign country impinge on skill acquisition decisions at home” (p. 227). In effect, they argue two things. First, they argue that “As long as the expected marginal earnings or the marginal earnings exceed the marginal costs of acquiring the human capital that produces the earnings, optimizing individuals will acquire more human capital” (p. 231). Second they argue that as highly skilled labor leaves, the labor market in the destination country reaches the point of discriminating saturation (meaning that it begins to discriminate between skill levels). Lower skilled, highly educated emigrants who are filtered out in the destination country return to country of origin with their human capital intact or even enhanced and are able to make a contribution to the accumulation of human capital in the country of origin. The authors argue that even if the second were not to hold true, the first in and of itself could potentially lead to brain gain in the country of origin.

Mountford, an economist at Southampton University, independently reinforced the work of Stark et al. He begins by examining the “intuition” present in the brain drain literature that “the average level of human capital in a developing country will not grow because the developed world will ‘siphon off’ its highly educated workers, thus increasing the productivity of the developed world at the expense of the developing economy” (1997, pp., 287-288). In response, reacting especially to an article by Miyagiwa, which had attempted to demonstrate that the attraction of human capital from small scale economies to large scale economies was both inevitable and damaging to human capital accumulation in small-scale economies (Miyagiwa, 1991), Mountford sets out to demonstrate that “when educational decisions are endogenous and if successful emigration is not a certainty, a brain drain may increase the productivity of a developing country” (p. 288).

He demonstrates this claim in two separate arguments. In the first, he argues that “the possibility of migration to a higher wage country raises the return to education. This leads to an increase in human capital formation which can outweigh the negative effect of the brain drain itself” and leads to “the endogenous formation of ‘educational classes’ in an economy” (p. 288). Stated in other words, “a brain drain will increase the proportion of educated people in the economy if π is low, if w^F is very high relative to λ , w^H , and if the proportion of educated people in the economy was previously low” (p. 295), where π is the probability of emigration, w^F foreign wage, λ , the level of technology, and w^H the home wage. The result from these conditions is the formation of educational classes that become self-perpetuating, allowing for the continual generation of new human capital. This occurs because “a brain drain lowers the threshold level of ability needed before education is worthwhile from e^*_{NM} to e^*_{BD} (where e = level of ability, $_{NM}$ = non-migrants, and $_{BD}$ = brain drain)” As a result, the number of educated agents is increased by $\frac{e^*_{NM} - e^*_{BD}}{E}$, as long as $e^*_{NM} > e^*_{BD}$. Since only a portion of all educated agents emigrate, the number of educated agents remaining in the economy is reduced by $(\frac{E - e^*_{BD}}{E}) \pi$. He then concludes that “whether a brain drain is good for the source economy depends on the relative size of these amounts” and that “the positive effect of a brain drain will dominate the negative effect if it is low and if the proportion of educated people in the economy was previously low” (p. 295; see Figure 8)

In the figure below, the striped rectangle represents the gains of educated agents under emigration while the black rectangle represents the losses of educated agents due to emigration. As can be seen graphically from the above, as long as the area of the striped rectangle exceeds

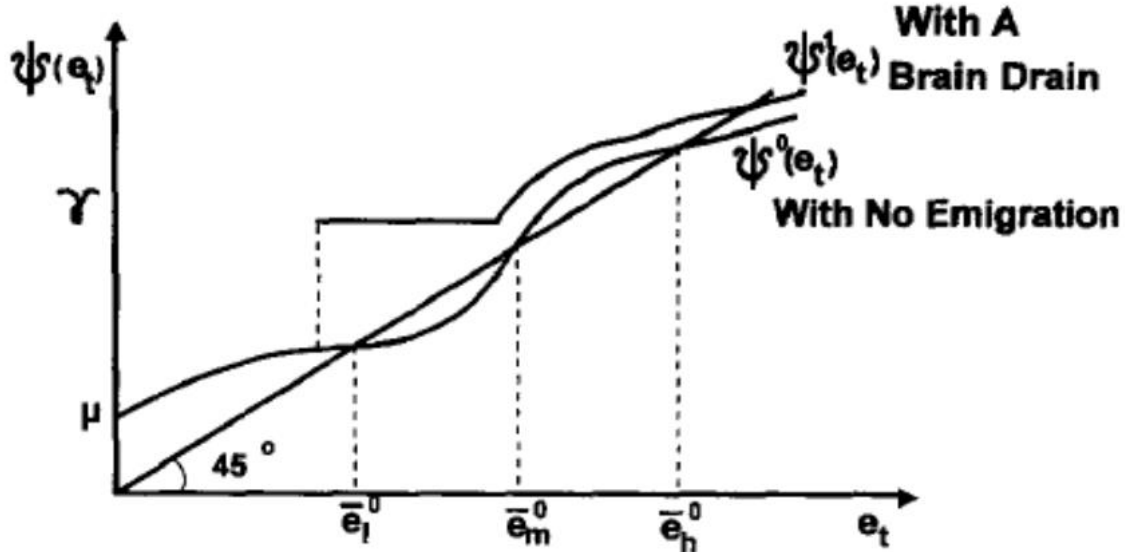
Figure 9: Educated Agents Migration (Mountford, 1997, p. 295)



the area of the black triangle, there are human capital gains for the country of origin. Thus, Mountford concludes, “a brain drain can increase the productivity of the source economy when productivity is an increasing function of the proportion of educated people in an economy in the previous period” (p. 296)

In the second part of the paper, Mountford argues that “a brain drain can change the dynamics of ‘class’ formation so that an ‘under-educated’ class fails to develop” (p. 288). He demonstrates this claim using a slightly different model in which the education variable is continuous rather than dichotomous (educated/uneducated). Assuming that the human capital of each succeeding generation is incremental to the previous generation, Mountford models two different scenarios: one in which there is general emigration, and one in which there is restricted emigration. The results are depicted in the figure above (see Figure 10). The diagram shows that “brain drain eliminates the low level educational steady state and thus causes the descendants of all agents, that remain in the economy, to converge to the high education steady state” (p. 301).

Figure 10: Human Capital Gains under Migration and No Migration Scenarios
(Mountford, 1997, p. 298)



The x axis depicts parental human capital and the y axis the individual agent's human capital. The γ represents the threshold level of human capital accumulation necessary for emigration. As can be seen, a "brain drain" actually increases the human capital of all agents in the economy under this model, but especially among the class of those who are in the middle group ($e_i^0 - e_m^0$), whose parental level of human capital lies just below the γ threshold. Such a scenario will boost both human capital and productivity at rates higher than a no-emigration scenario. Mountford concludes that "when human capital accumulation is endogenous and when successful emigration is not a certainty, the interaction between human capital accumulation decisions, growth and income distribution can lead to the result that a brain drain, either temporary or permanent, may increase the long run income level and income equality in a small open economy, and, in certain circumstances, may even be preferable to a non-selective 'general' emigration." (p. 304). The articles by Mountford and Stark et al. marked the beginning of a series of critical articles based on macroeconomic models that argued for and against the

inclusion of specific factors within the modeling (Piketty, 1997; Stark, Helmenstein, & Prskawetz, 1998; Vidal, 1998), but what was still sorely lacking at this point was the empirical literature necessary to test these hypotheses.

This second wave of theoretical literature purportedly demonstrating gains to human capital as a result of brain drain in developing countries was hotly contested by Schiff in an article appearing in an edited collection of essays on brain drain. in 2006 (Schiff). After reviewing the existing literature, Schiff takes aim at the new economics of the brain drain, declaring flatly, “the [positive] impact of brain drain on welfare and growth is likely to be significantly smaller and the likelihood of a negative impact on welfare and growth significantly larger, than reported in the literature” (p. 203). Schiff begins with this graphic analysis (see

Figure 11: Net Brain Gain under Conventional and Schiff Models (Schiff, 2006, p. 205)

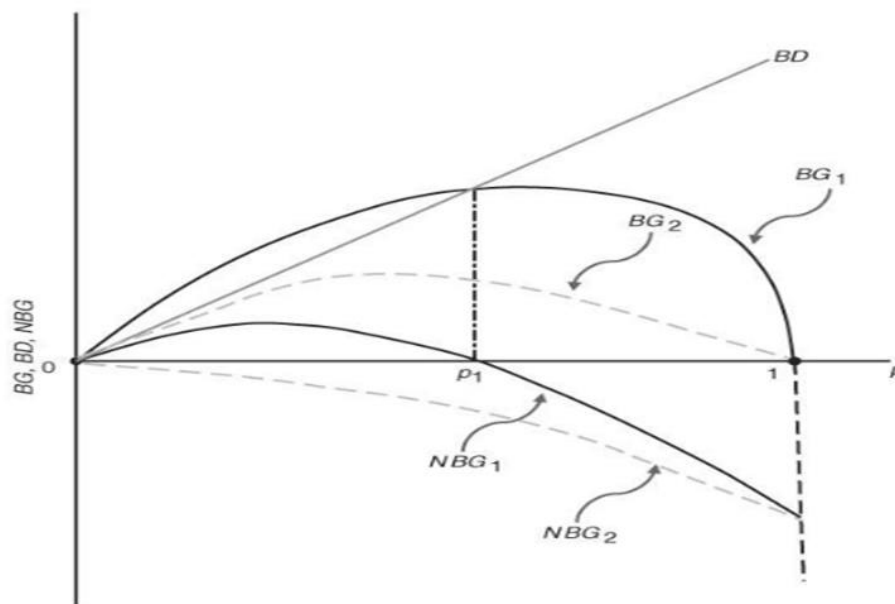


Figure 11) of his conclusions. Where BG = brain gain, BD = brain drain, and NBG = net brain gain, Schiff points out that that the new economics of the brain drain argue for NBG_1 , where net brain gain is positive to p_1 and then turns negative (as the brain drain becomes too large). Schiff

then argues that the actual net brain gain in fact is closer (or equal) to NBG_2 , where the net brain gain is negative from the outset.

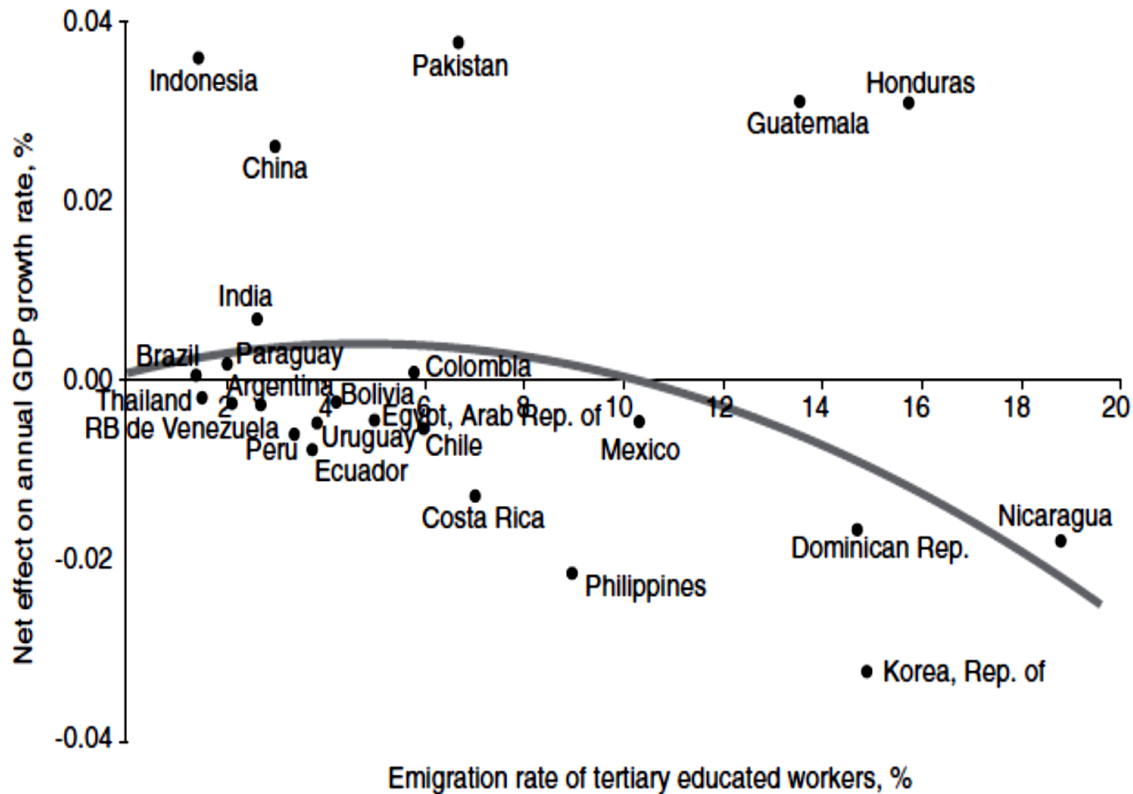
Schiff bases his arguments on four sub arguments. First, he argues that since ability is heterogeneous, even if there were a net brain gain, the remaining average ability would be lower in country of origin since the brightest and the best would emigrate. Second, he argues that where there is a probability of migration, not only the skilled migrate, but also the unskilled, since higher foreign wage is also the reality for the unskilled. That means that the potentially uneducated classes that would normally invest in further education in order to benefit from the higher returns on education would be depleted themselves by emigration, resulting in a lower brain gain. Moreover, if the wages for the unskilled in the receiving country are higher than the wages for the skilled in the sending country, then there would be an exodus of both skilled and unskilled and no incentive to further invest in education, leading to what Schiff calls a “negative brain gain” (p. 210). Third, he demonstrates that there is negative brain gain not only for high probability of migration, but also for low probability due to the uncertainty of migration. This uncertainty deinceivizes the educational benefit. His fourth point is that since governments heavily subsidize public tertiary education, any increase in the number of those seeking education will mean an increase in costs that must be met with either, higher taxes, lower subsidies, or a reduction in other public services. Higher taxes will reduce disposable income and make study more difficult, as will a reduction in subsidies. Shifting expenditures away from other areas and toward education will affect national welfare generally and thus eventually negatively affect human capital accumulation as well. Schiff notes that “The new brain-drain literature assumes that education is the only sector that generates positive externalities,” and then points out that “In fact, positive externalities are also generated by a number of other public (and

private) sector activities as well” (p. 214). The result is that a brain drain would act in concert with negative capital accumulation to make the situation more acute for developing countries.

In the final part of his article, Schiff looks at the emigration rates as compared to GDP growth. At the time of writing, three empirical studies had been published examining the relationship between brain drain and education levels or growth. Beine, Docquier, and Rapoport (2003) had obtained a beneficial brain drain (i.e., brain gain) for countries with low levels of human capital and skilled migration rates. Faini (2005), citing a study by Constant and Massey argued that the desire for emigration would not necessarily have the human capital accumulation effects predicted by Stark et al. and Mountford since the potential for emigration may very well drive the skilled to seek schooling in the destination country rather than the country of origin, thus actually depleting the human capital formed in the country of origin. I will describe the Constant and Massey study in more detail below under microeconomic studies.

Since the Constant and Massey study found years of training in country of origin to be positively correlated with return migration, Faini argues that the desire for emigration would not necessarily have the human capital accumulation effects predicted by Stark et al. and Mountford since the potential for emigration may very well drive the skilled to seek schooling in the destination country rather than the country of origin, thus actually depleting the human capital formed in the country of origin. Lucas (2005) using two alternative definitions for the education variable, had obtained a negative impact of the brain drain on education. Using the statistics compiled by Beine et al., Schiff notes that there is a negative association between higher emigration rates and GDP growth, although the evidence is not conclusive and there are several outliers (see Figure 12).

Figure 12: Brain Drain and LCD's Growth with 2nd Order Polynomial Trend (Schiff, 2006, p. 219)



Schiff concludes that “An analysis of the dynamics of the brain drain shows that the net brain gain is equal to zero in the steady state. In other words, a so-called beneficial brain drain cannot occur in the steady state. Moreover, a net brain loss is likely to hold during the transition” (p. 221).

There are several conclusions that can be drawn from these studies. First, it is clear that the outcome of macroeconomic theories depends entirely on which factors are included and excluded in the analysis. Second, it is clear that more empirical testing was needed. Third, it was becoming evident that most emigration decision are very personal and related as much to individual characteristics and preferences as they are to market forces.

Macroeconomic Empirical Literature Testing Negative and Positive Effects of Brain Drain

As is readily evident, the literature up to this point was still almost completely theoretical (with the exception of Schiff). The short-lived, but very active second wave of research was followed by a third wave, beginning around the turn of the millennium. The third wave attempted to supply empirical grounding for the now competing paradigms. This third wave can be divided into two groups, according to Clemens: those studies that attempt to draw a correlation between talent migration and development, and those studies that attempt to measure the impact of talent migration on specific aspects of development (Clemens, 2009).

The first group of studies has produced mixed results, many of them showing a correlation between talent emigration and deteriorating conditions in the country of origin. In 2006 a Docquier and Marfouk published a massive meta-analysis on skilled migration rates into OECD countries (Docquier & Marfouk, 2006) intended to lay an empirical foundation to the allegation that emigration rates among the highly skilled out of developing countries and into developed countries was accelerating worldwide. One shocking finding was the following:

In absolute terms, we show that the largest stocks of educated emigrants are from Europe (specifically the United Kingdom, Germany, and Italy); Southern and Eastern Asia (including the Philippines, India, China, the Republic of Korea and the Democratic People's Republic of Korea, and Vietnam); and, to a lesser extent, Central America and Mexico. *These emigrants are concentrated in a few destination countries: about 50 percent of skilled migrants live in the United States; this percentage increases to 70 percent if two other immigration countries (Canada and Australia) are included and to 85 percent if the three largest EU countries (the United Kingdom, Germany, and France) are included.* (p. 187, emphasis added).

The massive buildup of intellectual talent in just a few developed countries was a clear indication that these developed nations were benefiting disproportionately from world skill migration. Another somewhat surprising conclusion was that “the brain drain is rather low in the former Soviet Union; the Gulf States; and large countries such as India, China, Indonesia, Brazil, and most of the OECD countries” (p. 187). The latter phenomenon is due, in part, to the sheer size of the educated populations in those countries. Although many skilled workers emigrate from these countries, the size of the emigrant population is dwarfed by the large size of the skilled population overall. Perhaps most important among the findings of the study was the fact that skilled emigration occurs at the highest rates in those countries who can least afford it, that is, in those countries with the smallest populations and the smallest skilled populations. The top three emigration countries in the study for the year 2000, for example, were Guyana, Grenada, and Jamaica, with 89, 85, and 85% skilled migration rates, respectively. When only countries with populations over 5 million were considered, Haiti, Ghana, and Mozambique top the list with rates of 84, 47, and 45%, respectively. This highlights the assumption that countries with lowest GDP’s are hit disproportionately by brain drain.

Although this foundational study served to put the truth to the allegations of brain drain, it did nothing to test the differing positions on the effect of the brain drain on country of origin. This task was left to a series of studies that tested the effect of brain drain on a particular segment of the emigrant population or on a particular sector in the developing country. One such study, by Bhargava and Docquier in 2008, examined the association between brain drain and HIV deaths in Sub-Saharan Africa ([Bhargava & Docquier, 2008](#)). In their study, they gathered brain drain data on emigrating health professionals from 39 sub-Saharan African countries and ran regressions on independent variables of wages in home country as a percentage of wages in

Table 1: Maximum Likelihood Estimates for Medical Brain Drain from Sub-Saharan African Countries Explained by Socioeconomic Variables and HIV Prevalence Rates, 1990-2004, source Bhargava and Docquier (2008) p. 358

TABLE 2. Maximum Likelihood Estimates for Medical Brain Drain from Sub-Saharan African Countries Explained by Socioeconomic Variables and HIV Prevalence Rates, 1990–2004

Explanatory variable	Specification 1		Specification 2		Specification 3 ^a		Specification 4 ^b	
	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error	Coefficient	Standard error
Constant	−0.465**	0.146	−0.815**	0.224	−0.485**	0.151	−1.055**	0.201
ln(<i>physicians' wages in home country/physicians' wages in United States</i>)	−0.036**	0.019	−0.057**	0.030	−0.035**	0.019	−0.066**	0.032
ln(<i>percent school enrollment secondary</i>)	0.115**	0.045	0.236**	0.069	0.124**	0.048	0.248**	0.081
ln(<i>GDP per capita</i>)	−0.035	0.033	−0.102**	0.057	−0.037	0.034	−0.085	0.066
ln(<i>HIV prevalence</i>)	0.079**	0.017	0.082**	0.022	0.071**	0.021	0.107**	0.036
Lagged dependent variable	0.921**	0.028	0.811**	0.053	0.914**	0.031	0.769**	0.035
Between/within variance ratio			0.445	0.354				
Within variance			0.051					
2 (maximized log-likelihood function)	512.75		461.79		570.55		300.45	
Chi-squared test for random effects decomposition (12 degrees of freedom)			50.96**					
Chi-squared test for exogeneity of HIV prevalence rate (5 degrees of freedom)					12.04**			

Dependent variable: Logistic (*medical brain drain rate*).

**Significant at the 5 percent level.

Note: Data on 39 countries, with five time observations at 3-year intervals.

^aHIV prevalence rate is treated as an endogenous variable.

^bSpecification uses 4-year averages at three time points.

Source: Authors' estimation results.

the US (as a proxy for developed country wages), rate of secondary high school education, per capita GDP, and prevalence of HIV. The results were perhaps predictable and are displayed above (Table 2).

As can be seen, positive economic conditions in the country of origin, such as wages and GDP are negatively associated with emigration (although GDP is significant only in the second time specification) while negative conditions such as the prevalence of HIV is positively associated with emigration. More difficult to understand, perhaps, is the positive association of secondary school education rates with emigration. The authors speculate that this may be due to the increased possibilities of emigration from countries with better developed education systems, in other words, candidates from these countries would be more acceptable to destination countries that control their emigration policies. They also note that “Thus the long-run elasticity of the medical brain drain rate with respect to HIV prevalence is about 0.8. This means that a doubling of the HIV prevalence rate implies an 80 percent increase in the medical brain drain rate in the long run” (p. 359). Oddly enough, a second regression testing the relationship between the medical brain drain rates and deaths due to AIDS proved positive and significant in only one of the specifications, while it was negative and significant in two others. Although, when the brain drain rate is combined with the HIV prevalence rate, the coefficient turns positive in all cases.

A final study in this group, written by Rogers (2008), begins with the assumption prevalent among development experts that years of schooling is key to human capital accumulation which, in turn, is key to economic growth. Rogers then points to the many countries where gains in education have led little or no economic growth. He hypothesizes that

Table 2: Schooling and Brain Drain Regressions Dependent Variable: Growth in GDP per Worker 1960-2000 (Rogers, 2008, p. 365)

	(1) Full sample	(2) High brain drain	(3) Low brain drain	(4) Full sample	(5) High brain Drain	(6) Low brain drain	(7) Full sample	(8) High brain drain	(9) Low brain drain
Growth in capital to labour ratio	0.525 (6.65)***	0.741 (6.20)***	0.479 (5.49)***	0.456 (5.42)***	0.649 (5.61)***	0.406 (4.30)***	0.502 (6.41)***	0.645 (5.47)***	0.446 (5.69)***
Change in schooling years	0.117 (2.94)***	-0.022 (0.41)	0.199 (4.43)***	0.171 (3.82)***	0.009 (0.17)	0.254 (5.30)***			
Log of GDP per worker (1960)				-0.005 (2.61)**	-0.006 (2.02)*	-0.006 (2.18)**	-0.003 (1.48)	-0.007 (2.30)**	-0.005 (1.19)
Schooling years (level 1960)							0.004 (2.57)**	0.001 (0.68)	0.007 (1.91)*
Constant	-0.016 (3.06)***	-0.004 (0.46)	-0.023 (3.85)***	0.022 (1.52)	0.049 (1.87)*	0.018 (0.98)	0.020 (1.06)	0.050 (2.05)*	0.029 (0.93)
Test of 'poolability' (prob)	0.03			0.03			0.10		
Observations	53	23	30	53	23	30	53	23	30
Adjusted R^2	0.64	0.69	0.69	0.66	0.72	0.71	0.61	0.72	0.62
<i>Two-stage least squares</i>									
Higher, Age015, EducGDP	0.168*	0.098	0.147	0.286**	0.285**	0.254*	0.005*	0.002*	0.006
Hansen J -test prob. ($n = 46$)	0.59	0.17	0.75	0.25	0.25	0.34	0.58	0.17	0.74
Higher, Age015	0.272***	0.870	0.321**	0.432***	0.260	0.630*	0.007***	0.003***	0.012***
Hansen J -test ($n = 51$)	0.68	0.86	0.78	0.17	0.33	0.57	0.18	0.35	0.32
Barro & Lee 1965–1995 ($n = 53$)	0.237***	-0.011	0.428***	0.347***	0.050	0.499***	0.011	0.005	0.019

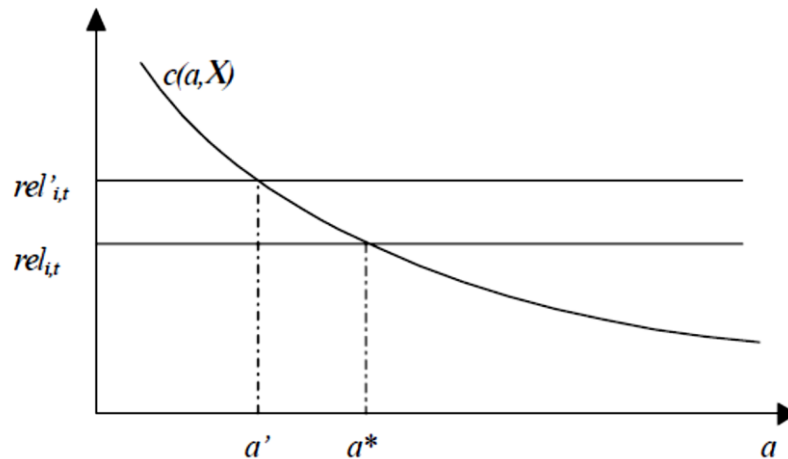
Note: * significant at 10%; ** significant at 5%; *** significant at 1%. All t -statistics based on robust standard errors. Other notes as per Table 2.

two variables mitigate the impact from gains in schooling – corruption and brain drain – and sets out to test his hypothesis empirically. For our purposes, it is the latter variable that is of interest. Rogers regression tests the relationship between higher brain drain rates and economic growth. His results are included in Table 2 below. As can be seen, growth in GDP is unaffected by higher brain drain where the growth in capital to labor is positive. GDP growth is negatively correlated with high rates of brain drain, however, where there are positive changes in the years of schooling. Rogers argues, based on this data, that investments in schooling by developing countries produce growth in per capita GDP that is “insignificantly different from zero” (Rogers, 2008).

The second group of studies is aimed at isolating the variable of migration in order to measure directly its impact on development outcomes (Beine, Docquier, & Rapoport, 2001; Beine, et al., 2003; Beine, et al., 2008; McKenzie & Rapoport, 2006). The first of these studies, appearing in 2001, looked at “the impact of migration prospects on human capital formation and growth in a small, open developing economy” (Beine, et al., 2001, p. 275). After reviewing the existing, competing models, the authors construct a hybrid model out of the components of the existing studies and then cross-check the model against available immigration data. What they found was that “[a beneficial brain drain] is likely to occur in two cases: when the economy is originally closed to an underdevelopment trap and that migration probabilities are not too high, and when the economy already exhibits a relatively high growth performance and that migration probabilities take intermediate values” (p. 288). What they mean is that brain drain can be beneficial to the country of origin if the country demonstrates a recent history of economic growth, and the probability of emigration is greater than zero but “not too high.” In that way, the

loss of human capital through migration can be “recuperated” through remittances, returned human capital, and human capital accumulation.

Figure 13: Ability Distribution and Human Capital Formation (Beine, et al., 2003, p. 9)

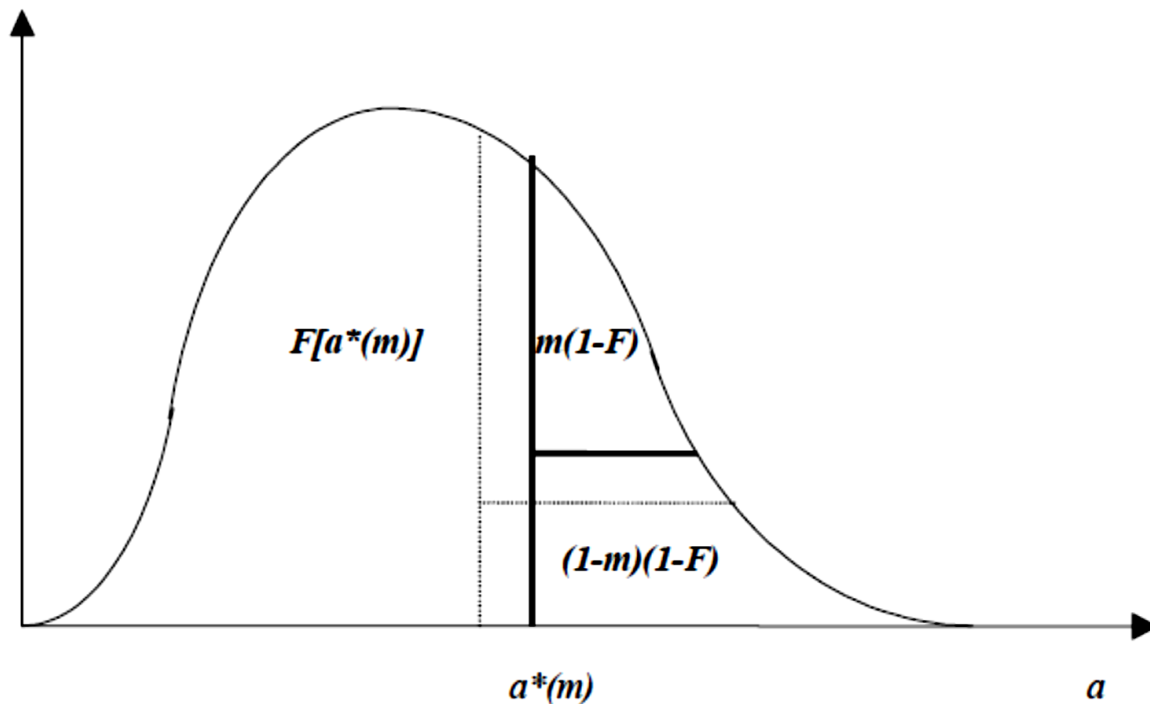


The authors returned to an empirical analysis of least developed countries (LDCs) using the same model in 2003. This time, armed with a new, more reliable database estimating emigration from developing countries based on grade level (primary, secondary, or tertiary) compiled by Carrington and Detragiache (1999), the authors were able to estimate the effect of brain drain on developing economies. Applying the model to 50 developing countries, the authors found “a positive and significant effect of migration on human capital formation” (p. 6). The findings are based on a simple theoretical model, as depicted above in Figure 13. In the figure, $rel_{i,t}$ represents the relative expected return on investment in education. The letter a represents ability, and the line $c(a, X)$ represents the cost of education as a function of ability and X , which represents country specific factors. As can be seen from the figure below (Figure 14), as expected returns to education increase, the threshold level of ability needed for cost to equal return moves left, increasing the number of those who invest in human capital. As was noted in the 2001 study, there is evidence to support this model. In this study, the authors apply the model to LDCs.

The hybrid nature of the model (taking into account both brain drain and brain gain) is then depicted on the following graphic (Figure 14), in which F represents the uneducated present in country, a represents ability, and m represents the probability of migration. The graphic is quite simple to understand. The vertical lines represent the education line. Those to the left of the line are those who choose not to invest in education. Those to the right of the horizontal line are the educated, who are divided into two groups based on the probability of education: those who emigrate [$m(1-F)$] and those who do not [$(m-1)(1-F)$]. As can be seen from the graphic, as the relative returns to education increase (vertical axis), the departure of human capital can reach damaging proportions, causing “brain drain” to exceed “brain gain” to the detriment of the developing country. The authors then turn to testing their model empirically. Using the available data, (W. J. Carrington & E. Detragiache, 1999), they calculate emigration rates by education level for each country. Where country specific data is unavailable, they use regional averages. One very questionable aspect of their approach is the fact that they have extrapolated emigration rates for all LDC’s to OECD countries based on emigration rates by educational level to the United States, the only country for which immigration data by level of education is available. That aside, after examining the data, the authors conclude:

We found that most countries combining low levels of human capital and low emigration rates of their highly-educated are positively affected by the brain drain. By contrast, the brain drain appears to have negative growth effects in countries where the migration rate of the highly educated is higher than 20% and/or where the proportion of highly-educated in the total population is above 5%. While there are more losers than winners, it is striking that the latter include the biggest countries in terms of demographic size, representing nearly 80% of the total population of the sample. (Beine, et al., 2003, p. 35).

Figure 14: Proportion of Educated Agents Remaining in Country (Beine, et al., 2003, p. 10)



Once again, in this study, the empirical results, although questionable on some scores, point to a at best a mixed effect for “brain drain” on human capital accumulation.

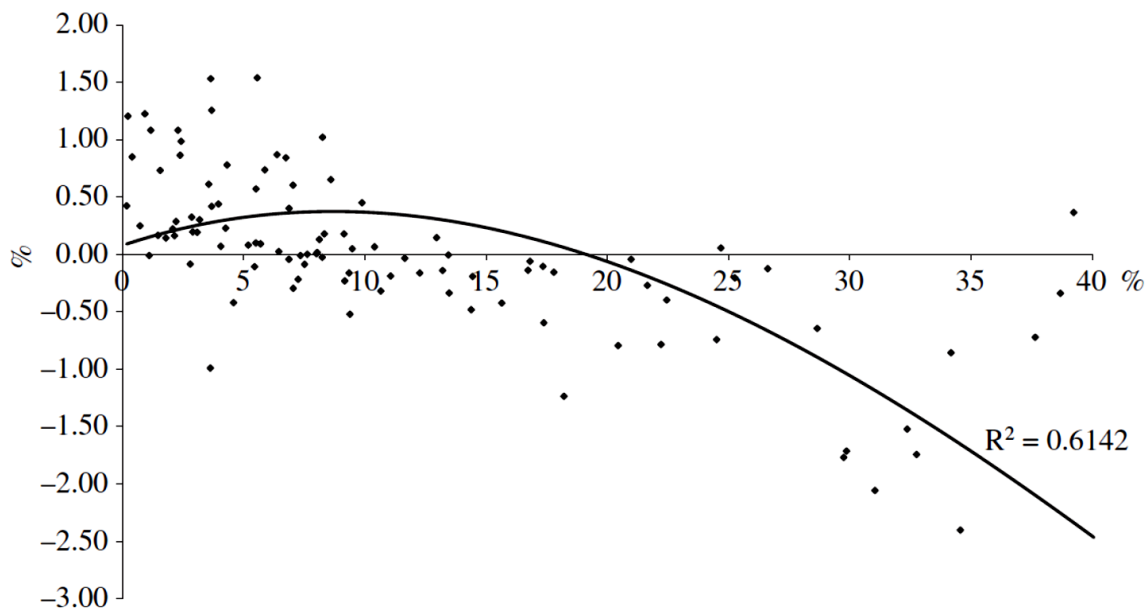
In 2008, using newly published migration data from the World Bank (Docquier & Marfouk, 2006), Beine et al. returned to their theoretical model to seek further empirical support. Here their conclusions are similar:

It appears that the countries experiencing a beneficial brain drain (the “winners”) generally combine low levels of human capital and low skilled migration rates, whereas the “losers” are typically characterized by high skilled migration rates (above 20%) and/or high proportions of highly educated in the adult population (above 5%). (p. 644)

These results, depicted in the graphic below (Figure 15), show that small countries suffer disproportionately from the brain drain effect and that certain regions are especially hard hit, namely, Central America, the Caribbean, Sub-Saharan Africa, and the Pacific region. On the

other hand, certain regions have benefited greatly from the emigration of human capital, especially those of South America and parts of Asia. Also evident in the results is the fact that larger countries, such as China, India, Brazil, Indonesia, Egypt, and Bangladesh tend to experience gains in human capital through emigration.

Figure 15: Brain Drain Effect and Skilled Migration Rates (Beine, et al., 2008, p. 648)



As the authors explain, in the aggregate,

There appear to be slightly more losers than winners and, more importantly the former tend to lose relatively more than what the latter gain. The situation of many small countries in Sub-Saharan Africa and Central America, in particular, is extremely worrisome. In contrast, the main globalisers (China, India, Brazil) all seem to experience non-negligible gains. Once translated into numbers, these gains outweigh the losers_ losses, resulting in an overall gain for developing countries as a whole. (p. 648).

The difference between winners and loser is then, perhaps, the fact that in spite of large losses of human capital to developed countries, the main globalizers are able to retain or attract enough residual human capital after emigration to provide a platform for development. It would be interesting to attempt to discern what the platform might be – whether economic activity, education, or some combination of both.

Clemens shows, however, just how difficult it is to “isolate” a variable like emigration in complex environments. In spite of efforts to reframe the notion of brain drain as “brain gain” or “brain circulation” (Agrawal, et al., 2010; Commander, et al., 2004; Saxenian, 2005; The Brookings Institution, 2008; Thorn & Holm-Nielsen, 2008), studies continue to show that the loss of talent, including and especially scholarly talent, has a demonstrably negative correlation with economic growth and development, especially in smaller countries (L. C. Chen & Boufford, 2005; Dao, 2010; Fleisher, et al., 2010; J Gibson & McKenzie, 2010; Ha, et al., 2009).

One final study in this series that is relevant to my proposal is that of Savvides and Stengos (2009). The above literature explores the macroeconomic effect of brain drain on sending countries on the assumption that human capital accumulation is positively correlated with economic growth. But is this assumption borne out by the empirical evidence? This recently published book by Savvides and Stengos first gives a comprehensive overview of the theoretical literature to date on the relationship between human capital and economic development. They then proceed to test the various models for human capital accumulation using a balanced cross-country panel data set that covers nine non-overlapping five-year periods: 1960-64, 1965-69, 1990-94, 1995-98, and 1999-2003. Deleting countries for which data were missing for some of the periods, they were left with 639 observations from 71 countries at various stages of development.

They employ the two main linear approaches currently used to measure the relationship between human capital and economic growth: the transition to the steady-state approach formalized by Mankiw, Romer, and Weil, (Mankiw, Romer, & Weil, 1992a) and the growth accounting methodology. They conclude that “the growth of human capital, regardless of how it is defined (total or differentiated by sex or level of education), is an insignificant determinant of productivity growth” (Kindle locations 1882-1883). This is a shocking conclusion, but perhaps less shocking when the rest of their argument is taken into account. When non-parametric regressions are used, using the same data and the same two models, the effect of human capital (measured in average years of schooling) on growth is mixed. Their conclusions are stated as follows:

(1) The relationship between human capital and economic growth is nonlinear; (2) For very low and very high human capital countries, we find a negative relationship between human capital and growth (as evidenced by the two portions: less than 1 year of schooling and greater than 7 years). We suggest that at very low levels of human capital lack of primary education acts as a break on economic growth, and at very high levels distortions in labor markets may hinder growth; and (3) We find support for several theories that stress the beneficial growth effect of human capital at the post-primary level as the result of absorption of new technologies. (Kindle locations 2250-2253).

When the more comprehensive notion of total factor productivity is substituted for growth, the relationship turns positive. The elasticity with respect to human capital increases for a wide range of mean years of schooling and remains positive. There is a clear threshold effect of human capital on TFP growth. For less than 4.7 years of schooling, the contribution of human capital growth to TFP growth is negative but it increases with the level of human capital. For the

range between 4.7 and 10.3 years, the return to education is positive and increasing, and after 10.3 years of schooling, the effect is decreasing but still positive. Savvides and Stengos conclude by saying that there clearly is a nonlinear relationship between human capital (measured in mean years of schooling) and economic growth. At low levels of human capital the effect is negative and becomes positive at middle levels. For countries with high human capital the positive effect tapers off.

Summary of Macroeconomic Literature.

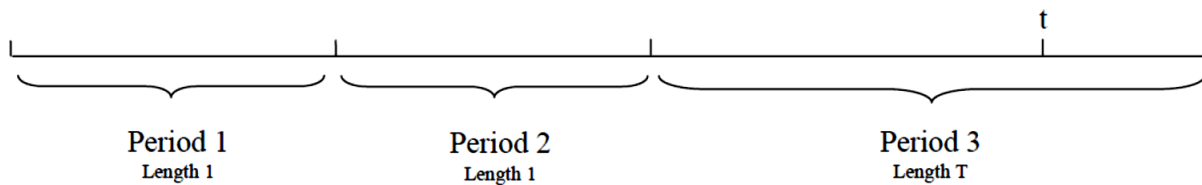
The macroeconomic models for the effects of “brain drain,” “brain gain,” and the effects of human capital accumulation on economic growth and total factor productivity are mixed. Nevertheless for smaller countries, countries with low levels of human capital, and countries with high rates of emigration, a preponderance of evidence shows three things. First, it is evident that for these special circumstances, a lack of human capital accumulation is negatively associated with economic growth. Second, in these special circumstances, the flight of human capital through emigration (brain drain) is particularly harmful. Third, while some of the harmful effects can be mitigated by brain gain, in instances where levels of emigration are particularly high, the net effect on economic growth is negative. Under these circumstances, it is particularly important for developing countries that find themselves in these special circumstances to seek means to accumulate human capital in their systems. As I will contend later in this proposal, one of the best ways to do so is by attracting and retaining faculty in higher education.

Microeconomic Theoretical Models for Determinants of Migration and Return

The most recent, though smaller wave of brain drain literature begins to look at microeconomic models and evidence for departure, stay, and return. As Gibson and McKenzie note, “There is much less research on the *determinants* of the brain drain” (2011). A recent

comprehensive study by Dustmann and Glitz explored the various microeconomic theoretical models and the extant empirical literature testing those models. After summarizing the extant literature, they construct their own model for microeconomic determinants for both emigration and return migration. They divide the life-cycle into three parts (see Figure 17). The first period corresponds to basic education, the basic education period is universal. Period 2 is a period of

Figure 16: Microeconomic Life-Cycle (Dustmann & Glitz, 2011, p. 26)

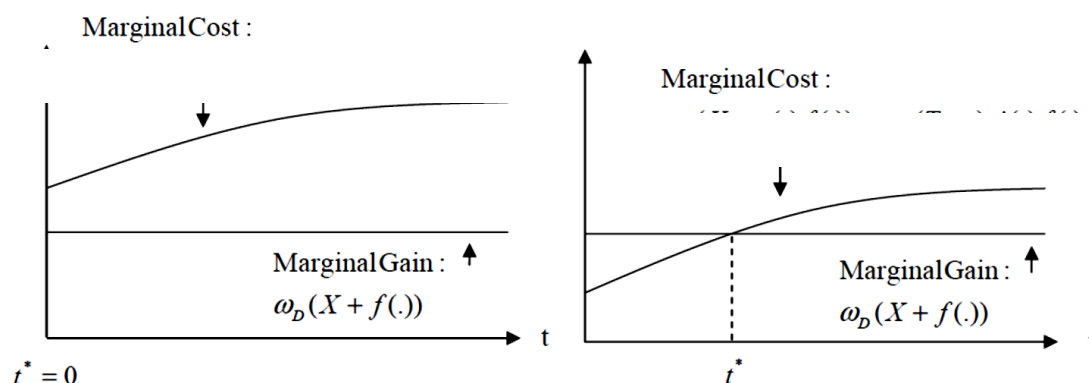


work and education. Its specific content is determined by decisions taken at the end of Period 1. This period corresponds to post-secondary education. The third period is a work cycle, although it does not preclude the possibility of further education. The entire life-cycle, then, is $T+2$. The decision to emigrate can be made at any point after period 1. In the event that it is made at the end of Period 1, then advanced education is acquired in the host country. In the event that it is taken after Period 2, then advanced education is taken in the home country. The decision to return to country of origin (t) can be taken at any point after the decision to emigrate. Permanent emigration occurs where $t=T$.

In this model, migration decisions are determined based strictly on economic factors. The reasons for emigration are quite simple. As Dustmann and Glitz put it, emigration occurs when “the rental rate on home country specific human capital is higher in the host country” (p. 38). The rental rate depends on several factors, including investments in education, ability, on-the-job learning, wage and cost of living in the country of origin and destination. Return migration occurs when “the return on human capital acquired in the second period in the host country is

higher at home” and “the (constant) marginal gain from delaying return by one period is lower than the marginal cost of staying” (p. 38; see Figure 18).

Figure 17: Motives for Return and Non-Return (Dustmann & Glitz, 2011, p. 39)



Microeconomic Empirical Literature on Determinants of Migration and Return

There are two bodies of empirical literature on determinants of emigration and return migration. One part consists of studies testing the theoretical models of microeconomic determinants for emigration and return, and the other, undertaken from a variety of disciplines, looks beyond economic determinants to build more comprehensive models of the decision-making process. In the first group are studies that examine immigrants in their countries of destination. Chiswick (1977, 1978) focused on the earnings of immigrants after arrival in their destination country as a reflection of the human capital investments undertaken by the migrants and the skill transferability between origin and destination country. His study, however, does not distinguish between permanent and temporary migration. The purpose of the study was to compare the economic performance of immigrants with that of natives with similar characteristics. Cheswick found that their performance was dependent on two factors: the quality of the individual's skills and investments in knowledge acquisition (1978). Although immigrants have lower initial earnings, their growth in wages outstrips that of native workers within 15 years. As he concludes, “For the earnings of the foreign born to exceed the native born eventually

suggests that the greater ability, work motivation, or investments in training of the foreign born more than offset whatever earnings disadvantages persist from discrimination against them or from their initially having less knowledge and skills relevant in U.S. labor markets" (p. 908). Further studies lent credence to Chiswick's findings (Carliner, 1980; De Freitas, 1980).

Chiswick's conclusions were quickly contested. A string of studies were produced calling into question both his methodology and conclusions. Borjas (1985) claimed that Cheswick's use of simple cross-sectional data does not take into account the effect of difference in length of stay in country of destination. Immigrants who had been in country for 10 years and those in country for 20 years were calculated equally, although the nature of immigration and the characteristics of the immigrant could have changed dramatically in that time. For example Borjas argued that the data from the 1970 and 1980 U.S. Census Bureau demonstrated that the quality of immigrants had significantly decreased in that period. As a result, simple cross-sectional data could inaccurately estimate the earnings growth of immigrants. Dustmann and Glitz also argue that the Cheswick studies, like others of their era, "did not allow the effect of education and experience to vary between immigrants and natives" (2005, p. 45, note 28). Other studies critical of Cheswick were produced by LaLonde and Topel (1991) and Borjas and Freeman (1992). Borjas (1995), using data from the 1990 census, was able to verify these. These initial studies have been followed by a wave of literature analyzing the earnings of immigrants.

In addition to the usual economic variables influencing migration decisions, there is also fear of political persecution or conflict (Cortes, 2004) and language competency (see, for instance, early work by Carliner, 1980, 1981; Chiswick, 1991; Chiswick & Miller, 1992, 1995; Dustmann, 1994; Grenier, 1984; Kossoudji, 1988; McManus, Gould, & Welch, 1983; Rivera-Batiz, 1990; Tainer, 1988), downgrading (Eckstein & Weiss, 2004; Friedberg, 2001) and the

presence of ethnic networks or anchor communities (Bartel, 1989; Edin, LaLonde, & Åslund, 2000; Jaeger, 2007; Piil Damm, 2009).

There are special circumstances that prevail, however, when migration is specifically for the acquisition of human capital (through education). As Dustmann and Glitz point out, for example, foreign-born students (mostly from India, Taiwan, South Korea and China) “accounted for 31 percent of all PhD recipients in 2006, with even higher shares in specific fields such as physical science (44 percent), engineering (59 percent), and economics (59 percent). In the U.K., foreign students account for 42 percent of all PhD recipients and 55 percent of all recipients of a Master’s degree in 2007/2008” (p. 65). Many of these students choose to stay in the country of destination.

In spite of the evident usefulness of these microeconomic studies and the empirical evidence that has been marshaled in their support, other studies have questioned the effectiveness of relying on economic reasoning alone. Several recent articles have begun to tackle the question of determinants by asking why brain drain rates vary from country to country (Belot, Hatton, & Centre for Economic Policy Research, 2008; Docquier, Lohest, & Marfouk, 2007). Among the significant determinants of brain drain they find country size (smaller countries suffer more), income level, distance to major destinations, colonial origin, language, and political environment. But as Gibson and McKenzie point out, while such analysis is helpful in explaining country variance, it does not yet answer the question: “why do some highly skilled individuals within a country leave, while others stay? Moreover, amongst those who go, why do some return?” (p. 2).

Gibson and McKenzie track highly talented (based on national exams) high school graduates from three countries (Tonga, Papua New Guinea, and New Zealand) and then attempt to identify the determinants for staying in country of origin, emigrating, and returning to country

of origin after emigration. It should be noted that emigration here is defined as “ever having worked or studied abroad after finishing secondary school” (p. 15), which means it includes those who chose to do any level of post-secondary study abroad. In their results they found high levels of emigration among the highly talented in all three countries: with 83 percent for Tonga, 67 percent for New Zealand and 37 percent for Papua New Guinea. The incidence of return migration is also high, “with between one-quarter and one-third of top students in each country being return migrants” (p. 3).

The determinants of migration, however, and for my purposes, the determinants of return, are surprising. The report contains several important conclusions. I will quote their report at length here:

We find that most of the highly skilled say that salaries would be higher for them overseas. However, among these individuals, the decision to migrate is found to be most strongly associated with preference variables, such as risk aversion, patience, and subjects studied in secondary school [with strong correlations between sciences and migration and languages and migration], and not strongly linked with economic variables such as liquidity constraints, the extent of the gain in income to be had from migration, or macroeconomic factors. Likewise we find the decision to return amongst ever migrants is most strongly associated with preferences, with family and lifestyle reasons being stronger predictors of return than the extent of the income gains from migrating. We also find educational bonding to be an important reason for return of Papua New Guineans, with little subsequent re-migration after the two-year required period is completed. (pp., 3-4).

The Constant and Massey study of German guest workers on which Fiani's findings are based (see above) is quite interesting. The study tests the two existing models for explaining return migration. The first is what they brand as the neoclassical economic model, in which migration is primarily an economic decision, intended to improve the earning potential of the migrant. According to this model, return migration would only occur when the expectations for improved earning potential are not met due to, for example, "under- or unemployment, because wages are lower than expected, or because the psychic costs of moving are higher than anticipated" (Constant & Massey, 2002, p. 10). In this sense, the neoclassical economic model views return migrants as "failures," and return as a result of negative, rather than positive selectivity. As Constant and Massey point out, however, there is a difference between country of origin and destination country in reward human capital. Human capital acquired in the country of origin is not always rewarded in the destination country while human capital acquired in the country of destination is rewarded there but not necessarily in the country of origin. Under these circumstances, the return migration could actually be due to a form of positive (as well as negative selection), i.e., human capital acquired in the country of origin could in fact be better rewarded there than in the destination country. In the neoclassical model, social attachment viewed as a cost for emigrating and a benefit for return.

A second model described by Constant and Massey is the new economics of labor migration model. According to this model, emigration is a response to market failure at home rather than an adjustment to disequilibria in international labor markets. They define emigration as a temporary "target" activity. Once the earnings target is met, the migrant returns to country of

origin. “By generating remittances, migrants diversify sources of household income to manage risk in the absence of well-functioning insurance markets in sending nations” (p. 10). The new economics model, then, views returnees as “successes” rather than “failures,” since they are those who have met their earnings target. According to this model, then, return migrants are negatively selected according to skill and human capital, since those who are less successful abroad are required to stay longer in order to meet their earnings target, and return migrants are positively selected according to earnings. In this model too, under- or unemployment are reasons for return.

Constant and Massey posit six factors that affect return migration: human capital, that is, the amount of human capital with which the emigrant arrives in the destination country measured in terms of years of schooling, and the amount of human capital acquired in country of destination measured in levels or degrees; amount of worked acquired in country of destination, whether full-time, part-time, or trainee; level of integration into the labor force, whether regular, irregular, or unemployed; socio-economic achievement, including earnings and prestige; level of attachment to destination country; and, finally, level of attachment to country of origin, where attachment is defined in terms of social belonging, such as the presence of wife, children, and/or other family members as well as citizenship, financial investment, such as property ownership, and psychological or political affinity with the destination culture. In this last category remittances are seen as a form of attachment to country of origin under the new economics of labor migration.

In the end, Massey and Constant found that “in general, results appear to be more consistent with [neo-classical economics] than with [the new economics of labor migration], with immigrants returning when they lose or lack employment and when they possess a

distribution of social ties that raise the costs of staying and lower the costs of returning” (p. 27). This would seem to imply that the “target” earnings are less important in migration decisions than economic opportunity. While these findings may or may not apply in the case of emigrating PhDs, the study at least helps us define some of the variables affecting return migration.

Summary of Microeconomic Literature.

The microeconomic literature is still in its nascent stage. Its findings are preliminary and will need further corroboration. One thing is evident in all the microeconomic literature, however: migration decisions are taken on more than economic utility alone. As we have assumed, migration decisions take into account precisely the four domains derived from the Zweig, Chen, and Rosen study cited above: the personal, the professional, the institutional, and socio-cultural.

Scholar Migration Studies

In addition to the macro- and microeconomic studies, there have been a few studies devoted primarily or exclusively to the movement of scholars. In this section I will look first at literature focusing on academic mobility generally, and then examine the literature having to do specifically with the movement of Chinese scholars.

General Studies of Academic Mobility.

Welch published the first study of the movements of academic migrants (1997). Using results from the recently completed International Survey of Academic Staff sponsored by the Carnegie Foundation for the Advancement of Teaching, Welch tracked the number of faculty who had had some form of international experience. Being the first study of its kind, the results showed just how widespread the internationalization process had become among U.S. faculty. Unfortunately, however, the study suffers a lack of distinction in the different types of internationalization. As a result, international experiences ranging from short-term study abroad

to permanent appointment in a foreign academic system were all described simply as “international experiences.” Welch did well to document a rising tide of internationalization among academic staff, but the phenomenon needed more in-depth study.

Welch’s study was followed later and article by David Hoffman (2009) to which I referred earlier. Hoffman analyses the email responses of 20 academics living in seven different countries. He finds that traditional notions of academic mobility, usually defined in terms of short term internationalization, are no longer applicable. He finds that there is much more “lateral” mobility, that is, long-term stays (of more than one year), which include also a new form of mobility that Hoffman labels “ICT mobility.” Alongside lateral mobility, Hoffman describes a “vertical” mobility. Vertical mobility is a relatively new phenomenon that results from the children of academic migrants entering education systems in other than their country of origin and then making those systems their academic home.

A similar study was undertaken by Lee and Kim (2009) focusing specifically on reasons for return among 12 South Korean academics who had received their PhD degrees at U.S. institutions. They found that most returnees never had intentions of remaining in the U.S., having made the decision to return before departing for doctoral studies. Among the reasons for return, was the higher prestige available in their home academic systems, family obligations (especially pronounced among females), and preference for work in one’s mother tongue. While the study is interesting because it overlaps on many points with the study that I am proposing here, its usefulness is limited by the sample size (only 12 subjects).

Kim and Locke (2010) use the Changing Academic Profession study to define different types of academic mobility: “study abroad,” in which an academic leaves country of origin for study but returns for employment; “magnetic,” in which an academic departs for study or work

and remains in the destination country for long-term employment; and “self-contained,” in which an academic is trained and remains in the same academic system. Kim and Locke point to the lack of effective study of the issues involved with academic migration and also point to the need for more effective policy. They suggest four areas on which future research should focus: how transnational academic mobility contributes to “the quality of research and the broadening of the intellectual tradition”; how it contributes to the introduction of “new styles of scholarship to the UK”; how it affects “the influence of senior academic leaders from abroad” (whether UK nationals or not); and how it contributes to “disciplinary differentiation and interdisciplinary knowledge” (p. 33).

Hopkins (2011) uses web analytics to examine the origination of inquiries into work within the Australian higher education system. His results display a wide range of “hits” from several countries. Unfortunately, however, the web-diagnostics are not very refined and the exact nature of the interest is difficult to discern. Although an interesting overview of web-traffic to a site featuring academic employment, it is difficult to draw conclusions about the nature of academic migration from this type of study.

Pherali (2012) takes an in-depth look at academics from non-English speaking countries working in universities in the UK. Using a model based on Bordieu’s distinctions between “habitus” (socio-cultural frameworks) and “field” (active contexts) to analyze the way in which seven academics in five different universities use their social and cultural capital to develop “new communities of practice,” Pherali finds that the level of integration depends on the willingness of the academic to “interact” with the field. She concludes that higher education institutions receiving international academic migrants would do well to have institutional policies in place that more effectively introduce academic migrants to their new academic “field”

and work with them both to develop effective pedagogies and to develop channels of interaction in order to ensure higher levels of success.

Specific Studies on the Migration of Chinese Academics.

In addition to the general studies of academic migration, there are also specific studies on the movement of Chinese academics. Most important among them, for our purposes, is the now dated study by Zweig, Chen, and Rosen (1995). The authors conducted a study of 273 “Chinese students, scholars, and other former residents of the People's Republic of China who are currently residing in the United States” (p. 1). Although the “other former residents” are described as being in the workforce in the United States, the authors also express their confidence that the sample makes it possible to “generalize across the entire population of Chinese students and scholars” (p. 88), which leads me to assume that they too are somehow part of the group of students and scholars, most likely possessing some tertiary degree. Although the research concerns of Zweig et al. are broader than my own research, central to their research was the question “What reasons motivate people to stay or return?” (p. 1).

Following Zweig, Cao did several studies of China’s elite scientific core. The initial study, undertaken with Suttmeier (2001), was based on interviews of 52 recipients of the Distinguished Young Scholars Award. Although the study was not directed toward returning scholars per se, the sample included 18 awardees that had received their doctorates from a foreign institution and returned. Through the interview process, Cao and Suttmeier were able to discern a definite bias toward those who had received foreign degrees. I quote their conclusions at length there:

Respondents indicated that through studying and working abroad, they gained useful perspectives on research which affect what they bring to their work in China, including

an appreciation of what is involved in doing research at the frontiers of science, and the importance of networking with foreign scientists. Going abroad was also seen as advantageous for offsetting some of the drawbacks of academic inbreeding, for having new and different life experiences, improving foreign languages, making money and, as noted above, getting the attention and resources to have such problems as housing solved upon returning (informants no. 12, 32, 35 and 45). (p. 963).

Due to this apparent bias, many Chinese trained PhDs also seek opportunities for post-doctoral appointments in foreign institutions. So important is considered foreign training that the Chinese Academy of the Sciences has initiated a sabbatical program intended to support Chinese trained scholars in finding foreign post-docs. Although these too could be considered returnees, they are typically sponsored by Chinese institutions in support of their fellowships and are bound by formal, if not informal, obligation to return.

Another study focusing on Chinese scholars in particular is that of Cao (2008). In this later study Cao looked specifically at Chinese academics. After reviewing the data on the movement of students and scholars, Cao concludes that although China has had some success in attracting a larger percentage of students and scholars, “first-rate academics have not returned to China” (p. 340). In exploring the possible reasons for their non-return, Cao lists six possible reasons. First, having studied abroad, Chinese scholars have weakened or lost the key relationships (*guanxi*) necessary for advance in Chinese culture. Second, he speculates that Chinese scholars shy away from the lack of collegial interaction, the intense competition between faculty members, the demand for immediate results, and the intolerance of failure at Chinese institutions. He describes this as another “culture shock” for returning students who have probably studied in a more collegial and supportive environment elsewhere. Third, he

speculates that Chinese academics are reluctant to enter into the world of political academics in Chinese institutions, where the presence of the Chinese Communist Party is visible and powerful. Fourth, Cao cites a wide-spread culture of scientific misconduct is distasteful to many of the best scholars, who prefer to work in environments where rigor, transparency, honesty, and respect are part of the academic culture. Fifth, Cao guesses that restrictions, especially for social scientists, on the subjects of research might cause some to keep their research in academic setting where no such restrictions exist. Finally, Cao speculates that top academics are not really as welcome as policy makes it sound, especially when they threaten the position or influence of Chinese academics who have stayed behind (pp., 340-342).

The most recent study on the mobility of Chinese academics is that of Leung (2012), who studied the presence of Chinese academics in the German higher education system. While Leung compiles extensive data on the movements of Chinese academic into and out of the German academic labor market, she does little to examine the motivation for such movements.

Summary of Scholar Migration Literature.

Although the new scholar migration literature is beginning to cast light on the nature of phenomenon, it is still too focused on the “whats” rather than the “wherefores” of academic mobility. Initial studies have explored the migration experience, but to date no one has asked the question “why?” In this study I intend to begin to fill that gap.

Decision-making Theories

The microeconomic literature on migration decisions, including literature on motivations among academic workers, depend heavily on decision-making theories. In this section, I will review the literature on decision-making, which can be divided into two broad categories: psychological motivation theories and rational choice theories.

Psychological Motivation Theories.

Latham and Pinder, approaching motivation from the field of psychology, identify seven approaches under their integrated theory of work motivation (2005). They are needs theories, traits theories, values theories, context theories, person-context fit theories, cognition theories, and affect/emotions theories. Needs theories are based broadly on Maslow's hierarchy of needs. They examine how the level of need determines what career decision are made in different circumstances (Ronen, 2001; Wicker et al., 1993). Traits studies look at the role of personality in determining motivation for career decisions (Kanfer et al., 2001; Schmitt et al., 2003). Values studies examine how commitment to a particular value structure influences career choices (Foreman & Murphy, 1996; Locke & Henne, 1986; Verplanken & Holland, 2002). Context studies look at contextual factors that motivate career choices. These studies can be divided into two groups: those that look at cultural context (Earley, 2002; Steers & Sanchez-Runde, 2002), and those that look at organizational context (Ambrose & Kulik, 1999). Person-context fit theories take the context theories one step further by looking not only at contextual factors, but also at the personality traits that lead certain individuals to choose certain contexts (Hollenbeck et al., 2002; Kristof-Brown et al., 2002). Cognition theories, as the name reveals, focus on cognitive processes that lead to career choices. These studies can be divided into four groups: goal-setting processes, social cognition, expectancy theory, and self-regulation theory (Latham & Pinder, 2005). Finally, affect/emotions theories were developed in reaction to what were perceived to be an overemphasis on cognition in motivational theories. These theories place more emphasis on non-cognitive factors that are described as affect, or emotion (Brief & Weiss, 2002; Erez & Isen, 2002; Lord & Kanfer 2002).

Rational Choice Theories

Alongside psychological theories, is rational choice theory. Originally conceived in the field of microeconomics, rational choice theory has found application in political science, psychology, sociology, philosophy, and even in biology and computer science. Classical rational choice theory focused on extrinsic motivation for maximization of utility, calculating material costs and benefits of decisions within an economic framework. This framework was intended to place microeconomics on an empirical foundation. Gilboa points to three weaknesses in the classical approach that have caused many theorists to reject its premises. First, the mathematical models failed to provide “accurate numerical predictions” (2010, p. xiii). Second, the empirical data belies its assumptions. Third, and most importantly, “it failed to deal with important and deep issues such as happiness and well-being, justice and fairness,” thus arguably serving the interest of neo-liberal economic models (p. xiii). The model still held basic explanatory power, however, and so has gone through many and different revisions in an effort to rescue its fundamental assumption: that all humans act rationally within the confines of what has since come to be known as bounded rationality.

Rational choice theory will always stake its fortunes on the definition of “rational.” Economists have long relied on economic behavior as the definition of rational and have developed their models of choice according to it, but the empirical data does not support this definition. Either that, or many people are irrational and rationality loses its predictive power of human behavior. Many psychologists and sociologists reject rational choice theory, because it is empirically demonstrable that humans do not always act in order to maximize *economic* value. That is not to say that they do not act to maximize *value*, however. These nuances have crept into rational choice theories. For that reason, it is best to think of rational choice as a paradigm,

rather than a theory, with certain fundamental features upon which several rational choice theories are built: that fundamental feature is rationality and the assumption that most people act rationally within their bounded rationality and within their values matrix. In other words, people act rationally within their assumptions and information (bounded rationality), and according to what is important to them (values matrix).

What complicates this picture even further is the fact that both bounded rationality and the values matrix are constantly in flux due to such simple matters as changes in the environment or even changes in mood. An individual may act in one way today, due to the assumptions he or she makes and what he or she considers important, but may act in an entirely contrary manner tomorrow, accepting a different set of assumptions or rearranging his or her values. Most people strive for coherence, however, and therefore develop patterns of behavior over time. That is not to say that they cannot or will not act contrary to coherence on a given day, but even a contrary act is “rational” in the sense that it flows from bounded rationality (assumptions and information) and the values matrix (what is important). This also explains why some behavior appears irrational to others. Simply put, the person making the judgment of “irrational” does not share the same bounded rationality or values matrix as the actor. Again, however, this difference does not make the conduct of the actor irrational. It simply derives from a different starting point.

Gilboa (Gilboa, 2010) identifies four fundamental groups of rational choice theories: optimization theories, risk and uncertainty theories, group choice theories, and rationality and emotions theories. The first group, optimization theories, is based on the premise that rational thinkers seek to maximize their utility. This group includes classical utility maximization theories, and what Gilboa calls constrained optimization theory. The latter introduces the element of constraint in the choice process. In other words, people choose to maximize their utility within

given constraints. The example given is that of a person who has a choice to spend his or her income on good x or good y . The chooser will seek to maximize utility under the constraints of income and price. In other words, the choice is constrained because of limits to income, which are to a certain extent beyond the control of the chooser, and because of fluctuating prices, which place limits on the choices and are beyond the control of the chooser.

The second group of theories is the risk and uncertainty theories. These include expected utility theory as well as probability and statistics. Simply put, expected utility multiplies utility by probability. Unlike utility maximization theories, expected utility theory introduces the concept of risk by separating risk-averse behaviors from risk-seeking behaviors.

Statistics and probability are already well known as a discipline, but not in the context of rational choice theories. In the context of rational choice theory, it means simply that actors choose the alternative with the highest probability. The third group, group theories, need not concern me here since I am dealing with individual decision makers, but the fourth group, rationality and emotions theories, are important to my research. In these theories, the goal is to maximize well-being rather than utility.

Summary of Decision-Making Theories

Although these two groups of theories derive from very different theoretical backgrounds, they have many similarities. In effect, decision making frameworks take into account four elements: the personal characteristics of the decider, the social networks of the decider, the cultural habitus of the decider, and the current circumstances of the decider. As I will demonstrate below, although there are those who reject rational choice theories for their roots in economics, once the modifications of more recent versions of the theory are taken into account, they differ little from the psychological theories. For the purposes of this study, then, I will use a

rational choice framework to understand how decisions are made. Within this framework, I will take into account notions of constraint, risk, and well-being in analyzing the responses to the interview questions.

Chapter 3

Methods

Introduction: Road map for this chapter

In this chapter I give an overview of the methodological choices I have made and why I have made them. The chapter begins with a review of the purpose of this study and the research questions that I have posed in order to accomplish that purpose. I then look at the research methods that I have chosen to answer those questions. I then explain how I applied those methods in both the data collection process and the data analysis process. In the final section of the chapter, I examine some special issues related to cross-cultural research and the steps that I have taken to ensure that the potential negative consequences of cross-cultural research are mitigated. To conclude, I describe the limitations to this approach.

Purpose of this study and research questions revisited

According to Creswell, a well-designed research study consists of a central question and sub-questions derived from the central question. The central question driving this study is: What motivates Chinese PhDs who have received their degrees in a foreign country to return voluntarily to China to pursue their academic careers? Related to this central question are three additional sub-questions that I will seek to answer through the data that I have collected around this first general question. The first sub-question has to do with the four identifiable categories of responses present in Zweig, Chen, and Rosen's study (1995) on returning and non-returning Chinese students in the United States (personal, professional, organizational, and socio-cultural). I want to know which of those four identifiable categories most influenced the decision making process of returning scholars. On which of these categories do returning scholars put more emphasis as they make their decision? In other words, generally speaking, what is the primary

motivation for return? A second, related sub-question asks how these emphases differ by age, gender, marital status, number of children, and academic discipline or area of study? Does age, for example, make a difference in the importance of salary? Or, does marital status make a difference in the influence of family in making the decision to return? In other words, are single PhD holders more susceptible to family persuasion than married family members? The final question regards how these decision making processes might be modelled through an economic utility function. Utility functions are central to understanding choice in microeconomics. In this study, based on the results of the qualitative and quantitative analyses applied to the data I ask how this decision-making process might be modeled in a traditional utility function so as to be useful to economists and policy makers in charting a path for scholar return policies?

Part 1: Theoretical

The Choice of a Research Method

The selection of a research methodology requires a fit between purpose and method. The method should be driven by the research question and the purpose of the study (Maxwell, 2013; Richards & Morse, 2012). I have three related purposes in this study as described in the research questions recited above. The first is to understand what factors motivate the return of foreign trained Chinese scholars. The second is to understand how those factors are related to basic demographic characteristics of returning scholars. The third is to model the results of these two analyses in economic language that informs how the decision making process occurs among returning scholars. The challenge then is to find a research method that fits these three purposes and answers the related questions.

It is often said that quantitative methods can answer “what” and the “how many” questions, but that only qualitative research can answer the “why” questions. This is not entirely

true, given that qualitative research methods can also answer “what” and “how many,” depending on what questions are posed to the subject, and quantitative research can also answer why questions by simply quantifying responses, especially in dummy variables. This overlap between methodologies actually led King, Keohane, and Verba (1994) to suggest that the differences between these two methods was purely stylistic and not substantive. This is, no doubt, an exaggeration, as Goertz and Mahoney point out (2012). Nevertheless there is a fundamental complementarity between the two methodological approaches that could be described as “drawing on alternative mathematical foundations: quantitative research is grounded in inferential statistics (i.e., probability and statistical theory), whereas qualitative theory is (often implicitly) rooted in logic and set theory” (Goertz & Mahoney, 2012, p. 13). In other words, “The employment of scientific methods for the generation of valid causal inferences, above all else, unites the two research traditions” (p. 15).

These two different theoretical bases to research require two different methodological approaches to data collection and analysis. As Ary, Jacobs, and Razavieh describe it (2002) quantitative research is objective and statistical in nature while qualitative research seeks to understand social phenomena from the subjective perspective of the human participants. The former has its philosophical roots in positivism while the later has its roots in phenomenology. Both, however, have value in describing reality and both will be used in limited ways in this study.

Given my research questions, I have selected a mixed methods approach to data collection and analysis. My first research question addresses why Chinese scholars return. Although previous research has given some indication of motivation for return and non-return, that research used a survey method to solicit the data (D. Zweig, et al., 1995). Options were

given to the subjects and subjects indicated the strength of that option in weighing their decision whether to return. The study did not provide, opportunity to subjects to indicate whether the slate of options with which they were presented was complete, exhaustive, or whether their personal concerns were accurately reflected in the options presented. In that sense, a qualitative inquiry, taking into account the areas detected by the Zweig, Chen, and Rosen study but not confined by them, was preferred. Only a qualitative approach would elicit that kind of data.

The second research question, on the other hand, whether these responses differed by age, gender, marital status, number of children, and discipline or area of study, is an effort to measure the strength of a relationship between these independent variables and such select dependent variables such as parents, salary, title, patriotism, among others. These types of relationships are best measured by quantitative methods. There is no assumption of generalizability beyond the population of this study in this use of quantitative methods with our data set. The sample was not chosen with an eye toward representativity of a larger population. Rather, the application of quantitative methods is an effort to understand how the data is related internally within the sample collected in an effort to better understand the inner dynamics of this particular group of scholars and to model the relationships between the data adequately.

Finally, this study depicts the relationships between the data in econometric terms. Utility theory is a way of explaining human choice behavior by assuming that “people choose those goods and services they value most highly” (Samuelson & Nordhaus, 2005, p. 84). It is a form of choice theory or preference theory. Utility theory is interested in “people's preferences or values and with assumptions about a person's preferences that enable them to be represented in numerically useful ways” (Fishburn, 1968, p. 335) A utility function, then, is a function that

seeks to move from human choice to real numbers “such that higher utility corresponds to more preferred items” (Kreps, 1988, p. 3).

In economic theory, individuals are assumed to maximize utility through decision making. In the case of the Chinese scholars who are the focus of this study, the assumption would then be that in deciding to return to China, these scholars are choosing to maximize their utility. The question remains, however, what utility are they seeking to maximize? At the end of qualitative analysis, based on the data that has been collected and analyzed, I will construct a utility function that models the preferences of these Chinese scholars in making the decision to return to China.

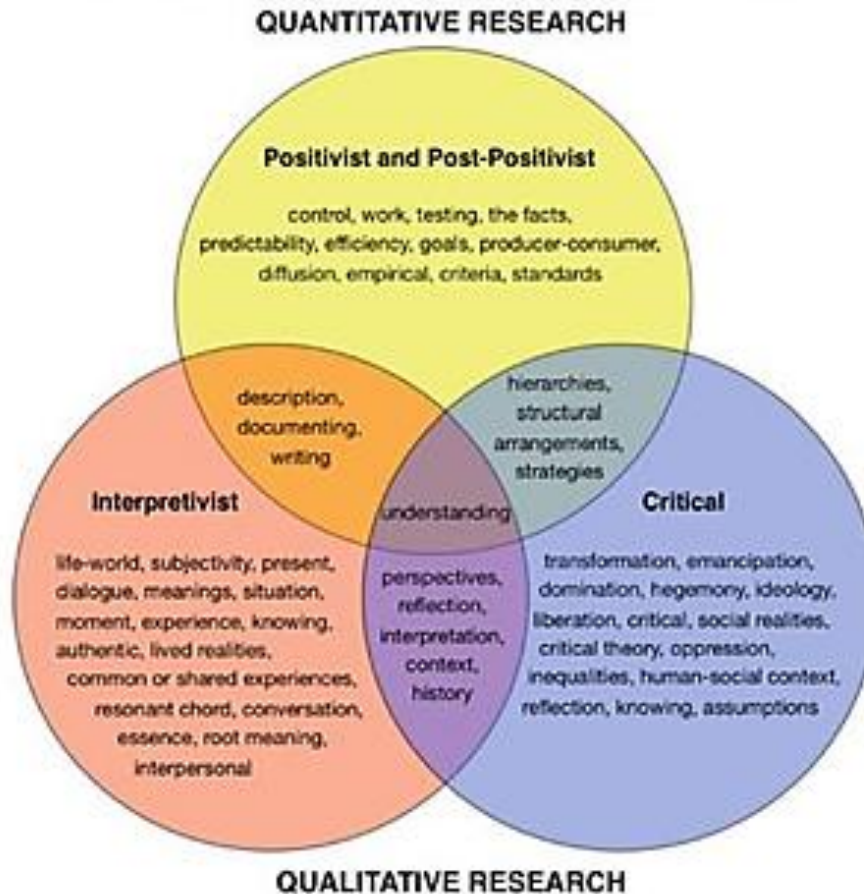
The value of qualitative methods

Qualitative researchers assume that our notion of reality is socially constructed and that the discovery of subjective constructions of reality offers valid and important insights into how reality is socially perceived and construed. Thus, alongside quantitative research, qualitative research adds an important dimension to our understanding of reality. As has been amply illustrated through research since Piaget first proposed the existence of cognitive “schema” (Derry, 1996; Piaget & Warden, 1928), humans understand their environment through cognitive structures that move our perceptions of phenomena into pre-existing cognitive categories. The schema is a cognitive construct that allows us to categorize phenomena into discrete, distinguishable and definable entities. We derive our categories of interpretation from one another as human beings and our interpretations of reality are validated socially (DiMaggio, 1997). Qualitative researchers try to get inside that process of the social construction of our human experience and to understand how meaning is created.

Cooper and White (2012) group these into two primary approaches: interpretivism and critical theory. Interpretivism, is based on the concept that “humans cannot know how the world

Figure 18: Cooper and White, 2012, p. 18

Key Words and Identifiers In Paradigms and Approaches to Research



really is, regardless of research methods used,” and therefore avoids stating its conclusions as generalizable truths or laws about human behavior (Cooper & White, p. 15; see figure 19).

Interpretivism suggests that the search for generalizable truths and laws about human behavior be abandoned and be replaced by analyses of socially constructed realities. On the other hand, critical theory is, at heart, ideological. It makes a fundamental assumption about the structure of social relationships and then seeks evidence of those assumptions through critical analysis.

Critical theory, drawn heavily from the Frankfurt School (Jay, 2008) and more recently from the work of Michel Foucault (2002), looks at power structures in social relationships and seeks to

make them evident through critical description. For critical theorists practice and process are inextricably interwoven the research approach so that the research process itself becomes a vehicle of liberation.

In this study, I approached the data collection process as a qualitative researcher from an interpretivist perspective because this approach allows me to see how individuals make meaning of their experiences (Creswell, 1998; Patton, 2001). Unlike quantitative methods, which measure the nature and strength of relationships between known variables, qualitative methods allow for the discovery of new variables. It is this heuristic approach that makes qualitative methods so valuable. Qualitative methods allow the researcher to uncover the complexities of meaning (Eisner, 1981). They allow one to enter into the schema of the subjects and see how he or she construes their subjective world (Peshkin, 1993; R. Stake, 2010). Although quantitative research is capable of measuring with some precision the relationship between variables, such measurement is always an abstraction, a vivisection of sorts that identifies parts of an organic and complex reality, separates them out, and measures them in isolation from the organic reality of which they are a part. It is precisely because subjectivity is “an essential element of understanding human activity” that makes qualitative research so valuable (R. E. Stake, 2010).

As a qualitative researcher, I believe that our understanding of reality is socially constructed (Berger & Luckmann, 1990; Lincoln & Guba, 1985, 2000). As Creswell (2009) describes it, the social constructivist worldview makes the assumption that “individuals seek understanding of the world in which they live and work. Individuals develop subjective meanings of their experiences. These meanings are varied and multiple, leading the researcher to look for the complexity of views rather than narrowing meaning into a few categories or ideas.”

He goes on to state that the goal of the researcher “is to relay as much as possible on the participants’ views of the situation being studied” (p. 8).

The qualitative methodological strategies that I employed to design this study and that I employ to analyze the collected data fall into the interpretivist camp identified by Cooper and White (2012). It involves “studying a small number of subjects through extensive and prolonged engagement to develop patterns and relationships of meaning” (Creswell, 2009, p. 13, citing; Moustakas, 1994). Although Cooper and White, no doubt, were contemplating spending extensive periods of time with a very few, select individuals, the time I spent with each individual, between 1.5 and 2 hours, gave me a cumulative total of over 100 hours of in depth conversation and certainly gave me both “extensive and prolonged” engagement as described above by Cooper and White. The fact that they were many individuals rather than a few, in fact, gave me greater comparative perspective.

Grounded theory, on the other hand, is a strategy in which the research “derives a general, abstract theory of a process, action, or interaction grounded in the views of the participants” (Creswell, 2009, p. 13). A qualitative approach to this inquiry allows returned Chinese PhDs to share their experiences of the decision making process in order to assist me in the construction of a decision making model for returning scholars.

Miles, Huberman, and Saldana (2013) identify two significant advantages to using qualitative research. First, it allows for the researcher to focus on “naturally occurring, ordinary events in natural settings, so that we have a strong handle on what ‘real life’ is like” (Miles, et al., 2013, p. 11). Qualitative approaches allow for what they call “local groundedness,” which they describe as proximity to a specific situation. Unlike quantitative studies, in which local context is stripped away, they argue that qualitative research allows for this type of nuancing. As such, the

possibility for understanding “latent, underlying, or nonobvious issues” is strengthened (Miles, et al., 2013, p. 11). A second advantage of qualitative methods is that it produces rich and holistic data that reveals complexity; what Geertz would describe as “thick descriptions” (1973). Finally, qualitative research allows for the collection of data over time and thus allows for an understanding of situations as they evolve rather than taking a simple snapshot of a process at a given moment. In sum, Miles et al. see qualitative research as inherently flexible and thus allows for more confidence in grasping the inner dynamics of a given phenomenon. For these reasons, I have chosen qualitative methods to investigate my first research question: why do Chinese scholars return to China to pursue their careers?

The value of quantitative methods

As mentioned above, quantitative methods have the fundamental value of measuring the strength of relationships between variables based on statistical calculations. Statistics is an advanced science of probability. In that sense, its conclusions have a measurable value based on probability, unlike qualitative data, whose value cannot be measured in the same way. However, even in statistics, nothing is ever “proven,” per se, but hypotheses can be demonstrated to be probable with high levels of certainty, enough certainty, at least, to reject the negation of the hypothesis, what is typically referred to as the “null hypothesis” (Ary, et al., 2002; Hinkle, Wiersma, & Jurs, 2003; Ott & Longnecker, 2010).

Quantitative research can take two forms, the experimental form and the non-experimental form. Experimental research manipulates independent variables in order to measure their effect on a dependent variable. There are many ways to carry out this measurement, but it usually involves creating an experimental group and a control group and contrasting the results of the experimental group with the results of the control. Non-experimental research, which

predominates in the social sciences, involves identifying variables and looking for relationships among them, but not manipulating those variables. This type of research is valuable for depicting the existence and strength of the relationship between variables in numeric and graphical form (Ary, et al., 2002). In this study, I use a non-experimental approach to the data that I have collected. Although the sample is small, it is nevertheless interesting to see how certain factors influence the decision to return. This is a foundational for building the utility function. Using quantitative methods in the data analysis allows me to see within this selected group the patterns emerge around their choices to return. Knowing how the data is organized internally will improve the reliability of the findings. For that reason, the use of qualitative methods to analyze the data is most appropriate for this data.

The value of microeconomic modeling

In its broadest sense, microeconomics is the study of the behavior of individuals, households and business firms, or, at times, of individual markets (Clower, Graves, & Sexton, 1988). Microeconomic descriptions are often written in calculus or algebraic functions in order to efficiently depict in theoretical form the way that individuals or firms make decisions. In this study I use a particular type of microeconomic modeling called a utility function. A utility function is an effort to depict the relationship between what is known as a consumption bundle and the total amount of utility that a decision-maker derives from his or her choices (Depken, 2006; Kreps, 2013; Krugman & Wells, 2006, 2013; Varian, 2010). In most modeling, that choice is binary, in other words, the choice is modeled based on two possibilities, to either consume product a or to consume product b. In this study, we are not talking about products, per se, but the resulting state that each choice produces can be treated as a product and the personal satisfaction attached to it can be treated as though it were derived from a product. This

satisfaction is measured in terms that economists call utils. A util is simply a measure of satisfaction. It is really a measure of *intensity* of satisfaction. For example, the intensity of satisfaction gained from eating one hamburger may be strong, the intensity of a second hamburger, not so strong, and the intensity of a third hamburger weak, or non-existent.

In this case, the choice has already been made. All of our subjects have chosen to return to China rather than the alternative, to stay where they were or to move to another market other than China. What we will attempt to model with our utility function is what factors produced the decision to return. As Gary Evans explains it, “Modeling provides a logical, abstract template to help organize the analyst's thoughts. Through the use of a model, the economist can experiment, at least logically, producing different scenarios, attempting to evaluate the effect of alternative policy options, or weighing the logical integrity of arguments presented in prose” (Evans, 1997, p. 2). Or as Krugman and Wells puts it, economic models are “simplified representations of economic situations” (2013, p. 17). As such, however, models have their limitations. Since the number of factors that influence any given economic situation are infinite, the modeler must control for which factors will be taken into account and what assumptions will be made in order to make the model useful. Some might argue that under such circumstances, the model is not useful at all. Nevertheless, even within these limitations, the model can powerfully demonstrate cause and effect in economic situations and therefore are useful especially for policymakers in crafting their policies (The Economist, 2006). This latter use is precisely its value in this study. My purpose in using a utility function to model return decisions is in order to allow policy makers to see what factors affect return decisions, how different demographic groups are influenced by those factors and in what proportions, and how to craft their policy decisions in order to have the desired impact with the desired demographic.

The rationale behind the mixed method approach

Since Borland first proposed the value of mixed-methods approach to research (Borland, 2001), there has been a steady flow of books and articles in various disciplines touting its value (Creswell, 2009; Creswell & Plano Clark, 2007; Dörnyei, 2007; Johnson & Onwuegbuzie, 2004; Johnson, Onwuegbuzie, & Turner, 2007; Morse, 2003; Sale, Lohfeld, & Brazil, 2002; Tashakkori & Creswell, 2007). Johnson and Onwuegbuzie's ground breaking article poignantly listed the strengths and weaknesses of each approach before concluding that using multiple approaches, especially to social phenomena, were preferable to single method approaches (see Appendix 1). According to them, there are five reasons for using a mixed-method approach rather than a single method approach. Those reasons are:

a) triangulation (i.e., seeking convergence and corroboration of results from different methods and designs studying the same phenomenon); (b) complementarity (i.e., seeking elaboration, enhancement, illustration, and clarification of the results from one method with results from the other method); (c) initiation (i.e., discovering paradoxes and contradictions that lead to a re-framing of the research question); (d) development (i.e., using the findings from one method to help inform the other method); and (e) expansion (i.e., seeking to expand the breadth and range of research by using different methods for different inquiry components). (Johnson & Onwuegbuzie, 2004, p. 22).

In this study, I am not attempting to generalize my conclusions to the population, as purposes a) and c) might imply, but rather am seeking results that oscillate between purposes b), d), and e). The value of using a mixed-method approach in this particular study is that it allows me to approach the social phenomenon of returning scholars from the subjective perspective of the participants. It also allows me to do so heuristically. The semi-structured interview process

was a powerful tool for entering into and analyzing the perceptual worlds of the subjects. I was able to make several new and significant discoveries that will inform any further research in this area. Using quantitative tools to examine the nature and strength of relationships between the discovered variables, on the other hand, was uniquely valuable in discerning how, among this group in particular, demographic variables might become a predictor of return decisions among certain segments of the population. This would require further research, of course, preferably using strictly quantitative methods. Nevertheless, observing these relationships under these controlled conditions lays the foundation for such future research.

Part 2: Mechanics

Data Collection

In this section, I will discuss the specific data collection strategies I used in seeking the data I needed to answer my research questions. This section will discuss both the qualitative data collection and the quantitative data collection.

Qualitative data collection

With the approval of the University's Institutional Review Board (see Appendix 2), I began collecting data on the experiences of 36 returned Chinese PhDs. The research process began with a summer research fellowship for the summer of 2011 during which I traveled to China's Beijing Normal University for six weeks in order to conduct a pilot study of the research issues I delineated above. After the decision to use qualitative methods to do an exploratory study of the issues surrounding motivation for return, I drew up a list of questions which I reviewed and discussed with my research partner. The design was intended to use both open and focused questions (Galletta, 2013; Kvale & Brinkmann, 2009; Wengraf, 2001). The open part of the interview was intended to elicit unprompted responses to the question of motivation. The

protocol was then tested for validity through seven initial interviews. As Adcock and Collier describe it, “Measurement validity is specifically concerned with whether operationalization and the scoring of cases adequately reflect the concept the researcher seeks to measure” (2001, p. 529). Validity testing is a standard part of quantitative research, but for some reason, this step is often overlooked when doing qualitative research. Already in 1995, Appleton noted that validity and reliability are often ignored in qualitative studies (Appleton, 1995). This situation has not much changed since then. The same issues are present when assessing the value of a qualitative instrument, however (Adcock & Collier, 2001).

The basic issue here revolves around whether the questions are understood by subjects in the same way that they are intended by researchers (Adcock & Collier, 2001; Galletta, 2013; King, et al., 1994). Validity testing in this sense has an important function in qualitative research as well. In order to achieve these levels of validity, I applied the initial instrument in seven interviews. The interviews were recorded, transcribed, and coded. The interviews were rich in terms of the desired content. I realized, however, that the combination of open and focused interview questions created results that were sometimes prompted by the questions addressed rather than spontaneous reflections of personal experience. Since I wanted to use semantic analysis software to triangulate the emergent themes in the interviews, question prompts would bias the semantic analysis. As a result, after the first summer of research, I resolved to address this issue by restructuring my question format.

The following summer (2012) I returned to undertake the remaining 29 interviews during a six week period using a snowball sample. In this second approach to the interviews, I retained the open and focused questioning format, but this time I created a “firewall” of sorts by asking the open questions first and allowing the interviewees to respond at length to these questions.

Only when their personal reflections on return were exhausted did I return to questions specifically about the four factors of motivation identified from the previous research literature. In this way, the open sections of each interview can be semantically analyzed for word patterns that will lend validity to my identification of emergent themes. As a form of reliability testing, I applied the interview protocol again to the seven interviewees who had participated in the pilot.

Reliability can take three forms, according to Kirk and Miller. It can be quixotic, diachronic, or synchronic. Quixotic reliability occurs when “a single method of observation continually yields an unvarying result” (Kirk & Miller, 1986, p. 41). As one can imagine, and as Kirk and Miller point out, this is nearly unachievable in qualitative research and where present, it usually is an indication of rehearsed or, even worse, coerced responses. A better measure of reliability, according to Kirk and Miller is diachronic reliability which, they say, refers to “the stability of an observation over time” and is usually demonstrated by “the similarity of measurements, or findings, taken at different times” (p. 42). While having to repeat seven interviews was cumbersome, it had the added benefit of allowing me to observe how their recollections were changed by a reordering of the structured interview questions. The final kind of reliability defined by Kirk and Miller is synchronic reliability. In this form of testing, the researcher seeks to discern whether responses are similar in the same time period. It became clear in the process of completing the interviews during the summer of 2012 that the instrument was holding up quite well in terms of both diachronic and synchronic reliability.

In the end, I was able to complete a total of 36 interviews. In fact, a total of 39 interviews were conducted. I did not include three of the interviews for various methodological reasons. One of the interviews was discarded because the subject did not exactly fit the subject criteria of being employed in higher education. Although having acquired his PhD from a US research I

institution, he was at the time working in a private firm rather than a Chinese higher education institution. A second interview was discarded because the low quality of the recording made the transcription nearly impossible. A third interview was discarded due to the poor language skills of the interviewee. I could not be certain that the subject correctly understood the questions and, judging from the answers given, my doubts were justified.

The information I obtained through the remaining 36 interviews formed the basis for the overall findings of my research. Permission to record was received from each of the interviewees. In order to protect the individuals' identity, each interviewee was assigned a number and all transcriptions were stripped of personally identifying information. Each of the recordings was transcribed.

Semi-structured Interviews

As noted above, I used semi-structured interviews as the data collection method for the qualitative data. Method must fit purposes. In this case, the primary purpose was to explore individual descriptions of a historical process, namely, the decision to return to China to pursue an academic career after having completed doctoral training in a foreign country. According to Flick, there are several possible forms of interviews available to the researcher: the focused interview, the semi-structured interview, the problem-centered interview, expert and elite interviews, the ethnographic interview, the narrative interview, the episodic interview, the group discussion, and the focus group interview (Flick, 2014). In my case, my research question required a method that would yield extensive subjective understanding of the process of return. According to Flick, the semi-structured interview receives its theoretical grounding through subjective theory (Scheele & Groeben, 1988). Subjective theory posits that subjects have an elaborate cognitive structure that includes knowledge, assumptions, both explicit and implicit,

and an action framework that derives from this structure. It is the task of the semi-structured interview to discover these structures which are in effect operative personal theories. In this sense, the semi-structured interview lends itself well to the purpose of discovering the internal logic of the decision to return. Flick recommends three layers of questions in semi-structured interviews: open questions, theory-driven or hypothesis-directed questions, and then what Flick calls a confrontational question. The purpose of the open questions is to elicit undirected, spontaneous responses based on knowledge that is readily at hand. The purpose of the theory-drive or hypothesis-directed “structured” questions is to test the subjective theory of the individual against the researcher’s theoretical framework. The purpose of the confrontational question is intentionally to create cognitive dissonance in order to test the strength of the operative subjective theory possessed by the individual (Flick, 2014). The three phased approach is not unlike that described by Seidman (2013), although Seidman breaks up the phases into separate interviews.

In similar fashion Galletta suggests a three tiered approach to the construction of the research instrument. In the opening portion of the interview, the interviewer should “elicit from the participant the central story that will give your interview direction and depth. The questions are open-ended in order to create space for participants to narrate their experiences,” the objective of which is to “guide a participant in conveying an account of an experience as it relates to the topic of study” and to produce data “deeply grounded in the participant’s experience and angle of vision” in order to “learn about the participant and his or her experience” and to generate a narrative, “a way into the phenomenon of study as determined by the participant” (2013, p. 46). In other words, the questioned should be posed in such a way as to

allow the respondent to describe in as much detail as possible the operative subjective theory, as Flick would say, that guided past actions.

A second tier is described as the complexity stage. In this tier the researcher presents questions that will “ensure your research topic is adequately explored” (p. 49). In the first tier of the interview, the purpose is to allow the subject to reveal in as much detail as possible the structure of the theoretical structure that governs his or her decisions. In this second tier, however, the researcher works from within his or her own theoretical structure in order to draw comparisons between how the researcher understands the phenomenon and the way the subject understands the phenomenon (Fowler, 2008; Galletta, 2013; Kvale & Brinkmann, 2009; LeGard, Keegan, & Ward, 2007; Schwartz, Knauper, Oyserman, & Stich, 2008).

The final tier described by Galletta is the concluding tier. The purpose of this last tier is to “engage the participant in clarification, meaning making, and critical reflection, particularly as it relates to more abstract and theoretically driven questions” (p. 51). In this section, the researcher can:

- return to those stories and metaphors in need of further exploration,
- look for opportunities to explore contradictions,
- work toward a sense of wrapping up and indicating to participant the interview is nearing completion,
- ask participant for additional thoughts or final points. (p. 52).

Taking these two sequential descriptions of interviews as presenting something of a standard, I have created a graphic below which depicts how my own research protocol fits into the suggested structure given by Flick and Galletta. As can be seen from Table 4, my instrument also contained a first, second, and third phase.

Table 3: The Three Phased Interview Protocol

Phase 1	Phase 2	Phase 3
Open Subjective Phase	Focused Theoretical Phase	Exploratory Closing Phase
The purpose of this phase is to give subjects as much time and space as necessary to disclose as fully as possible the dimensions of their individual subjective theory in relation to the topic of study.	The purpose of this phase is to allow researchers to probe the subjective theory from their own theoretical perspective. Researchers tests their own theoretical framework against the inner dimensions of the subjective theory to detect agreement and disagreement.	The purpose of this phase is to return to certain points for clarification, explore ambiguities and contradictions, test the strength of the subjective theory through dissonance, and allow the subject to add further information not already included or divulged in the interview process
Phase 1 Questions	Phase 2 Questions	Phase 3 Questions
1. When did you decide to return to China, before you left from China or while you were living abroad? Do you remember a specific time when the decision was made? 2. Please, describe for me how you made your decision? What things did you take into account when you made your decision? 3. Beside returning to China, did you have other choices, or were you pursuing other opportunities?	4. What family concerns did you take into account as you made your decision (both immediate and extended family)? 5. What professional/career concerns did you take into account as you made your decision in terms of your career advancement, opportunities to pursue your goals, professional status, recognition of and appreciation for your work, salary and benefits, Chinese research interests or research agenda, etc.? 6. Did the institutional or organizational setting to which you were returning affect your decision (e.g., institutional culture, facilities for research, scholarly community, support structure for your work, your place in the	7. What would you say was your primary motivation for returning to China? 8. What other concerns, if any, did you take into account? 9. Do you have any regrets about your decision? 10. Do you have anything to add?

Table 3 (cont'd)

Phase 1 Questions	Phase 2 Questions	Phase 3 Questions
	organization, funding for research, teaching/administrative/research assignments, etc.)? In what way? 7. What social or cultural concerns did you take into account as you made your decision (e.g. Chinese culture vs. foreign culture, cultural values, a sense of national loyalty, a desire to contribute to national development, the Chinese economic/political system vs. other systems)? 8. Did Chinese government policies affect your decision to return in any way? If so, how?	

As can be seen from the above table, the revised interview protocol corresponds roughly to the three stages defined by both Flick and Galletta. The first phase was structured in such a way as to give the subject as much opportunity as possible to describe the decision making process. The questions were posed in such a way as to give the respondents as much latitude as possible in describing their subjective experience. In the interviews, this phase of the interview lasted anywhere from twenty-five to an hour and fifty minutes. The point was to allow interviewees to say as much as possible about how they conceived the decision making process, what pros and cons they weighed, what they considered important and not important in making the decision, to whom they went for advice.

The second phase of the interview was directed specifically at the comparison of the interviewee's subjective theory and the conceptual framework from Zweig, Chen, and Rosen that I had incorporated into my approach to the research. In this section I asked the respondents to interact specifically with the four identifiable domains that influenced return decision making in the Zweig, Chen, and Rosen study. In this phase, I purposefully presented the respondents with a specific way of construing the process that may converge or diverge from their own experience in order to attempt to gauge how to what degree the conceptual framework adequately encompass the subjective frameworks of the respondents. The purpose here is not to suggest ways in which to reconstruct their schema, but rather to probe as to how well the conceptual framework that I chose to interpret the data coincides with the operative framework of the subjects.

In the final phase of the interview I asked one summative question, through which I sought to help the subjects reflect on the interview as a whole, clarify their thoughts, and express themselves in their own words once again. This final summative question was intended to have the effect of allowing the subject to "change their minds," so to speak, based on the reflective process that they had just undergone. In additions, I asked one dissonant question regarding any regrets they might have had regarding their decision to return. The purpose of the dissonant question was to allow the subjects to challenge their own assumptions and, indeed, their entire theoretical framework. How well did their framework serve them in the decision making process? It gave the subjects opportunity to consider the possibility that their operative framework may not have been as well construed as they had assumed before the decision to return was made. The final question was an open-ended opportunity for the subjects to address any issues that had not

been addressed in the course of the interview. Surprisingly, a number of the respondents took this opportunity to address issues that had not been considered.

Snowball Sampling

There were several challenges in defining a sample in this study. There is no accurate estimate as to how many foreign-trained PhDs are working in the Chinese higher education system. Although the Chinese government undoubtedly has records of those who have returned, since every returning national is required to register at the ministry of labor upon return to China, I was nevertheless unable to gain access to that data after repeated attempts through the few contacts I had in Chinese government.

Sampling is as important in qualitative research as it is in quantitative research. Nevertheless, not all samples are the same. The sample must fit the inferential claims of the research (Ary, et al., 2002; Blaikie, 2009; Flick, 2014; Huberman & Miles, 2002). In this study, due to a lack of country-wide data, I made no attempt to compile a representative sample. And, in the absence of records to guide the selection of subjects, I was relegated to collecting my sample through friends, relationships, word of mouth, and referrals. Such a sample is often referred to as a snowball sample, a networking sample, a convenience sample, or a chain sample (Ary, et al., 2002; Blaikie, 2009; Flick, 2014; Huberman & Miles, 2002; Wengraf, 2001). As Ary et al. point out, a snowball sample or chain sample is a form of “purposive sampling,” in which researchers select a specific group, which meets certain criteria, and is of sufficient size “to provide maximum insight and understanding of what they are studying” (2002, p. 428).

The size of the sample is determined by a concept called “saturation” (Ary, et al., 2002; Boeije, 2009; Galletta, 2013; Wengraf, 2001) or “redundancy” (Lincoln & Guba, 1985). Under this criterion, sampling continues until the researcher feels that there is not new information

being gleaned through the interview process (Ary, et al., 2002, p. 430). No “new information” is a rather subjective valuation. Clearly, in each new interview there is new information to be gleaned. Wengraf described saturation as the point at which “no new codes are needed” to describe the data collected (2001, p. 107), but such an alternative suggestion is of little use when the researcher never knows whether the next interview might be the one to reveal a whole new area of conceptualization not previously discovered. Perhaps a more helpful way to view this is to describe saturation as the point at which no new categories are needed. This might be a definable point since it seems conceivable that one would reach a point at which it would be impossible to imagine a new revelation falling outside this higher level groupings of codes.

In my own interview process, it became apparent relatively early that saturation had been reached at the theme level. Although I did not have the luxury of coding every interview immediately after it occurred (on some days, several interviews were conducted on a single day), nevertheless, as I coded the interviews I had conducted, it was becoming evident that all of the responses were falling into one of five categories: personal motivations for return, professional motivations for return, institutional motivations for return, socio-cultural motivations for return, and a fifth category that I describe as “process” comments, in which the subject describes the mechanics of the decision making process, such as timing, difficulty, strength of conviction, and the like. Although the saturation point was reached relatively early, I continued interviewing in order to be able to say with confidence that no new higher order organization of the responses would be possible.

Quantitative data collection

The heuristic approach to the research question of why China’s foreign trained scholars would return to China to pursue their academic careers was complimented by the question of

how the various known variables affected this decision. Given that my primary data collection tool was qualitative, I included a brief demographic questionnaire for each one of the participants in order to understand how a series of demographic variables might affect the strength of each one of the known variables. This demographic questionnaire would become the basis not only of understanding the relationships between these variables, but also an important tool in developing the utility function for decisions to return.

Table 4: Independent and Dependent Variables Measured in this Study

Independent variable	Dependent variable	Desired information
Gender (categorical)	Personal Motives (continuous)	Is it true that the younger generation of Chinese scholars are motivated more by personal interests and less motivated by communal interests?
Age (continuous)		
Marital status (categorical)	Professional Motives (continuous)	Is it true that the growth and expansion of the Chinese higher education system has made a career in Chinese academia a more attractive professional option?
Number of children (continuous)		
Time since return (continuous)	Institutional Motives (continuous)	What role do specific institutions play in attracting returning scholars back to China? Can institutions do anything to motivate return?
Discipline or Field of Study (categorical)		
Type of institution from which advanced degree was earned (categorical)	Socio-cultural Motives (continuous)	How much do social and cultural values influence the decision to return? Is there a strong sense of loyalty to the state or the culture? If so, how does that change with various demographic factors?
Current position (categorical)		

Demographic questionnaires

The question for me, the researcher, was how the four known categories affecting return decisions were correlated with a number of demographic factors. Those factors are displayed in the table below (see Table 4).

The questionnaire collected information on each one of the independent variables listed in the table above (Table 5). The purpose of collecting this information was in order to measure the independent variables against the four known dependent variables identified in previous research. In order to understand the strength of the relationship, I used quantitative word count data generated by the NVivo semantic software in order to measure the strength of the relationship as well as percentages of coded text around each one of the four categories of response.

There are methodological issues involved with using word count data, which I will discuss below. For now, I will simply point out that the accumulation of words around each one of the four dependent variables was considered a proxy for strength of influence (Bazeley & Jackson, 2013; Hsieh & Shannon, 2005; Leech & Onwuegbuzie, 2007; Weber, 1990). For example, if subject A devoted 50% of his or her narrative of the decision making process discussing professional issues, it is assumed that this 50% is a proxy for intensity of influence of the professional category on the decision making process. In each case, the relationship between the independent variable and the dependent variable was measured using the appropriate tests, which I will discuss further below in the section on data analysis.

In the same way, percentages of coded text was used to measure the strength of the relationship. This is a more accurate way of measuring the intensity of response around the four categories in that each portion of the text has been examined and assigned a code, avoiding some

of the pitfalls of ambiguous and decontextualized word usage that affect straightforward word count analysis.

Semi-structured Interviews

As described in the previous section, quantitative data was also mined from the results of the semi-structured interviews. The demographic data was tested against two quantitative measures of the intensity of response around the four identified categories of motivation for return as represented by the percentage of coded text devoted to each theme. The semantic statics generated by the word count analysis and the word tree analysis were used as a form of triangulations, in order to verify that the emphasis identified in the coding process were indeed reflected in word usage.

Part 3: Description of Study Participants

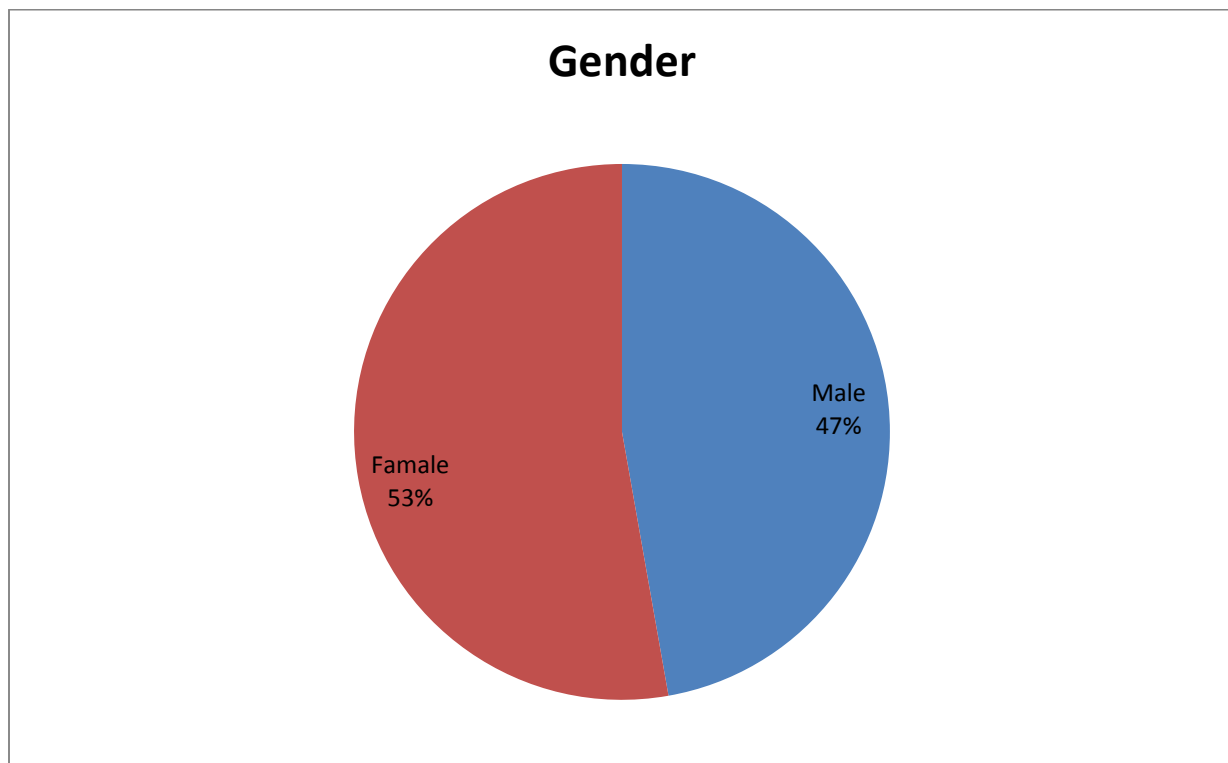
The study area covered is the nation of China, that is, the area delimited by Chinese national boundaries. Specifically, we looked at two segments of Chinese institutional culture: universities and academic research centers (including applied research centers) affiliated with universities. By so doing, we intentionally excluded Chinese scholars that are recruited for and return to commercial or governmental programs or institutions, such as those that are recruited into manufacturing research and development or those that are recruited into military research. We used a snowball sample. Each respondent was asked to refer others who met the subject criteria. The snowball sampling technique was utilized as a way to identify interviewees who met the following criteria: Chinese doctoral recipients who were currently employed in a Chinese university. The subjects were interviewed in Chinese. Measures were taken to ensure the reliability of the data. First, subjects were told that their names and personal information would be kept confidential. Second, they were also given the option of refusing to answer any question

with which they did not feel comfortable. The interviews were recorded, although subjects were given the option of either not being recorded at all, or turning off the recorder at any time they did not feel comfortable with recording. The interview protocol first asked about how the decision to return was made. After these first answers were given, follow-questions were asked how each one of the four variables of interest – personal factors, professional factors, institutional factors, and socio-cultural factors – influenced their decision. In each instance, examples of the individual components of each factor were described. The final sample consisted of 36 interviewees. All but one had a doctoral degree. One Masters of Fine Arts recipient was included since it is considered the terminal degree in that field.

Gender, Age, and Marital Status.

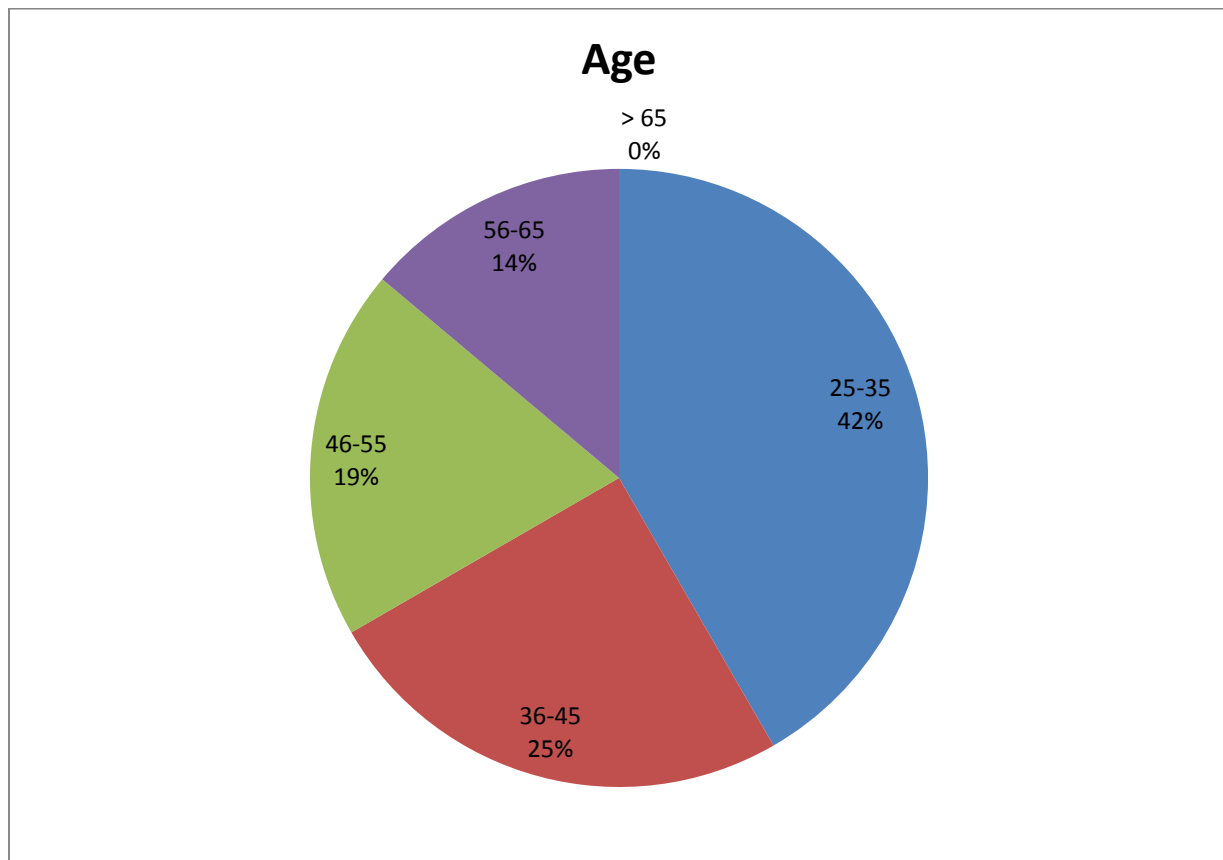
The gender composition of the sample was almost evenly split between males and females (17 to 19, respectively). This demographic is not reflective of the two other national

Figure 19: Gender



surveys conducted in 2008 ([Shen, 2008](#)), where the male/female gender composition of faculty was 63/37 in the Changing Academic Profession (CAP) survey and 57/43 according to the data supplied by the Chinese Ministry of Education (MoE). The age breakdown in our survey may be reflective of a shift in faculty composition among the younger, foreign-trained scholars that composed our sample, which would go a long way toward correcting the predominance of males on Chinese faculties (Jacobs, 1996; Kelly & Slaughter, 1990; Moore, 1987), but without a representative sample, it is impossible to tell.

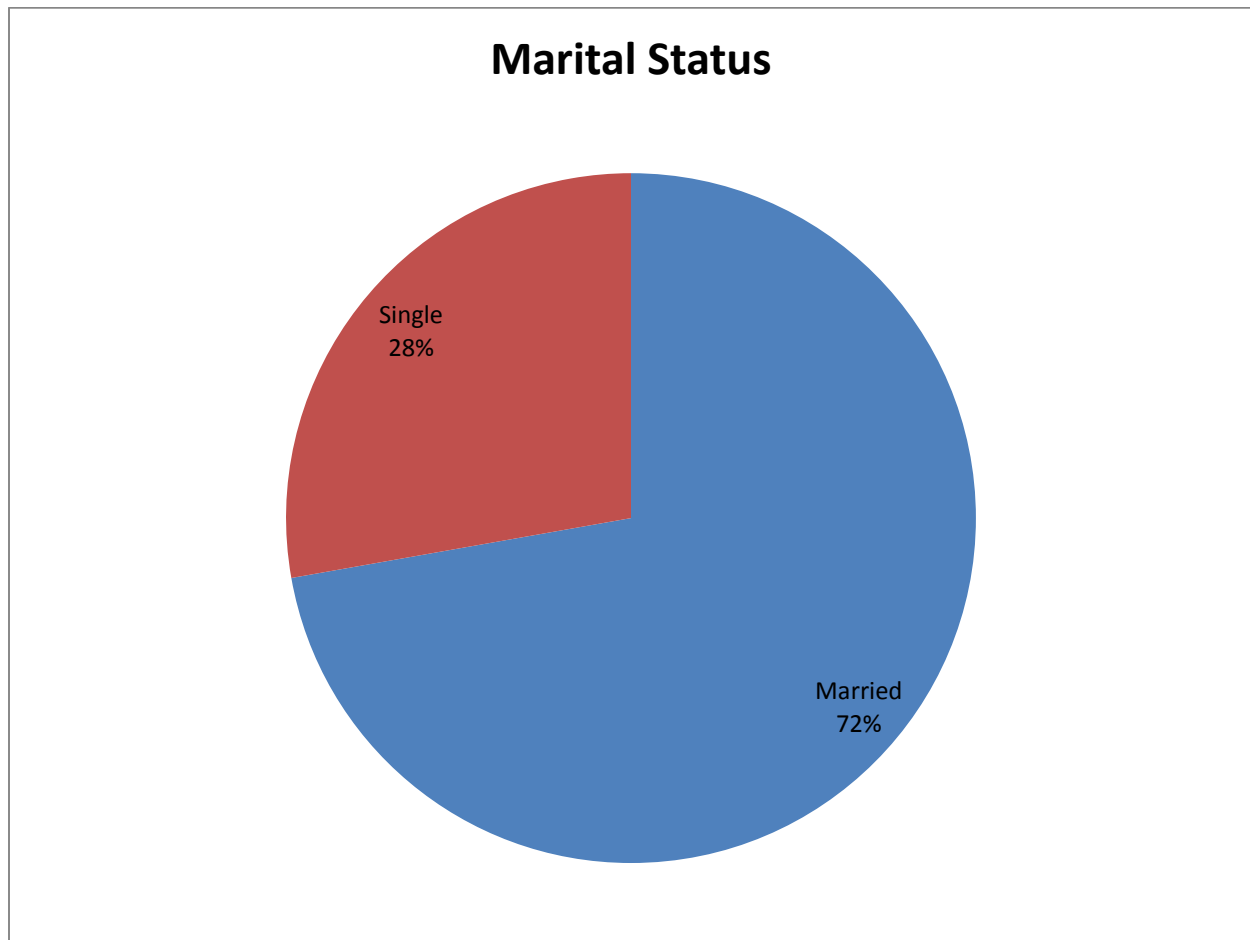
Figure 20: Age



The age breakdown corresponds roughly to the results of the (Shen, 2008), although those two studies divided their distributions in ten year segments starting with 30 (rather than 25, as in our study). In the CAP and MoE studies, roughly 90% of the professoriate was 50 years of

age or younger, while in our study, 85% were 55 years old or younger. Our demographic sample was slightly larger on the lower end of the scale as well, with 69% of those interviewed under the age of 45 (the CAP and MoE studies had 58% and 65%, respectively, under the age of 40). The age breakdown is not, however, unexpected, given that China has invested heavily in the expansion of its higher education system over the last 30 years, and that, since 1998, China's Project 985 has invested heavily in the quality improvement of faculty and facilities in a select number (currently 39) of universities nation-wide (J. Gu, Li, & Wang, 2009; Lixu, 2004; Ma, 2007). The majority of our interviews took place in Project 985 institutions, thus skewing the age demographic slightly toward the younger end of the scale.

Figure 21: Marital Status

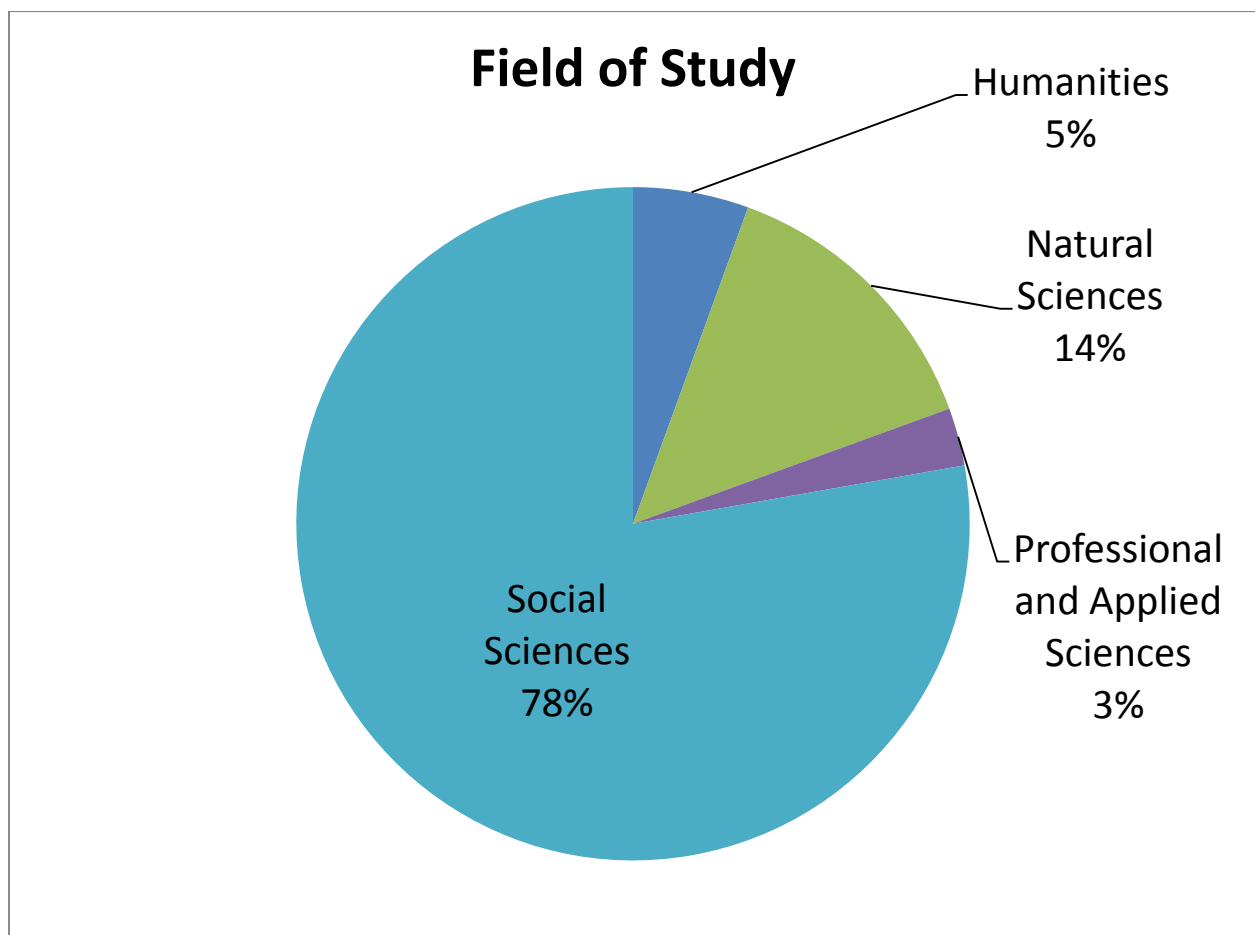


Marital status also is less reflective of the results of the other major national study that took this demographic into account. In our sample, 72% of the respondents were married and 28% single. This compares with 88% and 12% respectively for the 2008 CAP survey. This, too, can perhaps be explained by the fact that the predominance of Project 985 institutions in our survey skewed toward younger faculty, who would be more likely to be single.

Field of Study

The field of study is heavily slanted toward the social sciences. This is one of the hazards of the snowball sampling technique. Referrals tend to run in disciplinary circles. Being ourselves social

Figure 22: Field of Study

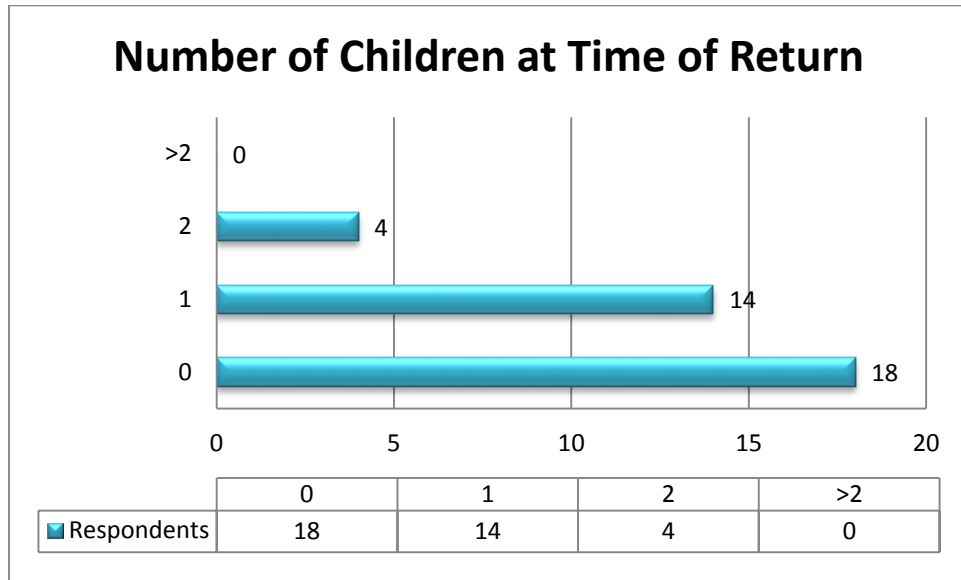


scientists meant that our most immediate and most extensive contacts were in the faculties of social sciences. As can be seen from Figure 21, social scientists made up nearly 80% of our sample. Clearly, this is not reflective of the overall population. It can be assumed, however, that with more limited dimensions, the population of foreign-trained returnees is indeed weighted toward the social sciences for the simple reason that social science research, unlike research in the natural, formal, or certain of the applied sciences, is more context specific. In other words, for such disciplines as economics, education, sociology and the like, the social context is important, whereas for STEM field disciplines, such as mathematics, biology, chemistry, physics, engineering and the like, context is of less importance. All this implies that the human capital of social scientists may be of less international value than that of STEM field scholars, skewing the returnee population toward the social sciences (Cao, 2008; Cao & Suttmeier, 2001). This will have to be born out, however, when we have opportunity to carry out a more extensive survey with a truly representative sample.

Number of Children and Time since Return.

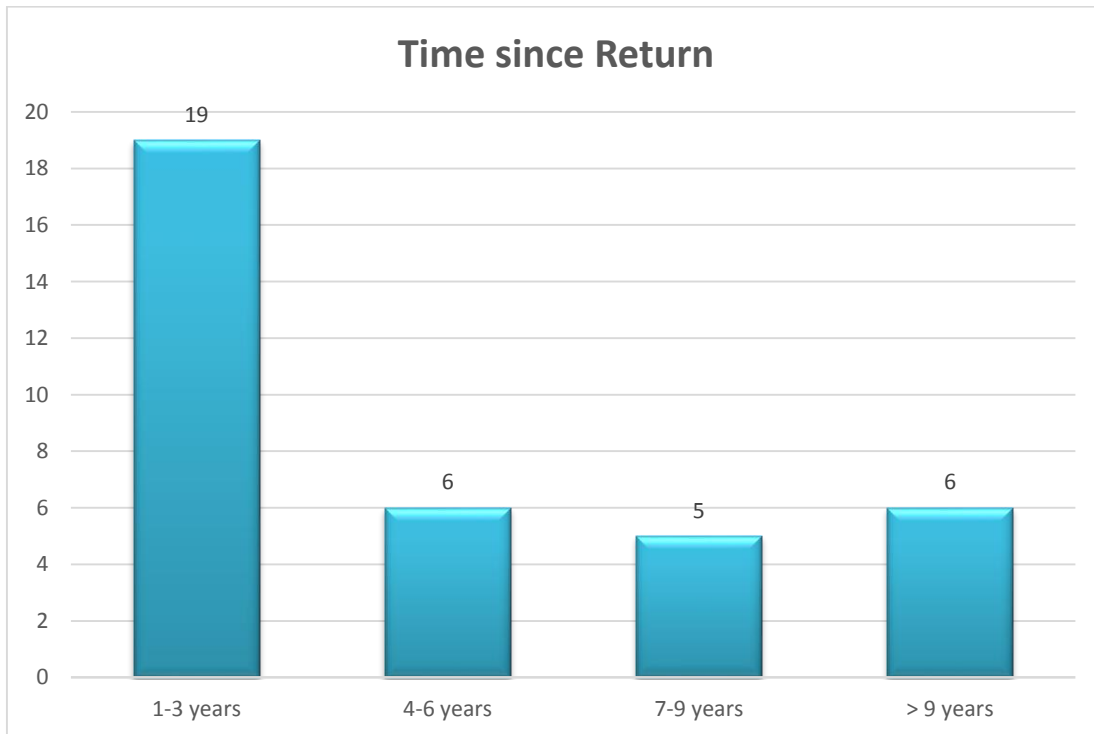
In an effort to understand whether the “one child policy” would have any influence on the decision to return, we inquired as to the number of children the returnee had at the time of return. As is reflected in the high number of single scholars as well as the younger age of our sample, the number of those having no children at the time of return was quite high, constituting half of the sample (see Table 5). Of those who had children, the vast majority had only one child at the time of return, while only four had two children and none of the respondents had more than two. In the course of our interviews, however, we were informed that children born outside of China (for example, those born in the United States) were not counted toward the one-child policy,

Table 5: Number of Children at Time of Return



meaning that a scholar having already one or more children born outside of China are still legally permitted to have a child in Chinese national territory.

Table 6: Time since Return

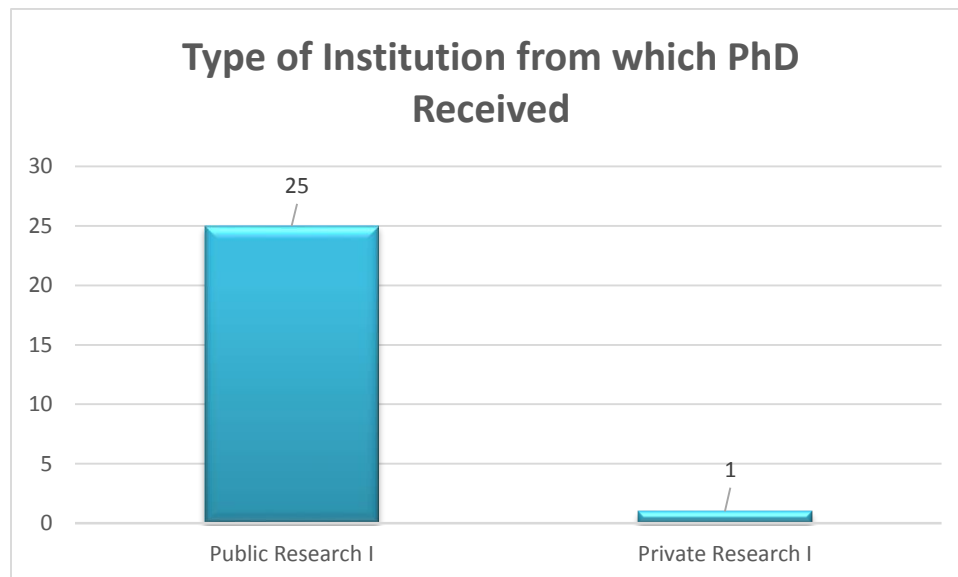


The time since return is also, perhaps not surprisingly, weighted toward recent returnees. As described above, a large portion of our sample are young, single, and with no children. It is not surprising then that they are also recent returnees, reflecting their age and station. This could also be a function of the recent increased need for faculty as a function of both the expansion of access to higher education in China and the infusion of Project 985 funds into key universities for the purpose of faculty improvement. As can be seen in Table 6, more than half of our sample had returned within the last three years.

Degree-granting Institution and Institution of Current Employment

In an effort to determine the types of institutions from which returned scholars were coming, we asked where they had received their PhD degrees. A total of 29 different degree granting institutions from seven foreign countries were represented in the responses. As can be

Table 7: Degree-granting Institution

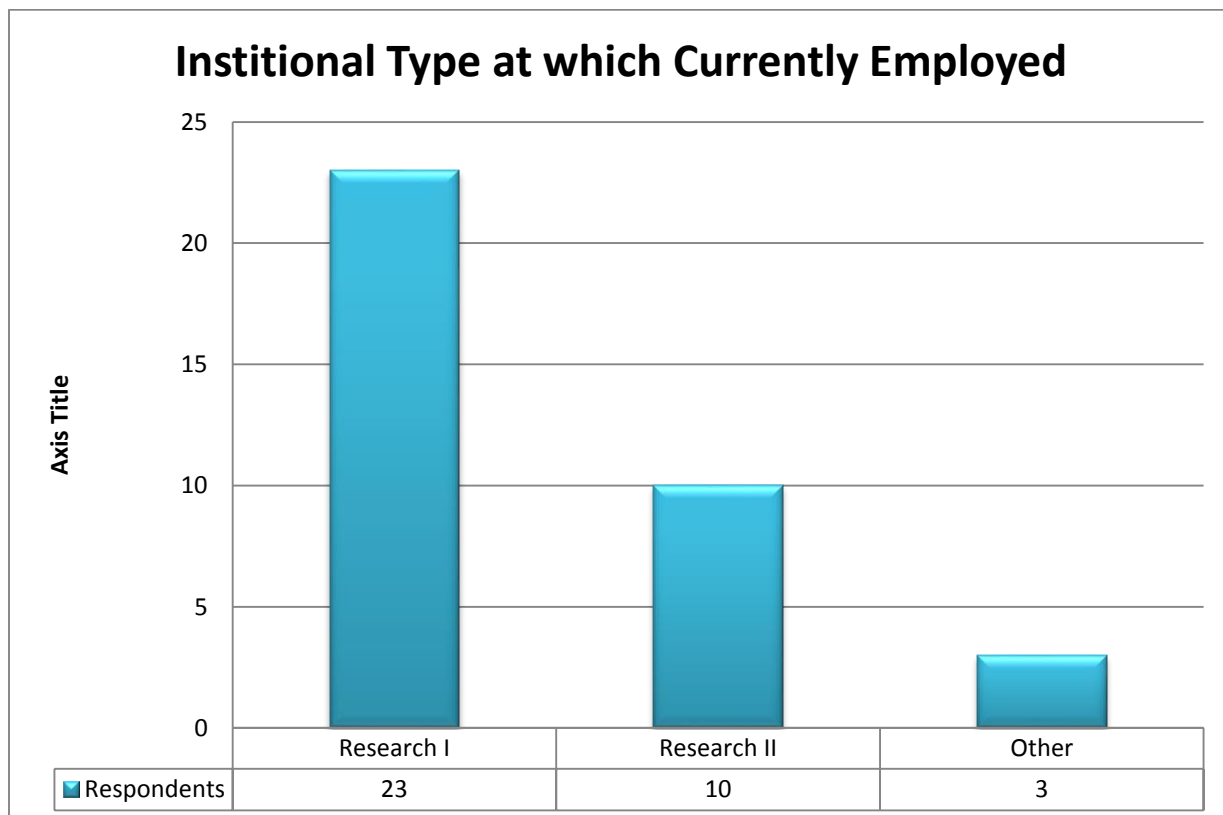


seen from the accompanying graphic, all but one of the respondents received degrees from what could be classified as Research I institutions, according to the Carnegie classifications of 1971 (Carnegie Commission on Higher Education, 1971). Another way to approach the institutional

type is to point out that all but one of the respondents received their terminal degrees from institutions that appear on the Jiao Tong list of world-ranked universities (the academic Ranking of World Universities index, <http://www.arwu.org/>). In other words, all but one of the respondents had acquired sufficient human capital to be marketable on the international stage. This is important to refute suggestions that returnees are primarily those who have little or no employment prospects in international markets and had returned because they had no other employment options.

The type of institution in which the returnees are now serving also show some interesting results. A total of 17 employing institutions were represented in the responses. As can be seen

Table 8: Place of Current Employment



from Table 8, the employment distribution shows a surprising amount of institutional diversity.

Although, as can be expected, the majority of returnees found employment in what could be

considered research I universities (23) by the Carnegie classification, the number of those in research II universities (10) and the number of those in academies (3) were surprising. To look at it another way, 23 of the respondents were in Project 985 universities, 10 were in non-Project 985 universities, two (2) were in non-Project 985 academies, and one (1) was in a prestigious research institute that is academically affiliated but not part of the university system.

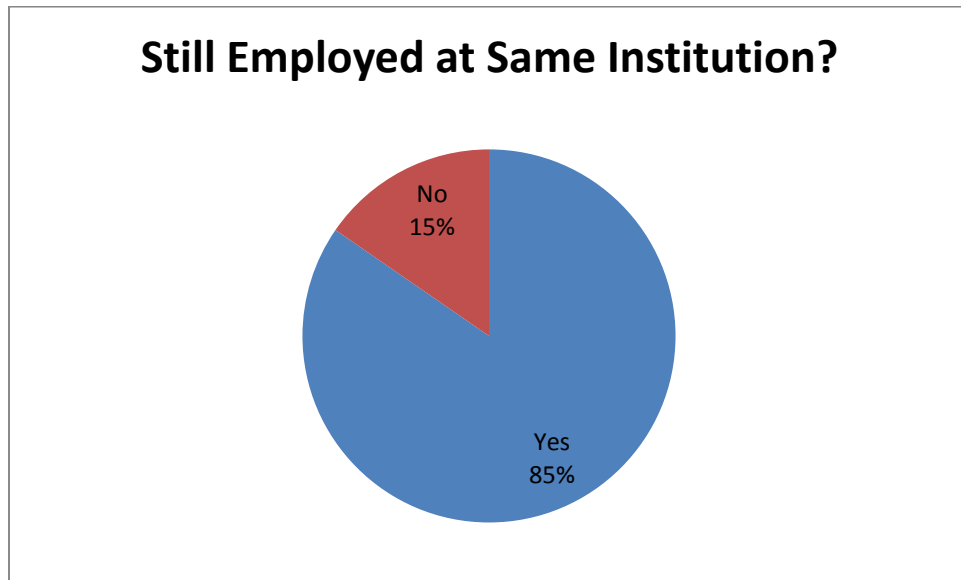
The surprising statistic here is the number of returnees who are present in institutions that are not considered top tier institutions. Critics of China's approach to the development of their higher education sector have alleged that it leads to a two-tiered system and that feeds into regional inequalities in the higher education system. While there can be no doubt that there are marked regional inequalities in the system, the presence of several returnees in non-Project 985 universities may be an indication that the aggressive recruitment policies of the Chinese Project 985 universities may be having a spillover effect into the rest of the system. Some, although not all, of those who were present in the non-Project 985 institutions expressed their desire to find employment in a top-tier institution, but had been unable to acquire an appointment. Several respondents, in both Project 985 institutions and in non-Project 985 institutions mentioned the increasing competitiveness of faculty positions in top-tier universities. There is evidence that an oversupply of PhDs returning from top-tier foreign institutions may be driving down the price of hiring and making such hires accessible to non-top-tier institutions. As a result, the pent up demand for highly qualified faculty is beginning to be met in secondary institutions.

Current Employment Status

Respondents were asked whether they were still employed at the institution to which they had returned initially to China and what the nature of their appointment was. As can be expected

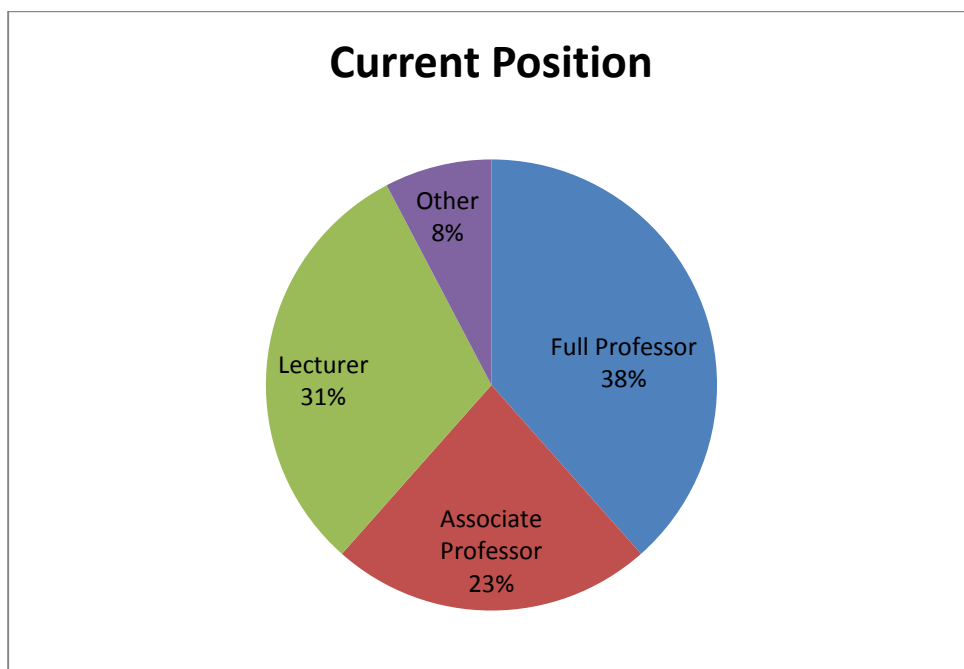
from the preponderance of those in the sample who had returned in the last three years, the vast majority (85%) were still at the same institution to which they had initially returned. Fifteen

Figure 23: Continuing Employment



percent had moved on to other institutions, reflecting, perhaps, the trend toward increasing mobility among Chinese scholars (X. Chen, 2003).

Figure 24: Current Position

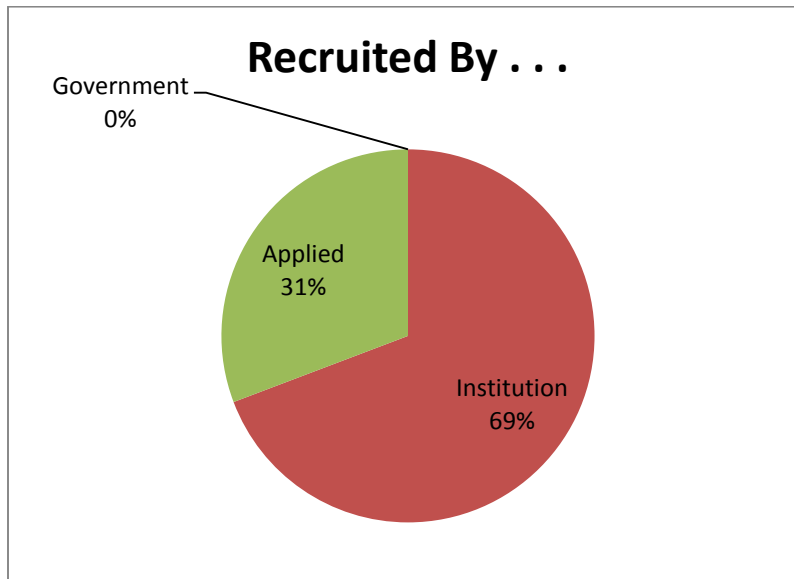


Respondents were also asked to list the nature of their appointment. Once again, reflecting the young demographic of our sample, many listed their appointment as lecturer, the equivalent of the assistant professor in the US system (31%). This statistic is significant in that, unlike earlier returnees, many of the young returnees are now expected to demonstrate their capability rather than receiving special favors or appointments. Somewhat expectedly, however, the largest appointment level is full professor (38%), revealing that many returnees are of such high quality that they are able to ask for and acquire full professor status. The rest of the sample was made up of associate professors and a few appointments that could not be classified or did not conform to the conventional system.

Type of Recruitment

Finally, respondents were asked to identify how they were recruited, if at all, to their current position. The vast majority (69%) of those holding appointments were recruited by the institution to which they returned (although this may not necessarily be the institution at which they are now working). In the interviews, it became apparent that this is the result of the infusion of Project 985 funds into top tier universities who are aggressively pursuing faculty quality and are recruiting top graduates from foreign institutions (Wu, 2007). Another large portion (31%) had actually returned to China without being recruited. Rather, they applied for advertised positions, either before or after they returned to China. This too may be an indication of a changing dynamic among foreign-trained scholars. It may well be, as our own interviews showed, that more and more scholars graduating from top-tier foreign institutions are making the decision to return to China without any specific or confirmed plans for employment, preferring to work within the Chinese system regardless of employment status. If this is indeed the case, it signals an important shift in motivation for return that bodes well for the future of faculty quality in

Figure 25: Type of Recruitment



Chinese higher education. Finally, and perhaps importantly, in our sample, there was not one respondent who had returned to China as a result of one of the high-profile national grant programs, such as the Hundred Talents program, the Thousand Talents program, the Distinguished Young Scholars program, or any one of a number of government sponsored grant programs intended to advance the recruitment of top-tier talent working abroad. We would rush to add, however, that our sample is still far from representative and that these results should not be generalized. Given that the total number of government sponsored grants is relatively small in proportion to the total number of returning faculty, the absence of grantees in our sample should not be given too much importance.

Part 4: Data Analysis

In this section of the study I will describe the data analysis methods I applied. These methods are divided into qualitative and quantitative methods. Among the qualitative methods, I describe my use of the more traditional method qualitative analysis known as coding. In addition, I will describe three methods made possible by the use of NVivo semantic analysis software. The

first of these is word count analysis. Word count analysis has long been part of qualitative research, but its powers are enhanced through the use of semantic analysis software. I also use a derivative of this method based on percentage of text devoted to the different categories identified through the coding process (Kaser & Lemire, 2007; Weber, 1990). The second method is word cloud analysis. Word cloud analysis is a descendent of tag cloud analysis that was first applied in conjunction with the content of web pages, but later found application in semantic analysis in general. The advantage of word cloud analysis is that it allows the researcher to see not only word frequency, but also the proximate relations of words in context (a type of key word in context research). These are typically displayed in a visual graphic in which the relative frequency of words in context can be quickly seen (Kaser & Lemire, 2007; Seifert, Kump, Kienreich, Granitzer, & Granitzer, 2008; Viégas & Wattenberg, 2008). The final form of semantic analysis is the word tree analysis. The word tree is a technique that allows for in depth analysis of key-word-in-context relationships across large volumes of text, such as that represented by the 36 transcribed interviews collected for this study. The advantage of this technique is that it allows the reader to visualize how these key words in context occur across several sources (Wattenberg & Viégas, 2008). I elaborate on this method in the sections below.

In the subsection dealing with the quantitative data, I describe the type of regression I have applied. The variables I examine are those I listed above in table 10 below. I reproduce the table here for the convenience of the reader. As can be seen in the table, I have measured two types of independent variables (categorical and continuous) against one type of dependent variable (continuous). There are several types of tests that could be applied to this data (UCLA Statistical Consulting Group, 2006). In this study I use the simple ANOVA regressions to

measure the patterns of variance between the independent variables and the dependent variables (Hinkle, et al., 2003; UCLA Statistical Consulting Group, 2006).

Table 9: Independent and Dependent Variables Measured in This Study

Independent variable	Dependent variable	Desired information
Gender (dummy)	Personal Motives (continuous)	Is it true that the younger generation of Chinese scholars are motivated more by personal interests and less motivated by communal interests?
Age (continuous)		
Marital status (dummy)	Professional Motives (continuous)	Is it true that the growth and expansion of the Chinese higher education system has made a career in Chinese academia a more attractive professional option?
Number of children (continuous)		
Time since return (continuous)	Institutional Motives (continuous)	What role do specific institutions play in attracting returning scholars back to China? Can institutions do anything to motivate return?
Discipline or Field of Study (categorical)		
Type of institution from which advanced degree was earned (categorical)	Socio-cultural Motives (continuous)	How much do social and cultural values influence the decision to return? Is there a strong sense of loyalty to the state or the culture? If so, how does that change with various demographic factors.
Current position (categorical)		

Semantic analyses

Qualitative research is heavily dependent on semantic analysis of texts or objects (Adcock & Collier, 2001; Appleton, 1995; Ary, et al., 2002; Boeije, 2009; Creswell, 2008).

Since words, by their very nature are ambiguous, in that they cover large and fluid semantic fields of meaning that are delineated differently by the speaker or writer of the word and the hearer or reader of the word (Speaks, 2014). If individual words are inherently ambiguous, then the analysis of large bodies of written material (or in this case, transcribed material) becomes exponentially more difficult. For this reason, qualitative research has always been challenged on grounds of validity (Adcock & Collier, 2001; Appleton, 1995; Flick, 2014; Maxwell, 1992). Qualitative researchers have responded to these challenges in a number of different ways. Some have simply rejected the notion of validity in qualitative research and opt for such terms as “authenticity” (Guba & Lincoln, 1989) or “understanding” (Wolcott, 1990). As Adcock and Collier argue (2001), however, there is no need to surrender the quest for validity in qualitative research. In this study we pursue a validation of the qualitative data through a triangulation of data using several different qualitative analysis methods, as we describe below.

Coding

Coding has a long and respected place in qualitative research. It is the method of choice among qualitative researchers (Flick, 2014). Once the interview data was collected, I selected coding as my primary data analysis method, which consisted of analyzing the transcripts of the interviews that had been recorded as well as my interview notes. The coding process was part of what Braun and Clark (2006) thematic analysis and is arguably one of the few skills required across the spectrum of qualitative analysis methods (Holloway & Todres, 2003). A code, in qualitative analysis, is usually a word or short phrase that assigns a “summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or written or visual data” (Saldaña, 2013). The codes can be assigned to large or small segments of interview transcripts, the researcher’s notes, other forms of documentation both written and visual, such as, artifacts,

photographs, drawings, or video. In this particular study, my data were contained in transcripts of audio recordings and hand written notes taken during those interviews. In coding the data that I had collected, I used the approach outlined by Saldaña, which calls for approaching the coding process in several “cycles” (2013).

During the first cycle, I focused on single words, sentences, or multiple sentences that appeared to contain a common notion that could be grouped under a single heading. The purpose during this first cycle is to attribute to portions of the transcript that appear to address a common topic a descriptor that captures in abbreviated fashion its contents. In the course of this initial cycle I came up with 112 distinct notions, or codes. Although I treated these data codes as discreet, it is important to keep in mind that data can never be completely circumscribed. It was sometimes difficult to discern where a notion ended and a new one began. At times, notions were imbedded in notions, where notions nuance notions, add dimension and depth, and create relationships between notions that helped me as a researcher get inside the cognitive schema of the subjects (J. Piaget, 1965; L. Vigodsky, 1962). As Tesch points out (1990), the parameters of any one code are fuzzy at best.

In the second cycle of coding I looked for patterns. These patterns can take many different forms (Hatch, 2002, p. 155), for example:

- similarity (factors contributing to the decision making process are described in similar ways)
- difference (similar factors are described as having opposite effects)
- frequency (a notion is mentioned several times)
- sequence (a pattern in the order in which the decision was made)
- correspondence (a relationship between two notions appears repeatedly)

- causation (one notion appears to be the cause of another notion).

Although the terminology for this process may differ, some describing the results of this process as themes, others as categories, Saldana (2013) calls this process “categorizing.” It simply means the identification of categories among the data that emerge as a result of the identification of the aforementioned patterns. As Saldana says, the purpose of this second cycle is “to arrange things in a systematic order, to make something part of a system or classification, to categorize” (p. 8). Or, as Grbich puts it, data is “segregated, grouped, regrouped and relinked in order to consolidate meaning and explanation” (Grbich, 2007, p. 21). And Bernard (2006) describes it as “the search for patterns in data and for ideas that help explain why those patterns are there in the first place” (p. 452), allowing me to put together expressions of notions that “look alike” and “feel alike” (Lincoln & Guba, 1985, p. 347). Based on this secondary analysis I was able to discern a total of 17 separate categories.

Having collected the codes into categories, I went on to Saldana’s third cycle, moving from categories to themes. Themes differ from categories in that while categories are the result of collecting codes under common notions, themes are the outcome of “coding, categorization, and analytic reflection” (Saldana, 2012, p. 13). In other words, while coding and categorization are descriptive in nature, themes are interpretive in nature. They are not just another level of coded material. These themes then become the basis for generating theory. Saldana refers to Richards and Morse (2007) who describe it in this way. “Categorizing is how we get ‘up’ from the diversity of data to the shapes of the data, the sorts of things represented. *Concepts* are how we get up to more general, higher-level, and more abstract constructs” (p.157). It is the task of the researcher to show how these themes and concepts systematically interrelate and it is this discernment that leads toward the development of theory (Corbin & Strauss, 2008; Saldaña,

2013). Theories can inform as well as drive the initial coding process (Layder, 1998), as was the case in my research, in which I used Zweig, Chen, and Rosen's research to inform the coding process.

The coding process allowed me to move from the individual statements to reconstructions of the schema of the subjects. It allowed me to enter into the subjective structure of the decision making process and understand it from within the perspective of the subjects, perceiving its inner dynamics and relationships. It is constructivist and inductive in its approach because it starts from the most basic units of speech, identifies patterns, and construes those patterns into meaningful cognitive structures. This is the first foundational step in theory building (Auerbach & Silverstein, 2003) and served as the basis of the utility function I at the end of chapter 4.

Word count analysis

As a result of the coding process, it was possible to see patterns in the way that returned Chinese PhDs conceived of the decision making process. Coding is, however, highly interpretive and depends heavily on the subjective attribution of meaning to text on the part of the researcher (Kelle & Bird, 1995). Ideally there should be ways to "check" the researcher's interpretation, an empirical verification, if you will, of the attribution of meaning. One way in which this can be accomplished is through the use of word frequency counts. Linguistic theory has long held that words are revelatory of meaning and that the frequency of words reveals importance, priority, or urgency (Foucault, 1971; Pêcheux, 1982). As such, word frequency analysis is a means of validating the coding process by allowing for emphases to be verified through a preponderance of occurrences (Flick, 2014; Kelle & Bird, 1995; Weber, 1990).

There are, however, several assumptions that underlie word count analysis. First, the assumption is that words that are central to the concerns of the speaker/writer tend to occur more

frequently. While this may intuitively seem true, there are caveats. First, word counts do not take into account the potential for words to have multiple meanings. Weber (1990), for example, in his examination of political discourse, points out that the word “state,” which shows up frequently in political speech, can refer to the verb “to state,” can refer to status, as in “the state of the union,” can refer to the federal government, or can refer to individual states. Unless there is closer examination of these words in context, it is easy to fall into the trap of lumping disparate meanings into a single group and inflating the importance of certain words in relation to the overall tendency of the text. Second, simple word counts underestimate the use of synonyms. Often key concepts are approached using a number of key words that are different but closely related to each other. These tend to be overlooked unless closer examination of the text reveals that they are being used synonymously or interchangeably.

In the analysis of my interview data, I employed NVivo’s word count query to examine word frequency. NVivo’s word count query is an easy and powerful tool for immediately seeing the general emphases across all of the interview data or in one or more texts (Bazeley & Jackson, 2013). Groupings of data allow, for example, for the analysis of the semantic data by demographic based on the information I collected about each one of the subjects. The results can be very revealing, as will be evident in the following chapter.

In order to avoid the pitfalls mentioned above, however, I examined each entry under the most frequent counts using NVivo’s key word in context feature and discarded those instances where the word usage did not correspond to the generalized meaning of the word. In those cases in which words had potential for more than one meaning, I subdivided the instances according to their different meanings and recalculated word counts based on this differentiation. In this way, I was able to ascertain with relative accuracy the real proportion of words devoted to particular

topics. One other feature of NVivo that makes for more accurate analysis of data is the stemmed words column in the data display. Using this feature allows the researcher to see not only the word in context, but also to see at a glance how frequently other words using the same stem occur in the texts. Although it does not rise to the level of synonym analysis, it does allow for grouping words based on the same root together (Bazeley & Jackson, 2013).

Another, related form of word count that I employed in analyzing my data was code counts. Quantitative analysis has long considered code counts part of its analytical repertoire (Flick, 2014; Kelle & Bird, 1995), nevertheless, the advantage of the NVivo queries is that it lists not only the number of times that a specific code occurs, but also the percentage of text that a particular code occupies. So, for example, if I want to know how many times that the code “spouse” was identified in the responses of subject 001, I find that subject 2 mentioned his/her spouse 4 times and that his/her responses correspond to 5.44% of the total text, when weighted (removing, for example, codes referring to process), the percentage is higher. Considering the number of topics covered in a typical interview, 5.44% is relatively high for subject 001 and appears to constitute a relatively important concern for subject 001. NVivo also allows me to see these numbers in aggregate, so that common themes across the body of transcriptions can be identified and analyzed.

Once again, the use of code counts to triangulate word counts is useful as a validation tool. Nevertheless, code counts, both in terms of number of mentions and the volume of those mentions suffers from the same subjective weaknesses that were mentioned in conjunction with the coding process. Both the number of codes and the volume of those codes depends on the researchers attribution of both the meaning and the volume of text grouped under a single coded unit (Carney, Joiner, & Tragou, 1997; Kelle & Bird, 1995).

Word cloud analysis

A second, more novel use of the semantic software is the analysis of word clouds or tag clouds. Word clouds are a derivative of word tag analysis which began in the field of web-page design in the nineties. In its origins, the word cloud was used to demonstrate at a glance how textual content was configured on the page by depicting the words according to the relative frequency with which they occurred (Viégas & Wattenberg, 2008). In this method, words are displayed in such a way that the higher the word frequency, the larger and denser the font. It is possible with this technique to include synonyms as well, which are then grouped under a single word rather than displayed separately.

Word cloud visualizations provide a new way of approaching data (Anderson, 2008). The methods are promising, but there is as of yet little empirical evidence to substantiate their claims (Hearst & Rosner, 2008; Lohmann, Ziegler & Tetzlaff, 2009). Perhaps, its most significant contribution is that of providing another means “for validating research findings through exploration of observations and assumptions” (Harvey & Baumann, 2012, p. 12). As can be seen from the graphic below (Figure 32, page 175), which is based on the word frequency of the entire corpus of the thirty six interviews I did the most frequently words are immediately noticable to the reader.

Since NVivo does not publish the algorithm used to configure the visual representation, it is a little difficult to know what the precise relationship is between the various words. Clearly, more frequent words are immediately visible, but it is not clear, for example, why “research” is proximate to “family,” “thought,” “things,” or “important.” Also, it is difficult to eliminate all stop words. Particularly evident in the above could is the word think, which was a frequent filler word in the interviews I conducted, not unlike the English “um.” In word cloud visualizations, it

is difficult to identify all stop words and to distinguish between when it is just a filler word and when it is significant in the response. I will address these methodological issues further in chapter four.

Word tree analysis

Word tree analysis is a particular advanced form of key word in context analysis. Like the word cloud, it has the ability to display key words in relationship to one another. Word tree analysis was developed by IBM and first available to the public in 2007 through the Many Eyes project (Wattenberg & Viégas, 2008). One of the weaknesses of word tree analysis is that in the past, it has been unidirectional, that is, when starting with a word, it displays all the words that follow. One of the useful features of the NVivo word tree displays is that it uses a double word tree, which allows the researcher to observe prior and subsequent word relations. Moreover, NVivo allows the researcher to focus on key words in the tree structure. Thus, for example, in my analysis of the data I was able to choose words that occur with relative frequency in the 36 interviews and isolate their relationships in the word tree structure. In Figure 26 I display partial results for the word tree analysis of the use of the word “research.” As can be seen from the graphic, NVivo displays the word research in relation to words that occur before it and the words that occur after it. Although this is only a partial graphic, as can be seen below, the most frequently occurring word preceding the word “research” in the interview data is the word “my.” Although this may seem insignificant in and of itself, when this analysis is split out by demographic, it shows that the word “my” occurs in conjunction with the word “research” more frequently among younger researchers than among older researchers. This difference will be explored below in the data analysis section in chapter four, but for the moment, it serves the illustrative purpose of showing how this contextual display of data can be useful in analyzing

data. When we add to this the fact that one of most frequent subsequent words is around the topic of funding (fund, funds, funded, funding), which lies beyond the parameters of this display, we can get a sense of what issues related to the issue of research in career decision-making are of

Figure 26: Two-Way Word Tree Analysis



salient importance among these researchers. In this case, as I discuss below, young researchers are much more self-oriented when describing their research than are older researchers. This is both a generational and, to a certain extent, therefore, a cultural question. The display also shows that one of the primary concerns in relation to research is the availability of funding for research. As Culy and Lyding point out, this type of visualization accelerates the analysis process and

allows an instant overview of the relationship between words (Culy & Lyding, 2010; Wattenberg & Viégas, 2008).

Regression analysis

Regression analysis is the most basic way to measure the relationship between independent variables and dependent variables, or explanatory variables and response variables. This relationship is described as a correlation coefficient (Borland, 2001; Hinkle, et al., 2003; Martin & Bridgmon; Ott & Longnecker, 2010). A correlation coefficient is measured in values that range from -1.0 to +1.0. A positive value means that the relationship is positive, or that the more the value of the independent variable increases, so also the value of the dependent variable increases. Thus, for example, I find in my data that the more the independent value of “time since return” increases, the more that the institutional theme increases among respondents. A negative value means, conversely, that the more that the value of the independent variable increases, the more that the value of the dependent variable decreases. The absolute value of the coefficient is a measure of the strength of the relationship. In other words, a correlation coefficient of .10 indicates a weak positive relationship and a coefficient of -.10 indicates a weak negative relationship. By the same token, a positive value of .90 indicates a strong positive relationship and -.90 a strong negative relationship.

In this study I examine the relationship between several independent variables, about which I collected information through the demographic questionnaire that was applied to each one of the subjects in this study. The correlation of each one of these independent variables will be measured with the four themes defined through the semantic analysis process as motivation for return: personal reasons, professional reasons, institutional reasons, and socio-cultural reasons. Since no quantitative data was collected directly from the subjects in this study

regarding their motivation for return, i.e., since respondents were not asked to quantify their motivations using, for example, a Likert scale, I have used as a proxy the quantity of response devoted by each of these respondents to the four themes identified through the coding process. This is easily identified through NVivo software which, when queried, renders the percentage of the text that has been coded under each one of the themes. All percentages are based on a proportional quantity of the full text, making all the measurements based on a scale of one hundred. Thus, for example, if a subject devotes 50% of his or her responses to describing professional reasons for return, the independent variable would be regressed against a value of 50. In this way, it is possible to measure and compare the relative emphasis of each subject against the rest. Again, by way of example, if we regress age against the sociocultural theme, we find that as age increases, so do socio-cultural motivations for return. In like fashion, when we regress discipline or area of study against the professional theme, we find that professional concerns rank higher among the social sciences than the other disciplines (our analysis of these correlations will be examined at the end of chapter 4).

In our study, we are examining the relationship of three different types of independent variables with continuous dependent variables (based on the percentage of text devoted to a theme). The three types are dummy variables (gender and marital status), continuous variables (age, number of children, and time since return), and three categorical variables (discipline or field of study, type of institution in which employed, and current position). In each instance, I used a one way ANOVA. The term ANOVA is the common abbreviated form of the analysis of variance regression. The one way ANOVA is typically used in situations in which the strength of the relationship between the dependent variable and more than two populations is sought. In my case I am testing the relationship between the quantified volume of the various themes detected

in the interview data and certain sub-populations present among the subjects. Thus, for example, I will be testing the strength of the relationship between the four themes and the populations represented by academic discipline or field of study. In other words, I will be comparing the strength of the relationship between the five subpopulations represented by the social sciences, the natural sciences, the professional and applied sciences, the humanities, and the formal sciences. The ANOVA has the advantage of allowing me to compare the variance across the population groups, giving better insight into the relationship between the groups than a simple t-test, for example.

The value for this study of the regressions proposed above is that it allows me, the researcher, to understand how the return decision is structured differently by the different groups represented by the subjects of this study. It allows me to get some indication of how the various demographic qualities affect the way that the decision to return is weighed and made. This information will be foundational for the modeling the decision making process through a utility function.

Part 5: Special issues in doing cross-cultural research

In this final section of the methods chapter I address the special challenges associated with cross cultural research and the steps I have taken to mitigate those challenges. There are certain assumptions that underlie cross cultural research, among them being the assumption of fundamental commonalities between cultures. If such commonalities did not exist, cross-cultural understanding and, consequently, research, could not be done. We know intuitively that cross-cultural understanding is possible, as demonstrated by the daily traffic of cross-cultural communication and activity that will only increase as our world becomes more global (Ember & Ember, 2009; Pranee Liamputtong, 2010; Liamputtong, 2008).

The need for cross-cultural researchers is not unlike the need for translators. In effect, the researcher interprets phenomenon present in one culture and represents them in another culture, much like a translator takes phonemes from one language and attempts to represent them in another language. Like language, however, cultural schema are not the same, meaning that a one to one correspondence between what occurs in one culture and how it is represented in another culture is almost impossible. We are not hopeless, however, because in spite of these schematic differences, there are sufficient commonalities to make cross cultural research possible. As Ember and Ember point out, “When you deal in words, you always deal in symbols that transcend an individual person's idiosyncratic, private meanings. That's because every word stands for some kind of repeated thing or experience. Words are always comparative. That's why we can talk about and share experiences. If words did not have general meanings, if they referred only to the unique and the private, we could not communicate at all” (2009, p. 11).

This presents some unique challenges for cross-cultural researchers which, if ignored, could undermine the validity of findings (Crossley & Broadfoot, 1992; Sekaran, 1983). There is no way to diminish the magnitude of the challenge that researchers who attempt to collect and analyze data from a foreign context. We have to recognize, however, that all research entails a degree of cultural separation, even when we work with members of our own cultural group. The question is not whether there are schematic differences between the researcher and the subject (there always are), but rather the degree of separation between the schema of the subject and the schema of the researcher.

Such differences in schema lead to daily miscommunications, misunderstandings, and false assumptions between people who live across the street from one another or work across the hall from one another. When we cross cultures, these differences in schema are magnified

exponentially. In the same manner the precautions taken by cross-cultural researchers to ensure that understanding is possible and interpretation is accurate are not unlike the measures taken by all researchers to ensure the validity and the reliability of their findings. It is, rather, a question of magnitude (Aikenhead & Jegede, 1999; Ember & Ember, 2009). I will address these issues under three headings, ethics, data collection, and data analysis, and then will discuss briefly the measures I have taken to ensure that the findings of this cross-cultural study are valid and reliable.

Ethics

The first question facing practitioners of cross-cultural research is the ethical question. Researchers have questioned the ethical and moral conduct of researchers in cross-cultural settings (Macklin, 2004). The primary concerns are those of exploitation and accuracy in representation. Although these issues can be applicable to research subjects generally, the chances of misunderstanding and misinterpretation are magnified when working cross-culturally. (P. Liamputtong, 2010). There is also the possibility that unscrupulous researchers may take advantage of the absence of laws governing subjects research or the lack of enforcement where such laws exist to carry out research that would be considered unethical in other research settings.

In the case of this study, exploitation of a marginalized population was not really an issue, given that the subjects were all well-positioned employees within China's higher education system, most of them working at one of China's elite universities. The exploitation test is often framed in the form of a question: will the outcome of the research benefit the community or damage it (Pranee Liamputtong, 2010, p. 32)? Clearly there are benefits to the Chinese higher education community, as well as to the researchers themselves. As for the Chinese higher education community understand what attracts Chinese scholars back to their home culture will

undoubtedly help shape policies and procedures both at the institutional level and at the national level (Cao & National University of Singapore East Asian Institute, 2004). Those who participated in the study have gone through a self-reflection that more than one described as revealing and were grateful for the opportunity to reflect on these issues. This is part of what being a Siedman, quoting Maisha Winn, describes as being a “worthy witnesses” of the participants in this study. I hope I have achieved that goal (2013, p. 144). The presence or absence of laws and presence or absence of enforcement was also not an issue in this case, since IRB supervision of the research was gained by my home institution. Nevertheless, it should be pointed out that the Chinese institutions rarely have fully functioning, campus-wide institutional review boards. Rather, permissions are usually given by department and the process is informal rather than formal, personalized rather than institutionalized. There could be room for exploitation in these settings if the researcher did not have the moral constraints to prevent harmful research.

Data Collection

A second potential pitfall in cross-cultural research is in the data collection process. Instruments must be constructed in such a way that respects the local culture, communicates effectively within it, is understood by the participants, and render valid and reliable information. This begins with a research question that can be framed in such a way that is relevant to the target culture (Ember & Ember, 2009). The only way to achieve this is through extensive interactions with members of the target culture around the research question. Fortunately, the academic setting in which I find myself is enriched with the presence of many friends, colleagues, and conversation partners who not only helped my understanding of Chinese language and culture generally, but also willingly and enthusiastically helped me refine my research questions.

In the end, the questions that resulted were thoroughly vetted and ultimately shaped by members of the target culture. To this I was able to add extensive time in country due to a generous grant provided by Michigan State University. This time in country allowed me to work closely with Chinese colleagues in country who were able to gently correct my misperceptions and to craft my research questions in such a way that they were of interest not only to me, as a researcher, but to them as well, as representatives of their culture broadly and more specifically of the higher education system in China.

The research instrument is the next point of interaction with the target culture and the next point of possible problems. Ideally, these instruments should be thoroughly tested for validity and reliability before they are applied (Ember & Ember, 2009; Sekaran, 1983). As a result of multiple visits to China before beginning the aggressive data collection in the summer of 2012, I was able to work closely with colleagues in country and actually undertake seven initial interviews that allowed me to perceive some of the weaknesses in the originally intended instrument. Being in a position to return the following year and to re-interview some of the original participants gave me the opportunity to test the reliability of the instrument. In the end, I was satisfied that the instrument that I was applying was one that could be understood contextually and produced both valid and reliable answers.

Language is always an issue in cross culture research. Although I took great lengths to explain to subjects prior to interviews that the interview would require fluency in English, I nevertheless found that some lacked the necessary skills to engage the topic successfully in a foreign language. In the end I discarded one interview that I had conducted because I was not confident that the subject sufficiently understood the questions or because I was not confident that the answers the subject gave demonstrated sufficient knowledge of the English language to

make the answers reliable. With regard to the rest, however, language issues were overcome in a variety of ways. First, more than other researchers, the cross-cultural researcher has to take extraordinary measures to ensure understanding, both in terms of understanding the subject and being understood by the subject. One of the best ways in which this can be accomplished is through frequent questions of clarification, addressing questions in more than one way, and frequently stopping to ask whether the subject understands (P. Liamputtong, 2010). I also had at my disposal a couple of additional tools that made this careful process more effective. I have a working knowledge of the Chinese language which made it possible for me to clarify my meaning in Chinese when there seemed to be an impasse. I had worked with Chinese colleagues to ensure that I understood key terms in Chinese and went to each interview armed with a lexicon of key terms. As the number of interviews increased, I began to be able to anticipate some of the difficulties in communication and, together with my research partners at Beijing Normal University, was able to devise strategies to overcome those difficulties. All of these tools made it possible to overcome the majority of the communication difficulties typically caused by language barriers.

Data Analysis

The final area in which difficulties arise in cross cultural research is in the data analysis stage. True qualitative research requires a willingness and an ability on the part of the researcher to enter the world of the subject and to perceive the phenomena under investigation from the perspective of the subject (Rossman & Rallis, 2012). This is difficult in any research, but is especially difficult when working cross-culturally. Cross-cultural work requires a special ability to deconstruct one's own assumptions and to nimbly and humbly enter the cultural constructs of the host culture. Rand Spiro calls this ability "cognitive flexibility" (Rand J. Spiro, Bruce, &

Brewer, 1980; Rand J. Spiro & Educational Resources Information Center (U.S.), 1988; Rand J. Spiro, Feltovich, & Coulson, 1996; R. J. Spiro, Feltovich, Jacobson, & Coulson, 1992; Rand J. Spiro, University of Illinois at Urbana-Champaign. Center for the Study of Reading., & Bolt Beranek and Newman Inc. Cambridge MA., 1988). While it may be presumptuous for anyone to claim such a skill, a trained cross-cultural researcher becomes adept at recognizing in his or her own work when cultural assumptions are being made and how to set aside one's own constructs in the interest of truly hearing and understanding the subject. Many years of cross-cultural work has led me to a point where I think I can say that those skills have been acquired and that I have successfully applied them in understanding the world of returned Chinese PhDs.

When the cross-cultural researcher makes her or himself aware of these challenges at every juncture in the research process and takes the necessary precautions to avoid misunderstanding and misrepresentation, cross-cultural research becomes an important means of promoting intercultural awareness and broadening and enriching the sources of information available to the research community.

Limitations to This Study

This study is rigorous in its efforts to triangulate qualitative and quantitative data in order to ensure the validity of findings, nevertheless, there are several limitations to the way in which it is constructed. First, with regard to the data collection process, the number of participants, while large for a qualitative study and while capable of rendering multiple perspectives and rich information, is not representative of the greater population of returned Chinese PhD holders. The sample is too small for those types of generalizations. Moreover, the amount of time spent with each subject was somewhat limited. It did not permit for the type of in-depth analysis that an interpretivist study would normally require. This perhaps is overcome somewhat by the large

number of participants. Nevertheless, multiple interviews with fewer subjects might have yielded better information. Also, the snowball sample used clearly put this study in a social sciences track and it was difficult to acquire a more balanced sample of differing academic disciplines.

Secondly, certain methodological assumptions may diminish the validity of the findings. For example, the assumption that frequency of word use equals level of influence is something that is debatable and should perhaps be reason for further study. Moreover, the use of percentage of text devoted to each theme as a proxy for influence is also an untested assumption.

Finally, I cannot ignore the fact that cross-cultural research is difficult on the fact of it. There are so many potential pitfalls at every juncture of the research process that it would be easy to question whether it is possible to produce valid results in cross-cultural contexts. These limitations notwithstanding, I have managed to collect and analyze a large body of data. In the end, the data speaks for itself.

Chapter 4

Data Analysis

Introduction

All qualitative research depends on some form of semantic analysis. Semantic analysis, in its simplest form, is the study of meaning (Goddard, 2011). Words, gestures, expressions, symbols, all of them are forms of human communication and in need of interpretation. More recently, semantic analysis has entered the domain of computer assisted qualitative data analysis (CAQDAS). Computers are powerful tools for identifying numbers and patterns. Yet, even the most sophisticated use of computers is no substitute for human interpretation. As Turney and Pantel note, “One of the biggest obstacles to making full use of the power of computers is that they currently understand very little of the meaning of human language” (2010, p. 141). Language is still fundamentally about meaning, which means that the human ability to understand such complex nuances as humor, irony, sarcasm, and double entendre are indispensable in the understanding of language. In addition, language is inherently ambiguous. There is no way to determine whether the source of language ever means exactly the same thing as the recipient of language (Erickson & Mattson, 1981; Goddard, 2011).

For this reason, qualitative researchers have warned against over reliance on CAQDAS for semantic analysis. As Gilbert points out, there is no substitute for being in the field, hearing the sounds, seeing the gestures and expressions, getting a sense for when a person is nuancing her or his speech. Gilbert calls this proximity, “closeness” to the data (Gilbert, 2002). According to Gilbert, closeness includes “two different constructs: knowledge of content and pleasure in handling data” (p. 215). Richards, one of the early developers of NVivo semantic analysis software, describes effective semantic analysis as a constant fluid dynamic between keen

attention to detail and the incorporation of that detail into abstractions. As she says, ‘Qualitative research requires an in-out process: researchers have to achieve and manage both ways of zooming in and ways of achieving a wide-angle view’ (1998, p. 374) For these reasons CAQDAS can play an important role in semantic analysis, but it will always be a secondary role, a support role for the qualitative researcher’s willingness and ability to wade deeply into the data and wrestle with its significance.

For that reason, in the qualitative data analysis described in chapter 3, I have taken a dual approach to the semantic analysis of the data I have collected. The first and primary approach is the traditional in-depth analysis of the data known as coding (Basil, 2001; Miles, et al., 2013; Saldaña, 2013). This process allows for the closeness that Gilbert describes. Painstakingly sorting through primary data in order to find patterns means wading deeply into the data, rehearsing it, turning it over, and over, and over again to ensure that the data has been understood correctly. Although time consuming, it is the only way in which to become intimately familiar with the data. The first part of this chapter is devoted to the results of that process.

The second part of the chapter brings in CAQDAS results, namely word count analysis, word tree analysis, and word cloud analysis. The purpose of adding these latter forms of analysis is to triangulate the coding process. Coding is an inherently subjective exercise (Appleton, 1995), but it is always a quest for an accurate construal of the meaning generated by the interviews. Although it is impossible to achieve complete accuracy, given the inevitable loss of semantic “fidelity” between the speaker and the hearer, nevertheless, one would expect the coding process to be a reliable representation of the meaning of the speaker(s). Without these basic reliable representations, detecting commonalities and construing them into patterns that form the basis of models and ultimately theories becomes impossible.

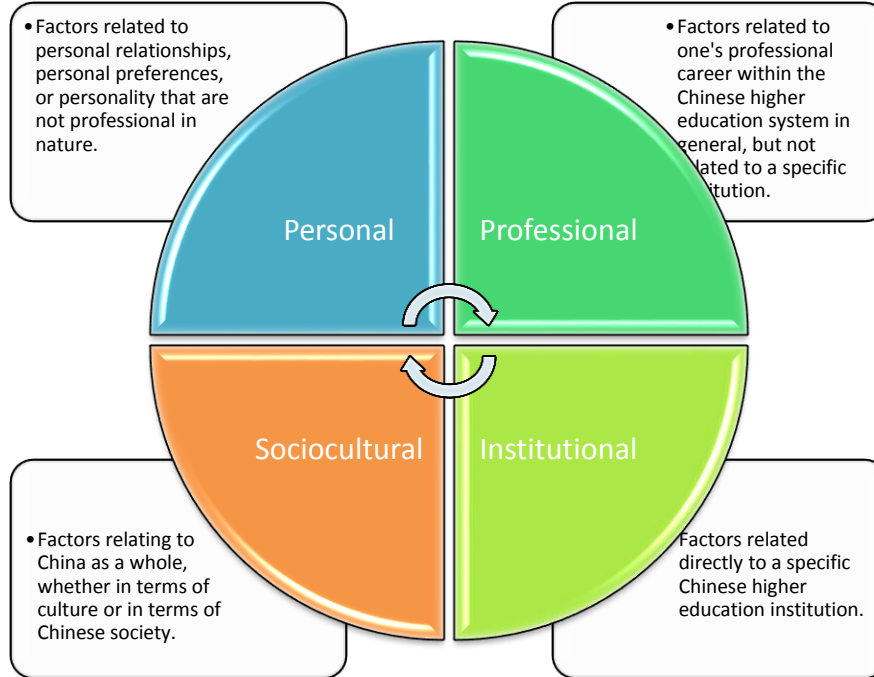
Yet, one would also expect these patterns to be detectible through other means. For example, all humans have the practice of reiterating that which is important in speech. Most modern internet search engines are based on this assumption (Finkelstein, et al., 2001). This weighting of importance through frequency is also at the base of much artificial language and is central to the recent vector space modeling for language (Turney & Pantel, 2010). For that reason, the use of CAQDAS as a means of triangulating the results of coding is advisable and will undoubtedly become a standard part of qualitative research in the future.

In the final section of this chapter, I construct a theoretical economic utility function to model the return decision based on the forgoing research which I then test using a series of one-way ANOVAs applied to selected data from the demographic questionnaire and the four themes – professional, personal, institutional, and socio-cultural – identified in the qualitative analysis. The purpose of this process is to detect and model how these independent demographic variables are correlated with the four themes defined by the foregoing research.

Results of the Coding Analysis

In the following sections, I examine the results of the coding process, from initial codes to themes. I first discuss the results derived from an initial coding of the transcripts. I then explain how themes were identified from the categories. The results of the coding process produced for themes that reflected in large part the themes also present in the research of Zweig et al. (1995), as seen in Figure

Figure 27: Emergent Themes



Codes analysis

The interview process produced over 1,000 pages of transcribed interviews and field notes. The initial approach to this data was a basic coding process. Although NVivo semantic software was used to organize this process for easier retrieval, it is no different than older methods of color-coding and marginal notes with which many older qualitative researchers are familiar. Using NVivo, however, has the advantage of retaining previous codes, having them ready to hand, and organizing the data consistently around these codes. This makes data retrieval infinitely more manageable. The initial coding of the interview transcriptions and field notes produce a total of 1,200 individual sections of text coded into 119 individual codes. Although this may seem like a confusing array, already through the coding process patterns were beginning to emerge.

Family

By far and away the most frequently coded references were to spouses (82), parents (73), and children (48). To get a sense of proportion, the next single largest grouping under one code was the attraction of the reputation of the institution that offered employment (35) and the opportunity in China to advance quickly or further in their academic careers (34). Clearly, family concerns weighed heavily in decisions to return. This is to be expected for a couple of reasons. First, the Chinese divorce rate, at 3.5% nationally, is very low compared with most western societies, although the rates are on the rise and are as high as 40% in urban centers (C. Zhang, Wang, & Zhang, 2014). Nevertheless, including spouses in career decisions is reflective of these more enduring Chinese relationships. This has been documented in academic migration decisions generally (Potts, 2014) and among Chinese émigrés in foreign countries (Cooke, 2007), but this is the first evidence of the presence of this factor among Chinese returned academics.

For several of the interviewees, the spouse also was pursuing a career and those career factors had to be taken into account as well in deciding where ultimately to pursue their mutual careers. Of the 36 individuals that I interviewed, 31 said that a spouse, or a potential spouse (for those who were still single at the time of the decision) had influenced in some way their decision to return. The majority of the respondents under this code returned either because the spouse had never left China (had stayed behind during doctoral studies), or because the spouse had already returned or was desirous of returning at the time the decision was being made. For example, the spouse of one of the respondents was a medical doctor in China and had achieved a comfortable career level as a surgeon. Leaving China would have been very detrimental for the spouse's career. As the subject stated:

My wife is a kind of doctor, a surgeon, so she has to do these kind of surgeries, staying up [to date], otherwise you lose your skill.

In the case of this subject, the couple decided to be apart for the duration of the doctoral program in order to maintain the spouse's position in the state run health care system. The subject went on to say:

Given the fact that, because my wife is a doctor, she would want to have a similar position in the States [if she were to emigrate]. And the only way for her to get that is to go back to medical school for a degree and that is a lot, of course, and we could not afford it. And so the rational choice for me was to go back to China, for myself and for my family as well.

In other cases, the spouse was still hypothetical. Many of the returned scholars are still young (Cao & National University of Singapore East Asian Institute, 2004; Cao & Suttmeier, 2001; Shen, 2008). The new cadre of foreign-trained scholars in China's higher education system tend to be under the age of 35 (Shen, 2008). Some of those who returned stated that the desire to marry within one's own culture was important in making the decision to return. As one of the respondents said,

I probably prefer a Chinese wife. I think it's kind of a cultural problem. I mean, I can communicate with some—I had a girlfriend, a Western girlfriend when I was in the UK, but I just think when I'm getting married, I want a Chinese girlfriend.

Moreover, given that most Chinese families have but one offspring, aging parents is an important concern. (Zhan & Montgomery, 2003; Y. J. Zhang & Goza, 2006). Being distant from parents as they enter into the more vulnerable years of old age factored into many of the decisions to return. This has long been known through studies of internal Chinese migration (Giles & Mu,

2007; W. W. Wang & Fan, 2006), It is also a feature of academic migration in developed countries (Hagedorn & Sax, 2003; Ward & Wolf-Wendel, 2004), but this is the first time that there is evidence that these tendencies are also present in international migration decisions. Several of the respondents expressed their concern for aging parents as an important factor in the decision to return. This was less the case for older subjects, since many of them were born before the one child policy was enforced, and therefore had siblings who could take on the care of aging parents. For the younger generation, who, almost without exception were only children, the sense of obligation was strong, even though parents often counseled against returning. In fact, not one of the subjects interviewed said that they felt pressured by their parents to return. On the contrary, in most cases, the parents advised the subject to stay abroad, believing that the opportunities for their children and grandchildren were greater outside of China. As one of the respondents put it,

We talked about it. We had meetings every week, and I think they actually supported the idea that I should stay in the UK. They said if I enjoyed it, if I loved the place, I should stay, because they didn't want to see me suffer if I came back.

Finally, children factored into the return decisions of many of the respondents. Exactly half of the respondents (18) had children either before they left for their studies abroad, or before they returned to China, having had those children while abroad. The upbringing of children was a factor in some of the cases. In some cases, it was fact that a child or children had been left behind while the parent went abroad to study. Rather than relocate the children, the subject chose to return to China. As one respondent stated,

But faced with this kind of situation, namely, my family and kids, and a large family behind . . . so you still make the decision to go back.

For others, it was concern for the education of the child that influenced the return decision. Several of the subjects were of the opinion that the education system in China was more beneficial for children than foreign educational systems. One respondent noted that,

Yeah. I think [in the interest] of classical education, I wanted my kids to stay in Beijing. I believed we could provide a more solid fundamental education.

Nevertheless, not all returnees were enamored with the Chinese education system. Some even mention it as a possible deterrent to return. As one respondent explained,

. . . the parents [in China] put so much attention to develop and explore the potential of their kids. With so much homework from school, they'll still send their kids to an actual training Sunday school for math, English, Chinese, and also all kinds of musical instruments. I was shocked, even though I was prepared.

In some cases, it was the fear of children losing their Chinese culture in a foreign country.

Very much I am afraid he's losing Chinese. I was wishing he could pick up the Chinese.

And, another, referring to her daughter said,

I think when she grows up, there will be a generational gap with her. I don't want there to also be a cultural gap between us. Because I have heard of many American-born Chinese who don't want to speak Chinese, and they think they are American, or even they don't like China. So, I feel, as especially when they enter the teenager age, it's very difficult to communicate with them.

Some of the parents felt ambivalent about returning, recognizing that there were definite advantages to Western-style education, but at the same time, not wanting to lose the cultural ties to China.

Actually, I wish they would preserve the good things about Chinese culture while adopting the virtues of Western culture. I think because my daughter basically spent almost six years in the US, I think she is quite independent, free from Chinese authority, and happily involved in significant activities. I think that's a great thing. But at the same time, she lacks the beauty of the virtue of duty, which I really want her to have. And she does not like to do things I believe she should do right now; it's difficult, because it's going to be helpful for her future. I think that's the thing—she hardly learned in Western culture, that's the reason I want her to come back. I want her to experience the culture of competition. Of course right now, she still has difficulty adapting to the new environment, but I think it will be beneficial for her in the long run.

In summary, clearly, family concern was one of the primary motivators for return. Chinese traditional values play an important role in determining the strength of marital relationships, the obligation to aging parents, and the desire to raise children in the best possible environment. Yet, as we shall see in the sections below, family was not the most important motivator for return nor, by any means, the most frequently mentioned.

Research

Early in the coding process, it became apparent that research was a central concern. Unlike family, which falls neatly into a limited number of discrete units – spouses, parents, children – references to research could potentially encompass an infinite number of nuances. In the end, taking into account all references to research, there were 155 specific references to research spread across a total of nine codes (see Table 10).

The resulting aggregation demonstrates how important research was to the returnees and how the opportunity to do research was central to their decision to return. It bears noting as well

Table 10: Codes Relating to Research

Code	Number of references
Research Funding	34
Research environment	5
Proximity to research	27
Opportunity to publish	16
More freedom to do research	7
Making an impact in the field	30
Local research networks	13
Opportunity to do research	12
Total	155

that this was but one of several professional interests that attracted graduates back to China.

Three emphases stand out in the above list of research related motivations. The first is the desire to make an impact on the field or discipline in which they were engaged. This is somewhat surprising, perhaps, since it is an altruistic motivation rather than a strictly economic motivation.

It was evident, however, among the many of the returnees (15) that this was far more than an economic decision. The desire to make a difference in China (27 references) or to make an impact in their particular field of research (30 references) were both important in the decision making process. Vocational psychology has demonstrated that career decisions are often based on factors other than the economic (Gabris & Simo, 1995; Krumboltz & Nichols, 1990; Lichtenberg, Shaffer, & Arachtingi, 1993; Sanfey, Loewenstein, McClure, & Cohen, 2006). This was certainly the case with many of the returnees. There was a desire to help in some way the

progress of the Chinese people, although it would be a mistake to call this pure patriotism, as other studies of Chinese nationalism have shown (Gries, Zhang, Crowson, & Cai, 2011). When asked directly whether their decision to return to China was motivated by feelings of patriotism, almost to a person, the respondents said “no.” The desire was not so much to help China per se, as a nation, but to help the Chinese people, either directly through their research or indirectly by improving their particular discipline. As one subject put it, looking at her colleagues who had stayed behind in the United States, but were not using their degrees,

I don't know. I never thought about [patriotism]. The only thing I thought that I probably can do something that . . . at that time, when I look at so many colleagues who work in library and also they have PhD, wow, checking books, reference desk, and I thought, oh, maybe I can do more if I come back [to China]. But my position, I felt that I can do more, but I didn't know. I just imagined I could do more.

The other major emphasis evident in relation to research is the desire to be near one's object of research (27 mentions). This was no doubt due to the fact that the majority of subjects for this study were in the social sciences. It has long been known that international academics in the fields of the hard sciences, technology, engineering, and mathematics (known as the STEM fields) have high mobility (Institute of International Education, 2010; Kim & Locke, 2010; OECD, 2002; Solimano, 2006). These same patterns do not hold true, however, for social scientists (Jöns, 2011). As the study of social phenomena, the social sciences tend to be culture specific by their very nature (Kim, 2009). This limits, somewhat, the international mobility of social scientists (with the possible exception of economists), makes their skills somewhat less marketable internationally, and, as can be seen from this data, is an important factor in decisions to return to country of origin.

Many of the returnees studied here had conducted their dissertation research on a phenomenon that was specific to Chinese culture. As a result, being close to their subjects was considered essential to building their research career.

I think if I study natural sciences, I might have stayed in the US, which is also the choice of the majority of Chinese natural science students and students of engineering. Even today China is rising rapidly in the scientific field, but it is still lagging behind from the US and I think I know the research conditions of natural sciences is first class in the US. Which is also true of software sciences but in my area, the policy area, it is kind of country specific.

Others did not lose sight of their international experience and wanted to continue in some form of comparative research, but understood that China would be their point of comparison, necessitating in-depth understanding of circumstances in China.

I like to take China as my starting point. I do international migration which is by nature international. So ideally I want to do comparative studies in this regard. But since I am more familiar with China I want to start with China.

This was also closely related to the need to have strong local connections in China in order to get access to subjects.

Most Chinese scholars get education, do their research on comparative studies between China and the US. If we want to do empirical studies, we needed to collect the data. While I was in the US, while I did my dissertation, I did not come back. Instead, some of my Chinese colleagues and graduate students have been collecting data. My problem is that it's not convenient for me to do my study if I stay in the US. On the other hand, now that I'm back, I can go to school, do interviews, do whatever questionnaires and

investigations, and I think in terms of research of professional development, I think it's more convenient.

Or, as another returnee put it, having personal relationships (*guanxi*) is absolutely vital in getting access to information in China.

Because when you are in China you will have much better connections. Number one, you have your personal connections here, your cohorts, your classmates, and your family, so you can always get some companions who would like to support you here. And we have faculty members here, . . . there are some very senior faculty members in our department. They are so powerful, and they can get the data sets so easy. But if we ask from abroad, they will say we have no connections here.

Finally, access to research funding was a primary concern for the respondents. Although there is much funding available to all scholars in developed higher education systems, the amount of funding available for international research always lags behind that of domestic research, or country specific research. It is understandable that government entities would want to fund research that had a direct bearing on their own development. Since many of the subjects we interviewed were researching phenomena that were China specific, concerns about the availability of research funding outside of China were frequent. As one respondent noted,

It's easier to get funding in this country. I applied several times while I was in the US. I didn't get it, and one of the main reason, I think, also, my professors told me, my colleagues told me, because my research topic is related to Chinese Education! One of my colleagues is very firm, "Who cares about Chinese Education!? This is an American agency! They don't want to support some research even about foreign education! It should be related to American education!" So I think it is easier to get it here. I've only

been back for 4, 5 months, and I've already received one. It's easier! Very much easier! Because I said, either I want to do some study about our country, or I can do one comparing the US and China.

Also contributing to this perspective was the general impression among those studying abroad that China was making major investments in research and that there would be ample funding available for their research were they return (Altbach, 2008; Cao, 2008; Cao & National University of Singapore East Asian Institute, 2004; Cao & Suttmeier, 2001; National Natural Science Foundation of China, 2010a, 2010b, 2010c; Shi & Rao, 3 September, 2010; H. Zhang, Patton, & Kenney, 2013).

I learned is that there is lots of research funding available, because it depends on whether you're being recognized by the few, by this society or not, by this small group or not. So I didn't worry about research funding.

Although, in some cases the acquisition of research funding was far more complicated and difficult than returnees had imagined before their return, nevertheless, the impression that there was funding available was a strong magnet for those considering a return. One additional factor was the fact that, although Chinese nationals living and working abroad could apply for research funding in China, they would be at a distinct disadvantage when applying for the funding, having to compete with local Chinese scholars who had strong relationships in place with funders and funding agencies.

They have different level of funds. So there's the national fund, for example, the national fund for social science, and the national fund for natural science. They have their fund in Shanghai. They have a fund there for science in Shanghai, and the natural sciences in Shanghai. Different funds. Not so easy. So many people apply. You have to know

someone who works in the agency, or your application will not be seen. They just set aside. And if you are outside of China, forget it! It is impossible!

It was clear from the interviews, then, that research forms the core of the professional concerns of these Chinese returnees. China's reputation for aggressive funding of research (Hicks, 2012; Shi & Rao, 3 September, 2010; P. Zhou & Leydesdorff, 2006) was a definite pull factor in the decision to return.

Advancement

Relatively early in the coding process it also became apparent that the possibility of advancement was an important factor in choosing to return (34 mentions). There was a perception among respondents that there were limitations in career advancement for foreign scholars in developed higher education systems. As one of the respondents noted,

I think—there's a phrase in China called the "ceiling effect," which means when you're staying abroad, even though you've got better chances to be pulled by an institution or a company, you still can't make it to the top.

Or as another respondent put it,

There's a ceiling for the Chinese. I mean, I can see why they say that, because they are Western firms, after all. Why are they going to have Chinese to be the boss?

This concern for restricted possibilities of advancement contributed in many cases to the decisions to return. On the converse side, the opportunities provided by a rapidly expanding higher education system were also an important factor in the decision to return for this group of scholars. In saturated systems, like those in most developing countries, where there is competition even for entry level positions and there are clearly recognized leaders in each field, one has to work his or her way up the ranks, so to speak, in order to make an impact on the field

(Goldman & Massy, 2001; Nerad, 2004; Nerad & Heggelund, 2008). New disciplines are infrequent and levels of expertise are high in most disciplines. In developing systems like China's, however, new disciplines and new levels of expertise are being added regularly to a system that is developing both depth and breadth (Bai, 2006; J. Gu, et al., 2009; M. Gu, 2010; Y. Gu, 2000; Ma, 2007). The result is that even for newly returning scholars, the opportunity to rise quickly in the system is there and attractive. As one respondent put it,

I think at that time [the national professional society corresponding to his discipline] was divided in terms of member. I was made the secretary general when I returned for collecting the data on my thesis. I was elected as secretary general . . . and after one year and I was elected also as Vice-President. Actually, I worked very closely with President [name of president at the time], the current president of the Chinese association, the largest one.

In other words, this particular returnee moved from graduate student, to general secretary, to vice-president of the largest national professional association in his discipline upon return. Such opportunities would be rare for someone working within an established and mature higher education system (Ryan, Healy, & Sullivan, 2012; Whitchurch, 2012), and this is especially true for women (Carter & Silva, 2010). One respondent described it this way:

But in China, people who have ambitions, they want to go back and seek some good opportunities in some big firms, or, like this university, they can make it to the top, and they can. So that's—I'm kind of affected by that phrase. I can see myself in a relatively higher position if I'm employed in a position in China rather than in the UK, because if I willingly stayed in [the elite university where she did her PhD training], the top position I could achieve would be probably principle researcher? I don't think I could ever make

professor, because it's very difficult in the UK to become a professor and already the locals, the native English researchers, I think they are on the top of the list.

Several of the respondents were the only scholars in China working in their fields. In general, the respondents felt that the opportunities to advance and to advance quickly in their field were more important than salary. Clearly under such circumstances the possibility of reaching academic status was strong and was an important motivator for return among these scholars.

Conversely, many of the respondents noted that they felt, at the time of their decision, that their prospects of employment in the foreign context were limited or non-existent. At times this was due to legal restrictions related to their visa (four mentions), but in most instances they simply felt that they would not fare well in the foreign job market where the higher education system was much more developed and where they would have to compete against their foreign colleagues for the few available positions. This latter factor was mentioned by nine respondents a total of 22 times.

Slightly different from but closely related to career advancement was the notion that the returning scholar had a certain advantage in the job market because of the foreign degree, which is greatly prized in Chinese higher education circles. It was not only the degree that gave them advantage, they felt, but also because their studies abroad gave them a broader perspective on their respective disciplines than could be achieved had they not left China. This notion of “comparative advantage” over against colleagues who had never left China was mentioned by twenty-five respondents. As one of the subjects noted,

But in this [international perspective] I have something I can do that is very special and I talk to the people in China also, mostly talked to the embassy education section, and they

very much appreciated my unique experience and also my research findings they helped me search and find the right place here in China.

The respondents felt that this comparative advantage, represented by the international experience that they had gained while abroad, made them stand out compared to their Chinese colleagues and would eventually translate into quicker promotion, higher salaries, and more recognition (Y. Gu, 2000; Guo & Medendorp, 2012).

One final factor related to advancement was the fact that the respondents had received job offers from prestigious institutions in China. In my conversations with these scholars, almost to a person (with six exceptions), they were contacted by one or more institutions before they returned to China. The Chinese diaspora network is strong and Chinese universities have acquired the ability to find where their students are studying and in what disciplines (A. R. Welch & Zhen, 2008; D. Zweig, Fung, & Han, 2008). For that reason, many of the respondents had already received offers of employment before they had returned and these offers tended to come from China's top tier universities. As was mentioned before, China has identified 39 universities in which it invests heavily for the purpose of elevating them to world class status (J. Gu, et al., 2009; H. Zhang, et al., 2013). As a result, many of the elite universities devote large amounts of funds to recruiting top talent from around the world. Receiving a solid job offer from one of China's elite universities before even having completed one's doctoral research can be very flattering, and was, indeed, a decisive factor for many of the respondents (16) in making the decision to return.

Cultural Values

One final area that emerged early in the coding process was that of cultural values. Being able to live and work in a cultural context in which one felt comfortable was an important pull

factor for many of the respondents. Sixteen of the respondents mentioned culture (35 times) as having influenced their decision to return. Closely related to the question of culture generally was the more specific issue of language. This was mentioned 22 times by 11 of the respondents. In general, this was not necessarily a repudiation of the host culture in which they found themselves studying as they made the decision to return. On the contrary, most of those who mentioned this value said that they could have easily remained in their host country if the right opportunities had presented themselves. Nevertheless, all things being equal, they simply felt more comfortable living and working in their own culture and language. As one respondent said,

I just feel, I feel more comfortable here. The culture, the language, the history, the politics—although it's bad, it's interesting. I had to come back. This is my home, my language, my people.

And so it was for many of the others as well. As another respondent said,

I am a Chinese woman. I can live in the West, but I will always be a Chinese woman. Here I don't have to be someone I am not. I can live my life and do my work. There is no difference between who I am professionally and who I am in my personal life.

This desire to live a life without the struggle of cultural duality was important for several of the respondents. Returning allowed respondents to embrace their new-found academic identities without abandoning their Chinese past.

Mentions of Negative Motivation

Also relatively early in the coding process it became apparent that there were negative as well as positive factors present in the decision making process, as one would expect. Although the vast majority of responses were reflections on what things positively motivated them to return to China, not all the influences were positive. There were also several mentions of those

factors which gave them pause, making the decision to return more difficult. As I began to take note of these issues, I also constructed a category of responses that I described as “deterrents.” These deterrents were various issues that the returning scholars had to somehow reconcile in their decision making process. Among these issues were several that had to do with working conditions in China. These revolved around questions of workload, bureaucracy or politics in Chinese institutions, the low salaries paid to Chinese academics, or generally the less developed state of science in China. But not all these issues had to do with working conditions. There were also several mentions of conditions generally in China, such as the more restrictive political climate, hazardous health conditions, and corruption within and outside of academic institutions.

Many of these deterrents, however, had to do with the better living and working conditions in the host country. Some had grown accustomed to the benefits of living in a fully modern society. Others were felt safer in the cleaner environments of developed countries. As one subject put it, describing the difficult health conditions in a major Chinese city,

My wife and I miss the US a lot, because for sure, the US has the best environment. In China, you see how smoggy the clouds are, it's not comparable to the US. In the US you always see the blue sky, clear water, safe food. But in China, we don't have the luxury of all these.

Or, in the words of another, talking more specifically about lifestyle,

It's more like I'm kind of thinking that it's a more leisurely life outside, because there's less competitiveness, and maybe there is more harmony, because if you're living in a small city in the US, it's really safe, and it's really comfortable. It's not like in Beijing, it's a huge city and the pollution is really bad, and we kind of—because we've traveled internationally a lot, so we kind of feel that that's the better way to live for a long time.

In a separate vein, many of the respondents were simply concerned about the things that they would potentially lose as a result of their return to China. These ran the gamut from the basic issue of loss of earning potential to more relational issues. Not only had they made friends and had good colleagues in their time abroad, but they had begun to feel part of their host cultures and had begun to appreciate its values. There was also concern that a return to China would imply a loss of international networks (eight respondents, 11 mentions), a loss of potential research funding (four respondents, five mentions), a loss of publishing opportunities (two respondents, two mentions), and a loss of exciting possibilities in the foreign context in which they were studying (three sources, four mentions). As a result of these mentions of deterrents, I began to include separate categories for positive and for negative motivations for return.

There were a series of responses that did not fit neatly into “motivation” categories but which formed a sufficient percentage of responses that I felt that they needed to be recognized as well. Among them were reflections on the value of the decision to return. In some cases this resulted in a sense of regret regarding the decision (three respondents, five mentions), but in most cases it was a validation of the decision to return (eleven respondents, eleven mentions). In addition to these reflections, there were a series of comments on the process of decision making.

Table 11: Non-Motivational References

Timing	Respondents	Mentions
Never	2	2
Late	14	17
Early	2	4
Before	9	10

For example, several of the respondents reflected on the timing of the decision to return. These responses I grouped into four categories as represented in Table 11 above. In the table, the designation “never” refers to those individuals who never really made a decision to return. In other words, these two returnees did not really deliberate regarding the return decision, but rather, either followed the lead of others, or simply followed the opportunities that were provided to them. As one of them noted,

It’s interesting, I can give a superficial answer, but for me, it’s kind of not “I made the decision;” it’s kind of my fate. The decision was made, but not made by me.

These instances were not frequent, however. The majority of those who returned had either made the decision before departure (nine respondents, ten mentions), or made the decision very late in their foreign stay, many of them making the decision only when a job offer was on the table (14 respondents, 17 mentions).

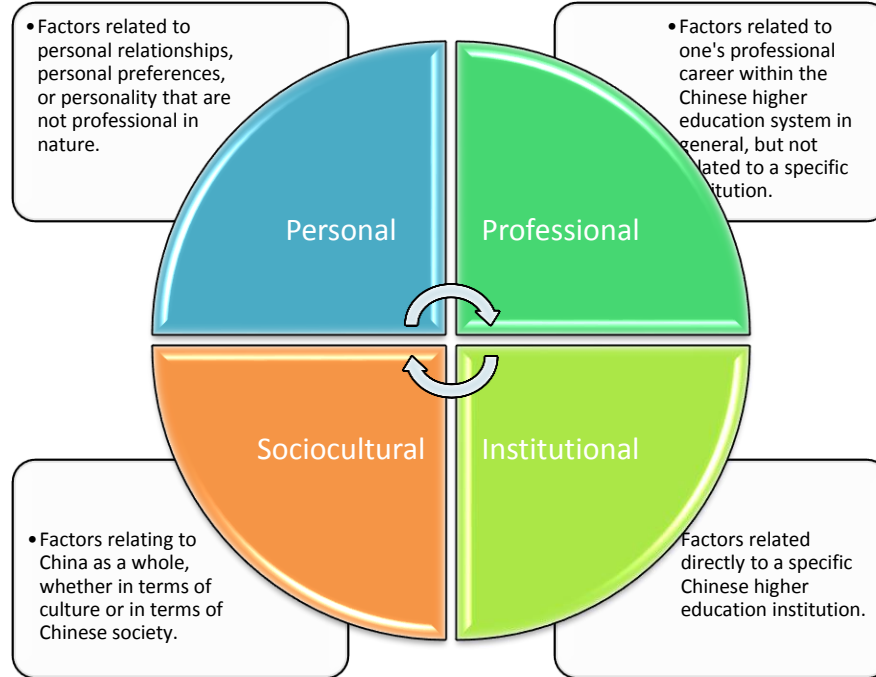
Another process issue that came up in many of the interviews was that of decisiveness. For a small number of those who returned, the decision to return was relatively easy (two respondents, four mentions). But in many more instances the decision was either difficult (five respondents), or at least provoked some hesitation on the part of the returnee (seven respondents).

In about a third of the interviews, returnees also reflected on whether their decision to return was in fact a permanent decision or whether they would also consider returning abroad at some future date. In three of these cases, the respondents stated categorically that they were there to stay and that they would not consider leaving China to pursue a career path. In more cases (seven respondents), however, the subject held open the possibility of pursuing a career in a foreign education system.

Emergent Themes

About midway through the coding process, it became clear that the responses of the returnees were beginning to group around several themes. Although I went into the interview process with the research question in mind of whether the four themes detected in the results of Zweig, Chen, and Rosen were comprehensive (D. Zweig, et al., 1995), it was becoming clear that the four areas found there were descriptive of my data as well. I began to group the coded responses around the four themes – namely, the personal themes, the professional theme, the institutional theme, and the socio-cultural theme – to see whether there were any codes that remained unaccounted for under this schema. Although, in some instances, the grouping of certain codes around the four themes detected there was somewhat artificial, as a descriptor, the themes were comprehensive enough that they sufficiently accounted for each of the codes. Those four themes were personal motivations, professional motivations (not institution specific), institutional motivations (relating to a specific institution), and socio-cultural motivations (see Figure 26). In what follows, I will describe the codes and categories that I grouped under each one.

Figure 28: Themes Emerging from the Coding Process



Professional

The largest number of mentions regarding motivation for return were those mentions related to professional concerns. Of the 1,121 coded portions of text referring to positive motivations for return, 327, or almost a third, were related directly to the professional climate in China. These comments took on many forms from push factors (one mention of an expired visa) to pull factors. The most prominent of these concerns, already mentioned above as one of the early emerging codes, was opportunity for rapid advancement in China's burgeoning higher education system (35 mentions by 20 respondents). Although, as several authors have pointed out (Bai, 2006; J. Gu, et al., 2009; Soo, 2007), the employment market for PhDs in China is tightening, nevertheless, perceptions from afar and reports of friends, colleagues, and loved ones indicated that there were open opportunities for returning scholars. In some cases this did not prove to be true. Some returnees had to resort to employment in second tier universities due to

competition at the elite universities for those prized positions. Nevertheless, in the decision making phase, the perception remained.

A second, closely related issue motivating return, also mentioned above, is the opportunity to make an impact in one's field or discipline. This type of altruism, long associated with youthful idealism, often drives "economic" decisions in that the utility derived from contributing to the "greater good" outweighs the disadvantages of less than ideal working conditions and lower remuneration (Haski-Leventhal, 2009; Khalil, 2004; Zettler & Hilbig, 2010). Fifteen of the subjects interviewed cited this opportunity to make an impact in China as an important motivator for their decision to return. But it is not only altruism motivating this type of behavior. There were also clear rewards associated with the decision to return. In several of the cases, making an impact also meant receiving social recognition and economic reward for the decision to return.

A third related cluster of factors in the decision to return had to do with research. As noted above, there were several factors that revolved around the desire to do research. They are noted in Table 12 together with the frequency of mention. The desire to advance one's career through research was one of the most frequently mentioned influences in the decision to return. Since these concerns were not related to any specific institution or offer of financing for research, I have placed them here under the professional theme. There are other research related references, but they had to do with specific funding offered either by a national program or by a specific institution. Under those circumstances, I grouped them under the institutional motivations. The desire to do research is not only part of the PhD identity, it carries disproportionate weight in promotion and tenure decisions (Fairweather, 1993, 1995, 1996, 2002, 2005, 2009; Fairweather & Rhoads, 1995). This is true not only in the United States and Europe, as the above citations

Table 12: Research Related Factors

Coded Reference	Number of Sources	Number of Mentions
Research Funding	17	29
Research Environment	3	5
Proximity to Research	10	27
Opportunity to Publish	9	16
Total	-	77

demonstrate, but is especially true for Chinese scholars. As the Chinese higher education systems seeks to establish itself as a world class system (H. Li, 2010; N. C. Liu, 2007; Ma, 2007; Shen, 2008; Shi & Rao, 3 September, 2010; P. Zhou & Leydesdorff, 2006), there is increasing pressure on scholars to produce world class scholarship. Many of the respondents mentioned not only the pressure to publish, but to publish in SCI or SCII journals. In the decision to return, these scholars knew that they would be assuming the responsibility to produce high levels of high quality research, but it was a challenge that they generally relished. Having the support to do so would naturally be important in deciding whether to return.

Another factor mentioned with relative frequency that falls under these professional concerns is that of comparative advantage. Those who had trained in foreign contexts felt that they had more marketable capital in the Chinese higher education system. This notion corresponds with evidence from leading Chinese universities, where it is clear that foreign degree holders have an advantage (Choi & Nieminen, 2012; Mohrman, Geng, & Wang, 2011). Returning scholars felt that this would give them an advantage in the search for employment and would lend them additional prestige in the pursuit of their careers.

Table 13: Other Professional Factors Mentioned

Coded Reference	Sources	Mentions
Salary	7	12
More Freedom	4	9
Local Networks	7	13
International Networks	9	15
Better Job Market	1	4
Government Sponsorship	2	11

One final factor that is mentioned with relative frequency among these returning scholars is the lack of foreign opportunities. Although they had been trained in a foreign system, they still

Figure 29: Factors Associated with the Professional Theme



considered their employment opportunities limited. Ten of the study participants mentioned this as a push factor in the decision to return. There were a number of other professional factors that were mentioned with less frequency by the respondents. They are reflected in Table 13 above.

In summary then, the professional concerns revolved primarily around the question of doing research. Not only did this include the 77 references in which research or publishing was specifically mentioned, but it could also, arguably include the 28 references to local and international networks that would be needed in order to support both the research process and the publication process.

Personal

Second to the professional theme in number of mentions was the personal theme. The personal theme I have defined as references to factors related to personal relationships, personal preferences, or personality that are not professional in nature. Under this theme I have grouped references to the influence of family, friends, mentors and advisors, as well as references to personal preferences, personal health issues, or references to age. As is typically the case when trying to construct a model, the lines are not altogether impermeable and around some of the codes mentioned here there is some blurring into the professional theme. For example, although the influence of mentors and advisors is clearly personal, the advice they give is professional. I tried, however, to separate those mentions that deal strictly with professional issues from those that describe the influence as being based on the relationship.

Without a doubt, the most important personal factor described by respondents was family. Families played a central role in the decision making process. This corresponds with the extensive research of Johanna Waters, who has studied the role of education in Chinese family structures. Education is viewed as a form of capital in Chinese families, according to Waters

(Waters, 2006). Although individuals study, their education is considered to be a family investment (Waters, 2005). These findings have been corroborated in other studies as well (Heckman, 2005; M. Zhou & Kim, 2006; D. Zweig, Changgui, & Rosen, 2004). Although there are not specific terms of repayment, per se, the assumption is that children who benefit from the support of their parents as they pursue their education will repay their parents with loyalty and support in their old age. As noted above, almost to a person, the respondents said that they felt no pressure from their parents to return, and that in many cases the parents, in fact, encouraged their children to stay abroad to pursue their careers. Nevertheless, the sense of obligation was strong among these returnees and the overwhelming majority of the respondents said that they had returned, in part, in order to be close to or care for their aging parents. Spouses and children also formed a significant source of influence in the decision making process. Disproportionately for women, the decision to return was based on the wishes of a male spouse. This is testimony to the fact that traditional male female roles are still strong in the mind of these Chinese scholars. In Chinese culture, it is assumed that the female spouse will support the needs and aspirations of their male spouses (L.-Y. Zhou, 2006).

Second to family in this personal circle was the influence of friends in the decision-making process. Many of the scholars interviewed had friends who had followed similar trajectories of foreign study and return. The testimonies of these friends were in many cases sufficient to convince the returnees that conditions were such that a return would be advisable. Seventeen of the respondents said that friends had in some way influenced their decision to return. This was not necessarily explicit encouragement to return from friends. In some instances, the example of friends who had returned was sufficient to influence the decision. In others, it was simply missing one's circle of friends or the difficulty of making new friends in a foreign context

that motivated the return. Migration studies have repeatedly found that return migration decisions are in many cases motivated by the lack of social integration into the new context (Cassarino, 2004; J. Gibson & McKenzie, 2011; Klinthall, 2006; W. W. Wang & Fan, 2006; Zakharenko, 2009). Although this was not the case in the majority of the cases described by those interviewed, it was a definite factor in the return of some.

Mentors and advisors played a small role in return decisions. Only seven of the 36 scholars interviewed felt that their decision had been influenced in any way by those who advised them. Of those four of the seven said that they were motivated by their professor to return to China. As one respondent put it:

Actually, my supervisor, he also is a person who encouraged me to go back instead of staying in the UK. . . . He told me that what he thought at that time is that it's different when you stay as a visitor to a different country, compared to staying as a local employee in that country. As a visitor, you will be treated as a guest. If you want to find a job as a local resident, to find a job there and stay there permanently, they will treat you as a competitor. So they will not treat you with warmth, as a guest.

Another respondent said that her advisor assumed that the grant money available in China was greater than she could have acquired in her host country. And in yet another case, the reason for the recommendation was the assumption that the respondent would have limited possibilities in the host country academic system. In three of the cases, however, advisors advised against return and recommended seeking employment within the host country system.

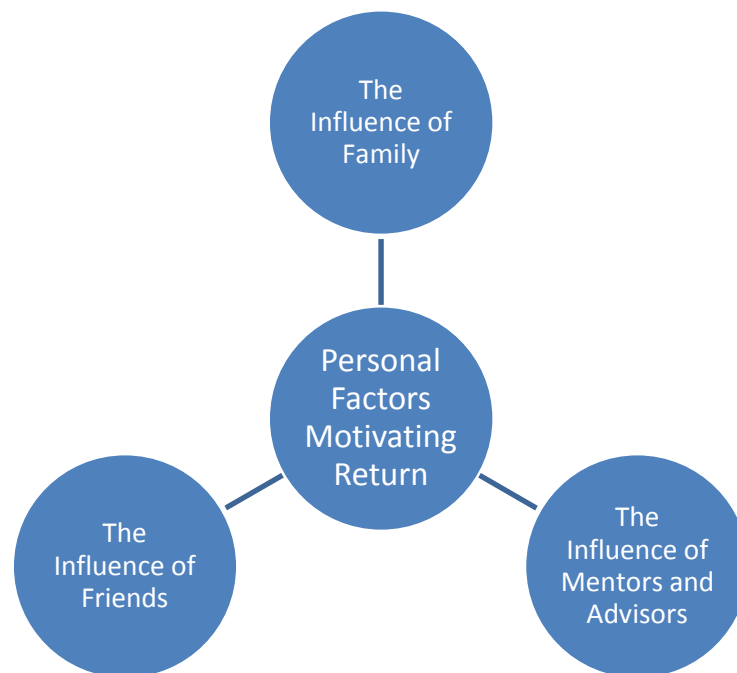
In addition to the above, there were a number of less frequently mentioned factors that influenced the decision to return. One was health concerns. In each instance, however, these concerns weighed negatively on the decision to return. The growing problem of pollution, food

contamination, the lack of accessibility to exercise venues, fears for the health of one's children, and the poor medical system in China were all mentioned as factors that gave pause to those deciding to return. On the other side of the ledger, however, one respondent mentioned that aversion to risk determined the decision to return. The fear of having to enter into an unfamiliar system caused discomfort. As she described it,

I don't like to takes risks. I'm not, how do you say it, I'm not adventurous. So you know, you don't adapt well to new circumstances and situations. You like your routine; you like to know what's going to happen every day. It was just less stressful for me to come back.

There was also one reference to age. The returnee felt that she was “too old” to find work in a foreign system. She had built a network of friends and colleagues in her pre-doctoral days and

Figure 30: Factors Associated with the Personal Theme



felt that her chances of employment were greater in China than in a foreign system. These latter concerns, however, were limited to one person.

In summary, the personal theme revolved primarily around questions of family. Concerns regarding spouses, parents, and children combined to make family the single most important personal concern in decisions to return. To a much lesser extent, other social networks, such as friends, mentors, and advisors played a role in the decision to return. Finally, minimal factors in the decision to return were personal traits or circumstances like risk aversion, health concerns, and age concerns.

Institutional

Closely behind in number of codes mentions is the theme that I have labeled “institutional.” Arguably, these institutional concerns are also professional in nature. Nevertheless, since most of these factors arose as a result of specific job offers that were on the table for the returnees before they had made their decision to return, it represents a different dynamic than general, and sometimes mistaken, perceptions of the higher education system as a whole. The qualifying factor that distinguishes the influence of these two qualitatively different factors is risk. On the one hand, decisions made without specific offers on the table entail greater risk-taking behavior, while those made with specific offers greatly reduce risk as a factor. This is confirmed by the scientific literature in both economics (McCall, 1970; Miao & Wang, 2011; Suutari & Mäkelä, 2011; Suutari, Tornikoski, & Mäkelä, 2012), and in psychology (Rynes & Lawler, 1983; Schreurs, Derous, Van Hooft, Proost, & De Witte, 2009).

The single most influential factor in the decision to return once an offer had been proffered was the reputation of the institution offering employment. In most cases, the institution in question was one of the 39 elite institutions known as the Project 985 universities. Graduates coming out of their doctoral programs were generally flattered by such offers and working at a prestigious Chinese university, in many cases, looked far more attractive than competing for

positions in the host country with no promise of employment. None of the scholars interviewed had a job offer on the table from an institution in their host country when they made the decision to return. In other words, none of the scholars interviewed were simultaneously weighing offers from a Chinese institution and a foreign institution, although some were already working in their host country when they decided to return home. Not all of this latter group actually had offers from Chinese institution when they decided to return.

In looking more carefully at this group of mentions, it is clear that the primary reason for accepting these job offers was due to the social capital it afforded the scholar. As one returnee put it,

Yes, reputation. Higher reputation means more resources you can get. And the higher social status, right?

Or, as another stated,

I think so, because you know, in China, if your university is in higher rank, and then the professors there, you can get grants more easily than in other universities.

Clearly, in these cases, there was an economic motive for accepting these offers to return. This confirms the scientific literature indicating that in career decisions, individuals are often willing to make sacrifices in other areas if the perceived prestige of the hiring organization is high (Collins & Han, 2004; Turban & Cable, 2003), given the assumption that great value will ensue. The reputation of the institution proffering the job offer was mentioned by 16 of the respondents a total of 35 times.

A second motivating factor in making decisions to return were the colleagues present at the institution that had made the offer. This was mentioned by 15 of the 36 subjects and was referred to 26 times. Most of those who returned took the time to research the departments in

which they were to be employed before making the decision to return. As several authors have pointed out, evidence shows the importance of the socialization process for faculty longevity and success (Austin, 2002; J. M. Gappa, A. E. Austin, & A. G. Trice, 2007; Gersick, Dutton, & Bartunek, 2000; Sorcinelli, Austin, Eddy, & Beach, 2006). Returnees were keen to find out what their working environment would be before returning, as one subject explained,

Before I came back, I called a person who is doing a postdoc here. I asked her whether people here are nice, and she said that yeah, they are very nice people, that they have good relationships. And it's true! After I come back I'm very satisfied with the personal relationship.

In some cases, the presence of potential mentors was the motivation behind seeking out a particular faculty in which to work (Ehrich, Hansford, & Tennent, 2004; D. E. Gibson, 2004; Stenken & Zajicek, 2010). In the words of another subject,

That's the reason, one of the major reasons, I chose this university over other universities. I did not try other universities, because I'd heard other people recommend this dean and say good things about this dean. So I contacted him and told him my interests, and briefly about my case, and then he asked me about my research interests, and what I think about my future career, then he said, "Okay, it sounds like you fit our interests."

In other cases, it was the potential research synergy and learning communities represented by colleagues that stimulated the decision to accept a job offer (Cox, 2004; Hord & Sommers, 2008; Stoll, Bolam, McMahon, Wallace, & Thomas, 2006). As another respondent explained,

I do think—I do admire many of the faculty here, and I thought I would feel comfortable working together with them; we have similar research interests. I read what they published, because I wanted to be in a place where there are other good researchers.

In all cases, it was the desire to build a community of scholars and to surround oneself with colleagues who would stimulate thinking and research that motivated the decision to return. As one respondent described it,

Yeah, it's not necessarily a big name that I admire so much—it's more like a colleague whose work I think is excellent.

The potential represented by a strong community of scholars and successful mentors who were willing to invest in the lives of new faculty were strong pull factors in the decision to return.

After the community of scholars represented by the institution, the next most frequently mentioned motivation for return was that of employment security. For approximately a third of the returnees, 11 of the 36 interviewed, an important factor in the decision to return was the mere fact that they had an offer on the table. There is extensive literature in economics (Böckerman, Ilmakunnas, & Johansson, 2011; Clark & Postel-Vinay, 2009; Jahn & Wagner, 2008; Origo & Pagani, 2009) and psychology (Koutentakis, 2008; Ye, Cardon, & Rivera, 2012) demonstrating the importance of job security in career decision-making. As Jahn and Wagner point out in their study of job security as an endogenous factor in job choice, job security is ranked higher in surveys than salary in factors influencing job choice (2008). For a nearly a third of the respondents, job security was an important factor in the decision to return.

After job security, there were two closely related codes that I grouped under the institutional theme. One I coded as “working conditions” (11 respondents, 22 mentions). These were references to the details of the offered job that made a difference in the way the returnees responded to the possibility of return. These working conditions fell into two basic categories. One had to do with the title being offered. China’s promotion and tenure policies reflect in general terms the structure in the United States, although with some fundamental differences.

Although the sequence of promotion from assistant, to associate, to full professor is reflected in China's lecturer, associate, and full categories, Chinese promotion policies, where present, have more to do with job security and less to do with academic freedom. It is understood, for example, that if one falls afoul of the party structure present as a shadow administration in all universities in China, one would lose one's protections and be summarily dismissed, regardless of one's achievements within the promotion system (Gan, 2003; Y. A. Li, Whalley, Zhang, & Zhao, 2011; Yang, 2012). Nevertheless, achieving associate professor carries with it certain job protections. In several cases, recent doctoral graduates from foreign educational systems were offered an associate professorship and, in one case, a full professorship with all of the protections that such a position implies. Such entry level promotions would be unheard of in more developed higher education systems, but in the desire to attract top young talent, universities were willing to make such offers.

A second aspect described under working conditions was that of work load. In several instances, respondents noted that they had won certain concessions in regard to teaching loads, administrative loads, and exemptions in other areas that would allow them to focus on their research. This was a highly desirable feature of the job offers described by those interviewed and formed another hiring strategy that paid off for the Chinese higher education institutions doing the recruiting. This is in line with other findings in studies of international faculty, in which the desire for flexible workload was high on the list of priorities, especially for senior faculty (Berberet, Brown, Bland, Risbey, & Trotman, 2005; M. Zweig & Baldwin, 2013).

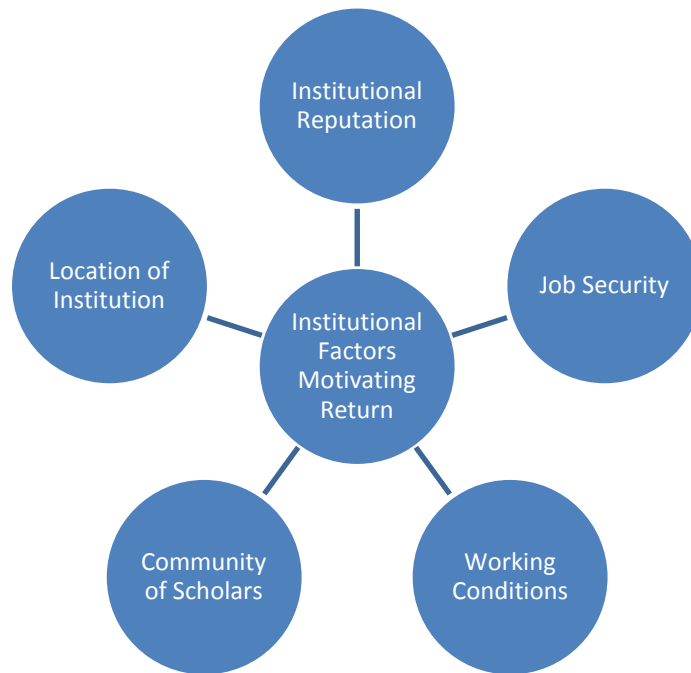
Closely related to working conditions, several of the respondents mentioned institutional culture as important in the decision to return (six sources, 11 mentions). Institutional culture referred primarily to the sense of collegiality and mutual support among faculty members. This

was more a perception than a reality, and usually came after a brief visit to the institution in question. Among the cited features of the institution that made its culture appealing were harmonious relations among faculty (four references), lack of politics or political intrigue among faculty members (two mentions), an emphasis on research (two mentions), and then one mention each for a more traditional educational culture (this reference was made to the freedom that the traditional system provided to scholars to do research), the size of the faculty (larger size implied a more dynamic research culture), and intellectual climate.

One other group of coded references that deserve mention here is the importance of location. Several of the respondents (nine respondents, 16 mentions) explained that the reason they accepted the offer they received was because the institution proffering the offer was in the right city. This was often related either to family (in six of the cases), or friends (the remaining three). In each one of these instances, the respondent said would probably not have returned had they not received an offer in the city of their choice.

In summary, the institutional factors were important to returnees in that they represented a specific job offer. Although the dynamic of these responses were qualitatively different than those who returned without a specific job offer, there are still several important themes that rise to the top in these responses. Chief among them is the importance of research in the careers of these returnees. Institutions that provided assurances and funding for research won more positive responses among the returnees. A second, equally important factor among this group of references is job security. Having a specific offer on the table was important in the decision to return and when that offer was enhanced by offers of the Chinese equivalent of tenure, or special concession in work load, it became even more attractive to those contemplating a return.

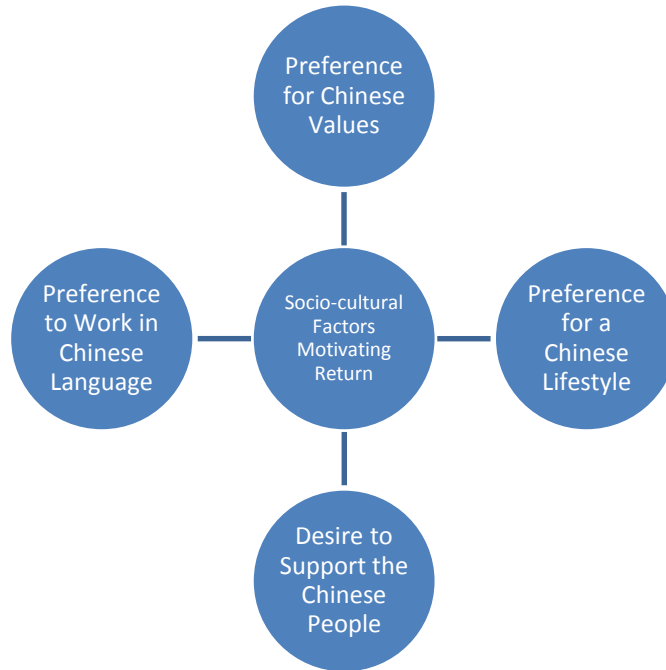
Figure 31: Factors Associated with the Institutional Theme



Socio-cultural

One final theme I identified among the codes responses was that of socio-cultural motivations. These coded responses all had to do with Chinese culture, society, or language but made no mention of either professional motivation or institutional motivation. I have already dealt with a two of these codes above, those of cultural values and the desire to make an impact. In addition to the more obvious issues of language and cultural values, there were other less prominent cultural and/or social issues present in the answers of the subject. None of these were mentioned as frequently as the two already defined, but taken together they represent an important theme. There was a certain cultural “homesickness” present among the respondents. It was not that there was a repudiation of their host cultures, although in three cases there was explicit mention of this. In most instances, it was simply an expressed preference for Chinese culture together with its values, its language, and its lifestyle.

Figure 32: Factors Associated with the Socio-cultural Theme



Summary of the Coding Process and Its Results

In conclusion, the coding process led me ultimately to the development of four themes around which I grouped the various individual codes that had emerged. Those four themes were the professional, the personal, the institutional, and the socio-cultural, in order of frequency of mention. In Appendix 3, I have displayed the proportions of these themes graphically, taking into account the number sources and the number of mentions that each of these positive motivations for return garnered in the course of the 36 interviews taken into account for this study.

Computer Assisted Qualitative Data Analysis

Coding is a subjective process. It entails the assignment of labels to text, but in each instance, it is the subjective opinion of the researcher that assigns the label. There has long been a desire to lend an air of objectivity to the process of analyzing texts. This effort is hampered by the inherent ambiguity of words. Words can have multiple meanings and those meanings can be further nuanced by the context in which they appear. For these reasons, the reliance on objective

measurements to assign meaning to text has always had its critics. This has not, however, slowed the increasing use of computer assisted qualitative data analysis in the social sciences. It is perhaps inevitable that these computer-based tools would make their way into qualitative data analysis. They are powerful processors of large volumes of data and, if the assumptions regarding the meaning of output are correct, then they are a useful means of triangulating data.

The repertoire of data analysis tools is relatively small. Here I introduce three of these measures as an attempt to discern whether the subjective coding process has rendered an objectively measureable result. As noted above, at the conclusion of the coding process, I had discerned that, in the aggregate, professional concerns were paramount in the decision making process, that personal concerns were slightly less significant, that institutional concerns were significant in those cases where a contract was on the table, and that socio-cultural concerns were less significant than the others. Each one of these dimensions is ultimately person specific, but in the aggregate, these are the relative dimensions of the four themes discerned through the coding process. Is it possible to determine whether these proportions are correct using objective computer-assisted data measurements? As mentioned above, I am applying three computer-assisted tools here to attempt to answer that question.

Word Count Analysis

The value of word count analysis is based on the assumption that speakers and writers refer most frequently to those things that are of greatest importance. There is some debate regarding the validity of this assumption. As Baayen points out in his study of word frequency distributions, words in texts do not display normal Bernoulli distribution, meaning that words are used with intent and that the frequency of words seems to be an indicator of intent in both the written and spoken use of words (2002). Assuming that words do in fact reveal intent or meaning,

how can we interpret the word frequency employed in the more than one thousand pages of transcriptions of text that were analyzed through the coding process?

I ran a word count query on the responses relating to motivation. The word count analysis produced a list of the top one thousand words containing three or more letters (in order to avoid the repetitive use of such things as definite and indefinite articles, prepositions, pronouns, and the like). There are many words that seem to have little significance in terms of the meaning of the transcribed text and so would have little bearing on the sense of value and priority present in the responses of the subjects. Below I have selected some of the more significant frequently occurring words and comment on their relation to the findings produced by the coding process. I have included the statistical tables in Appendix 4. In this analysis, I include only those words that occur at least one hundred times in the transcriptions. In order to give this process some meaning, I have grouped the words into clusters of related meaning in order to get a sense of the relative frequency with which they occur as word groups.

Words expressing feeling, thought, opinion, or valuation.

There were several words that showed that the respondent was reflecting on their own perception of the events that occurred. As can be seen from the list in Appendix 4, these words expressing thought, opinion, or feeling occurred with great frequency in the responses of the subjects. Nearly eight percent of the responses were devoted to words describing the respondents thought processes and valuation of that experience. It is interesting to note that “good” occurs before “better” and that both of these occur with more than twice the frequency of “difficult” and “hard.” It is, perhaps, an attempt to justify the decision to return in retrospect, knowing that only with great difficulty can that decision now be reversed. Two words related to the respondents desire, “want” and “wanted,” reveal that this decision was highly personal. In the end, it came

down to personal preferences. The frequent use of the word “know,” together with “decision” and “decided” lend an air of decisiveness to the process. But “think,” “thought,” “felt,” and “thinking” occur with more frequency which show that there was and is some hesitancy to say that the decision to return is as firm or as decisive as the former cluster might indicate. The word “important” occurs in the middle of this list, demonstrating that the respondents tried to prioritize their decision based on a hierarchy of external values. It was not a purely subjective decision, but rather took into account factors that had meaning or valued that transcended their personal wants or needs.

Words Expressing Migration, Geographies, Societies, Cultures

A second grouping of words that occurs with relative frequency is location words. These are references to migration, geographies, societies, or cultures. This is to be expected in a study of migration, in which the questions invite a comparison of spaces and cultures. These words reflect the decision making process to return. These words occurred with slightly less frequency than those referring to the internal states of the subject in the decision making process, but nevertheless form a significant portion of the responses at over seven percent. In other words, over fifteen percent of the responses were devoted to the description of the subjective process of deciding to return and its implications for the spatial surroundings of the subject. The full list of these words and their frequency can also be found in Appendix 4.

Words Expressing Academics, Work, Career

A third grouping of words revolves around the academic setting and the place of the subject in that setting. In this grouping we get closer to words suggesting motivation and, of the groupings, is the strongest indication yet of the reasons for return among these thirty six subjects. These words all refer to the academic setting, work circumstances and environment, and career

As can be seen from this list, the sheer number of words grouped around this theme as well as the volume of words makes this the single largest grouping of word use in the responses of the subjects. At nearly nine percent of the total words used, this clearly represents an emphasis in the responses of the subjects and validates the importance given to professional factors in the coding process. The full list can be found in Appendix 4.

Words Expressing Relationships

One final grouping, relates to words expressing relationships. These are words that are references to social connections outside the work setting. These words occur with far less frequency than the groupings already mentioned. This infrequent use of words relating to relationships is surprising given the number of times that I coded sections of text as referring to family was among the most frequently used codes in the data analysis process. This could be due to the fact that in describing relationships, after an initial reference to the person, pronouns tend to be used rather than the name referring to the relationship. For example, after initially referring to one's wife, for example, or child, one would continue the narrative using the pronoun "she" or "he" or "they" rather than the descriptor word to describe the relationship. The order of frequency, however, reflects well the overall proportions of the coding process, with "husband" taking top place, then "parents," and then "wife." As noted before, this reflects something of the gender role expectations of women in Chinese society as the study by Song and Dong found (2011), with the careers of men often taking priority over the careers of women in dual career households. In the responses documented in this study, concerns for the future of the male spouse outweighed concerns for the future of the female spouse. In sum, although not occurring with the same proportional frequency as the coding process, nevertheless among the groupings described here, personal relationships were still an identifiable and significantly large word

grouping. In that sense, it validates the priority of personal relationships reflected in the coding process.

Words Referring to Government, Law, Policy, or the System.

One final grouping should be noted in the word frequency results. These words all had to do with the legal and/or policy framework of higher education and related matters. Although these words did show up in some forms in the coding process, I did not identify them as a theme, mostly because those issues that would fall under this rubric are related to professional and institutional concerns, and were therefore grouped there. At less than one percent of the word usage in the motivation section, it cannot be argued that these occurrences are an important factor in the decision making process. Nevertheless, government and institutional policies do have some influence in the decision to return.

The remaining words occurring one hundred times or more do not show much of a discernable pattern. There were a few words that referred to time (time, years, year, future), but the rest occurred somewhat randomly (get, make, give, help, take, change, sure, and old) and cannot easily be grouped (see Appendix 4). When analyzing these lists in comparison with the results of the coding process, both in terms of perceived themes and relative importance of the themes, we can see some affirmation of the coding results and some patterns that might cause us to question the results of the coding process. Lending validity to the coding process is the fact that the most frequent use of words revolved around professional and institutional issues, followed by personal relationships. This confirms that in terms of word usage, these topics were paramount in the mind of the respondents. Calling into question, however, the coding results were the fact that socio-cultural references occurred with more frequency than personal-relational language. Also,

words referring government, law, and policy occurred with more frequency than was reflected in the coding process, where it was not identified as an important theme.

Summary of Word Count Analysis

What can be learned from this analysis and how does it support our coding process if at all? There are two observations that are important for the purpose of triangulation of data. The first word grouping that refers to motivation is clearly professional. There are two larger word groupings. One had to do with the subjective perspective of the respondent (thinking and feeling words) and the other had to do with the mechanics of migration (references to spaces and movements). Neither of these two larger words groupings could be considered as references to motivation. The first word grouping referring to motivation (academics, work, career) all have to do with professional factors for return. In this sense, the word count analysis confirms our coding process in that it also identifies professional factors as the single largest group of motivational words, whether referring to the profession in general or to professional factors present in the institution to which they had returned. The next largest group, also linked to motivation, are precisely the word groupings that we had identified as being the second most important factors in decisions to return, that is, words referring to personal relationships, such as husband, wife, parents, and children. The one large grouping that I had not accounted for in our coding method was references to laws, policies, governments, and legal frameworks or systems.

On the other hand, there were two themes which were not clearly identifiable through the word count analysis. One was the institutional theme. Nevertheless, I would expect the descriptions of institutional factors to rely on the same basic words grouping that applies to the professional theme, only applied to a specific institution. Thus, its absence as a separate word grouping is not surprising. The other word grouping that is absent is that of socio-cultural themes.

But here again, it is difficult to know how these words might distinguish themselves since they refer to a rather heterogeneous list of factors. These words would not be so easily identifiable in the word count analysis.

In conclusion to this section, then I can say with certain confidence that the word count analysis clearly identified two themes (professional and personal) and in a certain sense also confirmed a third (institutional). The fourth theme was too heterogeneous in nature to be discernable through a word count analysis.

Word Tree Analysis

In this section, I examine the relationship between some of the most frequently occurring words and the words that are used immediately before and after them. This is sometimes known as a “key word in context” approach. Unlike a pure word count analysis, that simply counts words, the word tree analysis lends insight into how the words are used in context. For the purpose of highlighting word patterns in the text, I am including graphics from word tree queries run in NVivo in Appendix 5. In order to make this process meaningful, I will look only at those words occurring more than 100 times in the transcribed answers coded under motivation. I will then examine only those words that might potentially refer to motivation. So, for example, I will not look at the most frequently occurring word, “think,” since in only very few instances might it have to do motivation for return, but I will look at the second most frequently occurring word, “China,” because it might in many instances express a motive for return. In other words, “think,” most probably is not a motivation for return while “China” might very well be a motivation for return.

“China” and “Chinese”

These two words occur with high frequency in the list of possible motivation words. Between them, they are used a total of 2,130 times. In examining the breakdown of contextual uses in the bi-directional word tree, however, there are few clues as to how these words might be related to motivation. Perhaps the most telling combination of words in this series is that of the expression “China is” The combination, displayed in Appendix 5, shows various adjectives and adjectival phrases associated with the combination. Some of them reflect some of the initial coding that I undertook as part of the analysis process. Consider, for example, the following expressions of positive motivation:

- China is becoming more and more like the US.
- China is better than the US.
- China is changing so fast.
- [My discipline] in China is developing.
- China is developing so well economically.
- China is in the process of reform.
- The whole educational universe in China is kind of migrating.
- It’s chaos, almost, compared to the US. But China is my China.
- China is not bad.
- China is rich.
- China is so rich!
- China is rapidly rising.
- China is the best.
- Chinas is uprising.

The predominant theme in these expressions and one which runs across the motivation spectrum, from personal factors to socio-cultural factors, is the fact that China is in a stage of rapid change. Most of those who returned saw this as an important factor in their decision to return. As can be seen from the return rates experienced by China before and after Tiananmen Square, the rate of return was clearly influenced by the events back home. The more political, social, and economic turmoil, the less inclined foreign degree holders are to return. On the other side of the coin, the greater the prosperity, the greater the political stability, the greater the pace of reform, the more optimistic returnees are about a bright future in their home country. This is in line with the findings of Zweig, Chen, and Rosen among others (Cassarino, 2004; Dustmann, Bentolila, & Faini, 1996; D. Zweig, 1997; D. Zweig, et al., 1995), whose results named political and economic uncertainty as important factors in return decisions.

“University,” “universities,” “school,” “faculty,” “department”

I also examined a group of related words that referred to the university as a system or as an institution, or to specific subcomponents of the university as an institution. These words as a group occur a total of 1,800 times. Once again, there are a large number of occurrences that render little clear information as to motivation, but here too there are a couple of interesting groupings that give some insight into the role that the university as a system and as an institution played in the decision to return. The grouping revolves around the issue of finding an acceptable position within the Chinese system.

A second grouping occurs around the word “I.” Here the issue seems to revolve around personal gain and advancement. Several of the coded professional and institutional themes appear in this grouping: salary, standard of living, institutional culture, local professional networks, colleagues, making an impact, opportunities for advancement, and the like. In addition

to these groupings there was also frequent mention of the names of specific universities in this word tree, reflecting the importance of institutional reputation in the decision to return. See, for example, the groupings around Xinhua (Tsinghua) University and Beijing University (see Appendix 5), the two top-ranked universities in China. It is clear from these frequent mentions that institutional prestige was an important motivating factor in the decision to return. This lends an empirical base to the coding process, in which institutional prestige was one of the more important factors in decisions for return.

“Research,” “Funding”

A third grouping that merited attention on the list of frequent words were these two words related to research. These two words appeared a total of 869 times. There were two nodes in particular in this grouping that seemed to reveal an important aspect of the role of research in the decision-making process of these returnees. The first has to do with the personal ownership of the research. One of the most frequent combinations in the rather lengthy list of uses of these two words is the combination with the words “my,” “our,” or the rhetorical use of the word “your” to describe one’s own research (see Appendix 5). The word “Research” was without parallel in the coding process, as was described earlier in this chapter. As can be seen from the graphic, the research process was also considered very personal. Research was clearly central to the concerns of these researchers when making the return decision and this is confirmed by the statistically frequent combination of the word with the personal adjective “my.” As I noted in the earlier chapters, this personalization of the research was much more frequently present among the younger researchers than among the older researchers. This may indicate an important shift in the cultural perception of the individual and the collective. Older generations might be reluctant to talk about their own research as though it belonged to them. There is a much stronger

sense among the older generation that all cultural products, including research, belong to the collective. The younger generation, on the other hand, many of them only children, have a much more independent view of themselves and have had endless exposure to capitalist principles of individualism, ambition, and personal pursuits, as is evidenced all around them by the unbelievably rapid growth of the wealth of urban areas in China (Bergstrom, 2012; F. Liu, 2011).

In 1974, Oliver Fulton and Martin Trow asked surveyed American faculty in research universities to discover their preferences for research versus teaching. In that study only 50% of faculty at research institutions indicated that they preferred research to teaching (Fulton & Trow, 1974). The study has not been repeated in the interim, and perhaps these percentages would be different today with the current emphasis on research in the promotion and tenure process. Nevertheless, the China's higher education system has clearly created a culture of research in its institutions. Both in official proclamations and in promotion standards, research is paramount in the Chinese system. In 2007, James Wilsdon and James Keeley graphically mapped the rise of China's research culture (Wilsdon & Keeley, 2007). In Table 15, the authors demonstrated the rapid rise of Chinese research productivity and attributed it directly to the presence of the *haigui*, the Chinese "sea turtles," slang for the foreign trained scholars who return to China. The returnees put a high premium on research and this same finding is also present in our data. China's burgeoning research culture is attractive to these young scholars and motivates their desire to return.

In Table 14, China is the only player on the research field that has been able to markedly improve its position in the world research rankings, achieving over 200% growth in research publications in the ten year period under study. Returnees know that they are returning to a research culture and relish the opportunity. In most cases, it is central to their decision to return.

Table 14: China's Percentage of Worldwide Scientific Publications 1995-2004 (Wilsdon & Keeley, 2007, p. 16)

Year	China	France	Germany	Japan	Korea	UK	US	EU-15
1995	2.05	6.09	7.62	8.65	0.79	8.88	33.54	34.36
1998	2.90	6.48	8.82	9.42	1.41	9.08	31.63	36.85
2001	4.30	6.33	8.68	9.52	2.01	8.90	31.01	36.55
2004	6.52	5.84	8.14	8.84	2.70	8.33	30.48	35.18

Job Security, Economic Security, and Career Opportunities

A longer grouping of words from among those that I have listed as motivation words are those referring to job, economic, and career security and opportunities. These words occurred a total of 1,958 times. The words included in this query were “work.” “job.” “position,” “career,” “working” “money,” “salary.” “offer,” and “opportunities.” In analyzing the query results, there are again several groupings of interest. First among them is the grouping around the words “can” and “could.” The emphasis here remains on “work,” yet work as a tool of opportunity. The return is motivated not only by job security, but by the possibilities that that job security provides in terms of career and impact. Empirical literature from all over the globe and from across the professional spectrum has shown that opportunity for personal growth and advancement are crucial indicators of job satisfaction (Linz & Semykina, 2012). This is also true faculty at research extensive universities (Bozeman & Gaughan, 2011). This potentializing use of language around the question of work and career, then, is not surprising among these Chinese returnees.

Another small but significant grouping occurs around the grouping “want/ wanted to work.” Although not of high frequency, it confirms the importance of job security in seeking a

return. Wanting to work was fundamental to the returnees. Many tomes have been written about the vaunted Chinese work ethic. For decades now, Gallup has documented this work ethic through a simple questionnaire asking respondents to describe their philosophy of life. Although there has been some shifting in attitudes with the growth of China's wealthy and leisure classes, over fifty percent of respondents still describe their philosophy of life to be "work hard, get rich" (Burkholder & Arora, 2005). To be idle is a source of personal shame in Chinese society. Every family member is expected to contribute to the economic well-being of the family. As Wang's timeless work on the structure of the Chinese family points out, the family in China is not just a social unit, as it tends to be in the West, it is also an economic unit. The family is viewed as an enterprise whose bottom line should always prosper. Every member of the family is expected to contribute. To be idle in such circumstances would be a source of great ignominy (F. L. Wang, 1998). Especially given that many of these scholars received significant family support from significant family sacrifices, the possibility of having to wade through a competitive process in their host country was too high a bar and was a definite push factor in deciding to return, while a job offer on the table from a prestigious institution in their home country was a definite pull factor. This priority was also reflected in the coding process, once again validating those results.

One final significant cluster is around the words "work with." In examining the cluster, it is clear that scholarly collaboration is important in the decision to return and must be taken into account when defining a model for the return decision. As can be seen from Figure 38 (see Appendix 5), the combination "work with" occurs with frequency in this graphic. As has been frequently pointed out, not only in empirical literature (Hou, 2013; Steele & Lynch, 2013), but also by many of the returnees that I interviewed, China is a collectivist society. Collectivism has deep roots in the Confucian ethic and bears only a thin, more recent communist veneer.

Collaboration is a must in Chinese society, not only as an ideological mandate, but also as an ancient ethic. In this word combination it is easy to discern echoes of that social value. This is also reflective of the need for a community of scholars. Over and over again respondents mentioned how important it was in their decision to return. As with the previous word clusters, this too validates the findings of the coding process.

Family and Personal Relationships

Words indicating personal relationships occur a total of 805 times, with the large majority referring to “family” (275) or “husband” (251). When we look at these words in context, we see that family obligations are a very important factor in the decision to return. Although it is impossible to capture a complete graphic because of the size of the graphic, I have included in Appendix 5 a portion of the tree representing part of the combination “my family,” by far and away the largest cluster on the tree (Figure 45, Appendix 5). As can be seen in the graphic, there are a number of the same salient issues present here that were detected in the coding process. From the first response “I returned for my work and my family,” and reports of nostalgia when “separated from my family,” to the confession that the motive for return was “very simple. I love my family,” the above graphic is a good cross-section of the issues detected in the coding process around family. The family played a central role in the decision-making process of these returnees, and the statistical evidence from both frequency queries and key words in context reveal that the coding process correctly detected that this was an important theme throughout the interviews. It is, of course, unknown at this stage, whether this represents a key difference between returnees and non-returnees, or whether other factors are just as important in determining the decision to return.

When we look at the second most frequent word in this group, “husband,” we find again that the tendencies detected in the coding process also take statistical shape in the word tree analysis. Consider, for example, the most frequent combination in the word tree (Figure 44). It is clear from the sequence of words that circumstances surrounding the husband are more influential in decision making than those surrounding the wife (Figure 46). When we turn to the tree for the use of “wife,” we see fewer such combination. What we find instead is less organized around a central theme than that of husband.

As the graphic in Appendix 5 shows, the combination “because my wife” occurs with less frequency, but probably more telling is the lack of combinations using words like, decided, decision, came back, and the like that take the husbands actions for granted and the wife’s responses is molded accordingly, there is some indication of collaborative decision making, “my wife and I decided . . . ,” “my wife agreed with me . . . ,” but in no instance is there indication that a decision was taken by the wife and that the husband followed. As noted above, this conforms to traditional roles for women and men that are still operative in career decision making (Ding, Dong, & Li, 2009). It also agrees with what I found through the coding process, that wives were more likely to make decisions based on the needs of the husband than based on the needs of the wife.

Summary of Word Tree Analysis

In summary, the tree analysis portion has by and large confirmed the results of the coding process. The most commonly recurring constructs in the use of language in the interviews revolved around professional, institutional, and family concerns. Culture was less frequently mentioned in these constructs, as we noted in the coding process as well. There are, however, a couple of new dimensions present here that were not detected in the coding process and probably

should be taken into account in identifying themes and, ultimately, in crafting a utility function to model the decision making process. The notions of progress, development, and reform was a cross-cutting issues. It was applied to the nation as a whole, to the professional arena, and to specific institutions. The sense of hope and optimism about China as a nation and about and about specific aspects of Chinese society as part of a broader pattern of progress was instrumental in the way returnees not only perceived the work climate in China, but also crafted their decisions to return. In the same way that Tiananmen Square produced a lost intellectual generation in its wake, in that the number of returnees dipped dramatically, it would be vitally important for China to protect its current image of progress and reform if it wishes to continue to attract its *haigui* back home.

The one place where it was not applied was in the family, where more traditional roles appear to have played out. There was no talk of progress and development there and the decision making process appears to conform, by and large, to traditional roles. In the next chapter, I will examine the gender dimension of the decision-making process using regression analyses.

Word Cloud Analysis

Briefly I examine also the word cloud output for the word frequency list. The word cloud does not add anything statistically, since it is based on word frequency and word combination patterns, issues that I have already thoroughly covered above. Nevertheless, it does allow us to see at a glance where the emphases lie in the responses of the subjects. The colors and position in this graphic are somewhat deceptive, since they seem to lend significance to the relation of space

[illegible]

and color, but, in fact, they are only used in NVivo for the convenience of display and readability. As can be seen from Figure 32, the most prominent notions in the responses of returnees were the notions of thinking, feeling, and the like. It takes some digging before we get to the motivational words. “China” and “Chinese” are prominent in responses, but among motivation related words, “university,” “research,” and “work” take the top spots, reflecting the emphasis on job security, research identity, and institutional prestige that we noted above.

Microeconomic Modeling of Research Results

In this final section I construct a theoretical economic utility function to model the return decision based on the forgoing research which I then test using a series of one-way ANOVAs applied to selected data from the demographic questionnaire and the four themes – professional, personal, institutional, and socio-cultural – identified in the qualitative analysis. The purpose of this process is to detect and model how these independent demographic variables are correlated

with the four themes defined by the foregoing research. In order to make this measurement, I am using as a proxy for the level of influence of the four themes in the decision-making process the quantity of coded material grouped under the four themes for each subject. Thus, for example, if twenty-five percent of a subject's responses regarding motivation for return discuss personal matters, then that twenty-five percent is taken as a proxy for the intensity of influence of personal issues in the decision to return. Further adding to the validity of this measure is the fact that in the coding process I disaggregated the coded responses referring to the four themes into incentives and deterrents. In other words, for example, I coded those references to personal matters as a *positive* motivator for return as *incentives*, and I coded those references to personal matters *negative* motivation for return as *deterrents*. I then took the percentage of *incentives* for return as a metric for the level of influence that personal matters had on the decision making process but did not score the *deterrents*. These proxy scores I used as dependent variable values and regressed the various demographic variables against them as independent variables.

As mentioned in the Chapter 3, there is one major assumption in using this methodology, namely, that frequency of mention is a reflection of intensity of influence. Although this may seem like a gamble in scientific terms, it is probably no less reliable an indicator than scores on a Likert scale (Carifio & Perla, 2007; Fowler, 2008; Göb, McCollin, & Ramalhoto, 2007; Maurer & Pierce, 1998; Norman, 2010). In Appendix 6 I explain further how I used NVivo semantic analysis software to generate proxy numbers for each of the four themes.

The Microeconomic Determinants of Return

In this final section of the chapter I use the evidence from the qualitative analyses in order to develop a model for microeconomic determinants for return. When discussing return migration, a common approach is to apply the Roy model of self-selection as a way of framing

the return migration question (see for example, Sjaastad, 1962; Borjas, 1987; Clark et al., 2002, Dustman et al., 2011, and Grogger & Hanson, 2011). According to the Roy model (Borjas 1987) an individual will emigrate if:

$$(\mu_1 - \mu_0 - \pi) + (\varepsilon_1 - \varepsilon_0) > 0$$

where μ is the mean wage, π is the cost of migration, and ε is idiosyncratic earnings. In other words, when the mean earnings in the destination country (μ_1), are higher than the mean earnings in the source country (μ_0) combined with the costs of emigration and the idiosyncratic earnings in the destination country (ε_1), are greater than those of the source country (ε_0), then the individual will migrate. These model has been given an evidentiary base in two separate studies (Beine, et al., 2001; Eggert, Krieger, & Meier, 2010). Thus, the probability of migration can be stated as:

$$P(v > -(\mu_1 - \mu_0 - \pi)) = 1 - \Phi(z)$$

where v is the difference in unrealized earnings ($\varepsilon_1 - \varepsilon_0$); $z = \frac{-(\mu_1 - \mu_0 - \pi)}{\sigma_v}$, Φ is the normal cumulative distribution function, and σ_v is the standard deviation of $v = \varepsilon_1 - \varepsilon_0$. In this case, large σ_v would increase risk and, therefore, reduce probability. By this definition, then, maximizing earnings would be the primary factor motivating emigration (Borjas, 1985, 1988, 1995; Borjas & Freeman, 1992; Dulam & Franses, 2014). In the case of return migration, one would assume that the same principles hold true with the exception that the source and destination country values are reversed. In this case, return would occur when source country earnings, both mean and unrealized earnings, exceed those of destination country. Under those circumstances, return becomes desirable.

In my research, however, mean earnings and idiosyncratic earnings were only one among many factors that affected return migration decisions. Not only so, but earnings were only one of

several professional factors influencing the return decision and the emphasis placed on professional factors varied by demographic variable. Under the circumstances, it seems evident that a more nuanced description of the microeconomic return decision is needed. In the following, I construct that more nuanced model for the purpose of theoretical predictions.

As I discovered in the preceding research, professional factors were very important in return decision. These professional factors were varied, consisting of position and title, support for research, opportunities for advancement, as well as earnings both mean wage and unrealized earning. I model the strength of these professional factors in this way:

$$f(Pr) = (T, R, A, E, \mathcal{E})$$

where T is the value attributed to position and title, R is the value attributed to support for research, A is the value attributed to opportunities for advancement, E the value of earnings, and $\mathcal{E}$ is a standard error term.

In addition to professional factors, I found that the decision to return was heavily influenced by personal factors as well, most of them consisting of personal relationships. Thus, for example, those returning cited family issues, the advice of peers and mentors, and friendships affecting return decisions as well as such personality characteristics as risk-aversion also affecting return decisions. For that reason I model the personal factors in this way:

$$f(Pe) = (F, Fr, M, RA, \mathcal{E})$$

where F is family influence (an aggregate of parents, spouses, and children), Fr is friends, M is mentors and advisors, and RA is risk aversion.

I also found that institutional factors became important once an offer was on the table. These institutional factors consisted of the prestige of the institution offering the job, and in some cases, its location, the presence or absence of a community of scholars in the immediate working

environment, and then questions about job description, work load, and working conditions, as well as job security influenced the decision-making process. These I represent with the following function:

$$f(In) = (Pg, L, J, Sc, \mathcal{E})$$

where Pg represents the institutional reputation, L location, J job description and working conditions, and Sc is job security.

Finally, my research pointed to the importance of socio-cultural factors in the decision-making process. The findings I compiled pointed to such factors as a desire to make an impact, longing for Chinese cultural values, an affinity with the Chinese language, and a strong Chinese identity. These I represent in the following function:

$$f(SC) = (Im, C, Lg, Id, \mathcal{E})$$

where Im is the desire to make an impact, Lg is a preference for Chinese language, and Id is identification with Chinese culture.

Analysis of Variance

In this section I look at the influence of certain demographic variables on the four factors influencing the return decision. Using weighted percentages of responses devoted to each of the four themes – professional, personal, institutional, and socio-cultural – as proxies for level of influence, I included them as continuous dependent variables in order to test variance against a list of demographic variables that include gender, age, marital status, number of children, time since return, and academic discipline. I first tested for collinearity by running a correlation test in Excel. The results, seen in Table 16, show that the dependent variables are discrete.

Table 15: Correlation Test

	<i>Professional</i>	<i>Personal</i>	<i>Institutional</i>	<i>Socio-cultural</i>
Professional	1			
	-			
Personal	0.107888166	1		
Institutional	0.267754072	-0.0299662	1	
			-	
Sociocultural	-0.17958161	0.01412957	0.042447786	1

In order to test for variance in the demographic variables, I selected the one way ANOVA. As noted above in the methodological chapter, the one way ANOVA has the advantage of allowing me to compare variance across the population group, giving better insight into the relationship between the demographic subsets of the group than a simple t-test, for example, would yield. In what follows, I will examine the results of the data analysis by independent variable.

Gender

The majority of my respondents were female. As noted in previous chapters, women in the Chinese culture generally, but also in Chinese higher education, face unique challenges and barriers that men do not face. I wanted to know whether gender seemed to affect the decision making process in terms of what types of factors influence the decision to return. In running the one-way ANOVA on the distribution of the four themes coded in the transcriptions, I found that there was no discernable difference between men and women in the influence of professional factors. Women were equally oriented to professional factors as men. There was a slight difference in mean, men showing a slightly higher mean than women (20.05 to 18.04), but also showed greater variance. Variance within groups was much higher, as was perhaps to be expected, than variance between groups.

When it came to the personal factors, however, women showed a greater influence of these factors than men, and the results were significant (see Table 17). As can be seen from the results, there was a difference in averages between men and women regarding the intensity of influence of personal matters and, at $p < .05$, the variance was significant. Generally speaking, this confirms our suspicions that the women among my subjects tended to be more susceptible to the influence of family than men (Rhoads & Gu, 2012; Song & Dong, 2011; Zhan & Montgomery, 2003).

Table 16: One-way ANOVA Gender and Personal Factors

Anova: Single Factor						
SUMMARY						
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
Column 1	17	162.9	9.582352941	45.75218		
Column 2	20	320.11	16.0055	83.50036		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	379.1167	1	379.1167072	5.72303	0.0222467768580774*	4.121338
Within Groups	2318.542	35	66.24405145			
Total	2697.659	36				

As one of the subjects interviewed said, it is not considered proper for a single woman to be living alone abroad. These types of pressures seem to be reflected in the relative influence of personal factors for women. The remaining two themes showed no significant variance. Males and females gave institutional factors and socio-cultural factors equal weight in the decision making process, with socio-cultural factors showing almost identical means across gender.

Age

I wanted to know whether the age of the respondent had any effect in the influence of the various factors. It was my assumption that the younger the subject, the more likely they were to be adventuresome and therefore less risk averse in choosing a foreign future. It also seemed to me that older returnees would have older parents for whom to care and would therefore feel more of a sense of urgency when it came to personal factors. When examining the data, however, age had no bearing on the strength of influence of the four factors. All four age categories reflected similar values at work in the return decision. There was some slight fluctuation in means, however, perhaps revealing a slight nuance in the way that the decision making process was approached. For example, the older the subject, the more emphasis that was placed on professional factors (see Table 18). This may reflect the fact that the oldest group had, without exception, been sent abroad for study by the institutions where they were at the time serving or

Table 17: One-way ANOVA Age and Professional Factors

Anova: Single Factor						
SUMMARY						
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
25-35	16	279.98	17.49875	113.7453		
36-45	9	201.99	22.44333	235.1152		
46-55	7	97.99	13.99857	164.6072		
56-65	5	121.64	24.328	288.2549		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	459.7539	3	153.2513	0.882944	0.45999	2.891564
Within Groups	5727.764	33	173.5686			
Total	6187.518	36				

by the Chinese government. The sense of obligation to return among this group was undoubtedly higher than it would be among the younger generations for whom in many cases the decision to study abroad was a personal decision and was not sponsored by any group, in many cases, other than the parents. One would expect, under these circumstances, that the sense of allegiance to family would be stronger, for example, than a sense of allegiance to China as a people or as a nation.

As can be seen from Table 18, the professional factors are in ascending order from the youngest to the oldest with the strongest professional influence in the oldest group, although the next youngest age range (46-55) breaks the pattern. The results, however, were not statistically significant.

Marital Status

The next level of variance I measured was that between marital status and the four themes. Once again, I had assumed a couple of things here. First, I assumed that single returnees were, as a group, younger, which would mean that they would be less risk averse than their older peers. As a result, I assumed that, generally speaking, professional, personal, institutional, and sociocultural factors would have less influence over them than their married peers, as the research on risk aversion has shown (Halek & Eisenhauer, 2001). On the other hand, however, I thought that, because of the unique nature of Chinese culture, they might also be more susceptible to personal factors because they were younger and, perhaps, more open to the opinion of their parents and peers.

In examining the results of the one-way ANOVA, some of the assumptions were born out, others were not. As can be seen from Table 19, single returnees were indeed less influenced by professional factors than their married peers. This result was significant at $< .05$. It is not hard to

Table 18: One-way ANOVA Marital Status and Professional Factors

Anova: Single Factor						
SUMMARY						
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
Single	11	135.82	12.34727	56.71664		
Married	26	565.78	21.76077	197.4156		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	684.9616	1	684.9616	4.356821	0.0442084852445931*	4.121338
Within Groups	5502.557	35	157.2159			
Total	6187.518	36				

imagine why this might be the case. Younger, single professionals are more likely to be driven by ideals than older professionals, and also have less at stake in risky decisions than their older, married colleagues (Eisenhauer & Ventura, 2003; Halek & Eisenhauer, 2001; Kaplow, 2005; D. J. Meyer & Meyer, 2005).

Table 19: One-way ANOVA Marital Status and Personal Factors

Anova: Single Factor						
SUMMARY						
Groups	Count	Sum	Average	Variance		
Single	11	164.37	14.94273	72.95872		
Married	26	308.71	11.87346	82.12973		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	72.81709	1	72.81709	0.915829	0.345136	4.121338
Within Groups	2782.83	35	79.50944			
Total	2855.647	36				

As anticipated, the risk aversion was less evident when it came to personal factors, although the findings were not significant. As can be seen from Table 21, the median level of influence for single returnees was slightly higher than that for married returnees. In this case, single respondents were 50% more likely to refer to personal factors when describing their return decision than their married colleagues. Nevertheless, the null hypothesis was not disproven in this case.

When it came to institutional factors, the ANOVA once again detected a significant variance that could not be explained by random distribution. Married returnees were almost twice as likely to mention institutional factors than their single counterparts. It is worth recalling at this point that the reason that I separated institutional factors from professional factors was that in the case of institutional factors, there was almost without exception a contract on the table. In the interviews with the returnees, it was evident that single returnees had done less research into the institutions they were joining, and were generally less concerned about such details as salary package, title, job descriptions, work environment, and future colleagues. Once again, the research on risk aversion parallels this pattern (Eisenhauer & Ventura, 2003; J. Gibson & McKenzie, 2011; Halek & Eisenhauer, 2001; Holt & Laury, 2002; Kaplow, 2005; D. J. Meyer & Meyer, 2005).

With respect to the final theme, sociocultural factors, my assumptions were not supported by the data. I had expected that older married returnees would be more motivated by sociocultural factors than their younger, single colleagues. The opposite proved to be the case. When it came to sociocultural factors, single returnees were more than twice as influenced by them than their married colleagues (Table 23). It is hard to know what, exactly, might be

Table 20: One-way ANOVA Marital Status and Institutional Factors

Anova: Single Factor						
SUMMARY						
Groups	Count	Sum	Average	Variance		
Single	11	97.99	8.908182	50.6821		
Married	26	434.77	16.72192	71.55857		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	471.9352	1	471.9352	7.194807	0.011083526253645**	4.121338
Within Groups	2295.785	35	65.59386			
Total	2767.72	36				

motivating this openness to sociocultural factors. There is any number of possible explanations. For example, because they are single, the issue of finding a spouse may loom large in their decision-making process. As was noted in previous chapters, for several of the single returnees,

Table 21 One-way ANOVA Marital Status and Sociocultural Factors

Anova: Single Factor						
SUMMARY						
Groups	Count	Sum	Average	Variance		
Single	11	173.3	15.75455	74.98995		
Married	26	220.01	8.461923	43.35846		
ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	411.0851	1	411.0851	7.84573	0.00824102302219959**	4.121338
Within Groups	1833.861	35	52.39603			
Total	2244.946	36				

the desire to acquire a Chinese spouse influenced the decision-making process. For others, the idealism of making an impact on China figured high in their expectations upon return. Perhaps in

older, married, colleagues, some of these cultural needs and aspirations had been replaced by more pragmatic concerns, especially where children were concerned.

Children

The presence or absence of children at the time of return had little impact on levels of influence. In the areas of professional factors, personal factors, and sociocultural factors, there was no appreciable difference between those with children and those without. When it came to institutional factors, however, there was significant variance (see Table 24). This may be attributable to the fact that those with children tend to be more risk averse than those without. It is, perhaps, understandable that those with children would prefer more stability in their employment situation than those without. It is easier to walk away from a bad situation if one is making decisions only for oneself, or even if a spouse is included in the decision-making process.

Table 22: One-way ANOVA Children and Institutional Factors

Anova: Single Factor						
SUMMARY						
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
0 Children	20	227.21	11.3605	76.22364		
1 Child	13	219.19	16.86077	42.68899		
> 1 Child	4	86.36	21.59	112.3093		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	470.2756	2	235.1378	3.479816	0.0421782810900201*	3.275898
Within Groups	2297.445	34	67.57191			
Total	2767.72	36				

Children, however, complicate the mobility question and make it difficult to simply uproot in a bad situation and move elsewhere, especially for women faculty (Austin, 2002; Philipsen, 2008).

Time since Return

I also wanted to see whether the time since return would affect the decision-making process. My reasoning for testing this variable was because those who had studied earlier and returned earlier were, almost without exception, government sponsored. Even those who were sent by specific institutions were sent with party approval and therefore were chosen in order to represent the party and to render service to the nation.

It was my assumption that this older group that had come out of the Cultural Revolution would display a different type of allegiance to China as a nation and would be more traditional in its forms of patriotic fervor. It was clear from the interviews that this was indeed the case. Official positions in China now make it possible to openly discuss and criticize the Cultural Revolution, which for many of these faculty was a personally traumatic time in their lives. Nevertheless, I expected that the more traditional upbringing under the Maoist regime which emphasized allegiance to nation and party would frame the sociocultural question differently for these older returnees. I expected that they would feel a greater sense of loyalty to China as a nation and to the party as the governing entity. As can be seen from the results generated by the ANOVA on “Time since Return” and “Sociocultural Factors” (see Table 24), these expectations were born out. As can be seen, sociocultural reasons for return were far more important in the decision-making process for those who had returned earlier than it was for those who had returned more recently. This was not strictly a function of age. There were also older returnees who had returned more recently who did not display this same kind of influence under sociocultural factors. It was more a function of when the returnee was sent and when he or she returned.

Table 23: One-way ANOVA Time since Return and Sociocultural Factors

Anova: Single Factor						
SUMMARY						
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
1-3 years	19	176.44	9.286316	30.01119		
4-6 years	6	83.09	13.84833	159.0244		
7-9 years	5	52.71	10.542	68.13527		
> 9 years	7	182.05	26.00714	98.65379		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	1476.091	3	492.0304	7.38117	0.00064719461461352***	2.891564
Within Groups	2199.787	33	66.66022			
Total	3675.878	36				

Academic Discipline

One final variable that was tested against the four themes using the one-way ANOVA test for variance was that of academic discipline. There were only two disciplines represented among the returnees of sufficient number to warrant a statistically valid reading, those of the natural sciences and the social sciences. Even at that, the natural sciences represented only six of the 26 respondents in these two disciplines, meaning that the number of subjects was too small to run reliable statistical tests. As might be expected, within-group variance was too large to render any statistically significant results, with one exception: sociocultural factors. As can be seen in Table 25, the variance found on discipline and sociocultural factors is unlikely to be the result of random distribution. The P-value is highly significant at $> .001$. It is difficult to know what the explanation of this pattern might be. In rereading the transcripts for these respondents, there is

Table 24: One-way ANOVA Discipline and Sociocultural Factors

SUMMARY						
<i>Groups</i>	<i>Count</i>	<i>Sum</i>	<i>Average</i>	<i>Variance</i>		
Natural Sciences	6	111.61	18.60167	12.62854		
Social Sciences	28	245.83	8.779643	26.07509		
ANOVA						
<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Between Groups	476.6859	1	476.6859	19.8834	0.0000949579368159192***	4.149097
Within Groups	767.1702	32	23.97407			
Total	1243.856	33				

only one factor that ultimately might explain this variance. In each of the instances, the respondents in the area of the natural sciences expressed a preference for the Chinese education system at the elementary and secondary levels. It is, perhaps, understandable that as natural scientists, they would want their children to be raised in school system that stressed competence in math and science. Almost to a person, the respondents pointed at the strength of the Chinese education system as lying in its emphasis on math and science and, indeed, China is among the world's top performers on international PISA and TIMSS tests in math and science (Guo, 2005). These concerns, more than any other, dominated the conversations about sociocultural motivations for return with these respondents.

Reevaluating Microeconomic Determinants of Return

In this section, taking into account the results of the variance tests, I look again at the determinant functions presented at the beginning of this chapter. Each of them is nuanced by statistically significant demographic factors.

The function for personal factors is also influenced by the factors of age and marital status, however, with the overall value of *Pr* increasing with age and increasing with marriage. For that reason, we must nuance the function by adding these variables:

$$f(Pr) = (T, R, A, E, \mathcal{E}; Ag, Ms)$$

where *Ag* is age and *Ms* is the status of married. In this case, as shown by the semi-colon, age and marital status are not key components themselves of the professional function, but shift the function. Thus also in the following reconstructions.

In similar fashion, the function for personal factors must be nuanced by including the effects of both gender and marital status, which means that the function should be written as:

$$f(Pe) = (F, Fr, M, RA, \mathcal{E}; G, Ms)$$

Where *G* is a multiplier for female gender and *Ms* is a multiplier for marriage.

The institutional factor, in turn, was influenced by influenced by marital status, rendering a revised function:

$$f(In) = (Pg, L, J, Sc, \mathcal{E}; Ms)$$

This function, as mentioned, represents institutional factors when there is actually a job offer on the table. If there is no job offer on the table, the decision to return would depend on the value of *Sc* in the individual decision maker. The higher the value of *Sc*, the less important the presence or absence of a job offer would be in the decision-making process.

Finally, the socio-cultural factor was influence by the independent variables of marital status, time since return, and discipline. This results in the following expanded function:

$$f(SC) = (Im, C, Lg, Id, \mathcal{E}; Ms, Tr, Ds)$$

where *Tr* is time since return and *Ds* is discipline. In this case, being married, having returned at an earlier date, and working in the natural sciences increased the value of this factor.

Returning then to the Roy model, then, in my estimation, based on the foregoing research, return migration will occur if:

$$\sum_{n=1}^{\infty} = c_0 (Pr_n + Pe_n + In_n + Sc_n) - \sum_{n=1}^{\infty} = c_1 (Pr_n + Pe_n + In_n + Sc_n) > 0$$

where $c0$ are destination country values and $c1$ are home country values and td represents the time of the decision. Putting this into layman's language, a person will return to country of origin if the sum of the correlation between circumstance in the country of origin and the personally held values of the individual is greater than the sum of the correlation between circumstances in the destination country and the personally held values of the individual.

What it means is that on balance, those who are contemplating return decisions weigh the things that are most important to them. It may be that family, for example, possesses a value that far exceeds all other values. But the value Pe does not just represent the value of personal factors in abstract terms, but rather, represents the corresponding value of circumstances in the country of origin relating to family circumstances. Thus, for example, it may be that the subject contemplating return to country of origin places a maximum value on family but that the subjects, spouse, children, and parents are all residing with the subject in the destination country. Under those circumstances, although Pe has an extremely high value relative to the other values, nevertheless, destination country circumstances attribute to that factor a higher value than country of origin. Under those circumstances, the subject would decide not to return (assuming that the sum of the values of the other three factors is less than the value of Pe). The addition of time to this equation is the reflection of the fact that circumstances change and that values may also change with time.

Calculating the probability of return then becomes a function of:

$$P = (\sum Vc0 - \sum Vc1) > 0 = 1 - \Phi(z; Pg)$$

where $z = \frac{-(\sum Vc0 - \sum Vc1)}{\sigma v}$ in order to account for risk aversion in the decision making process,

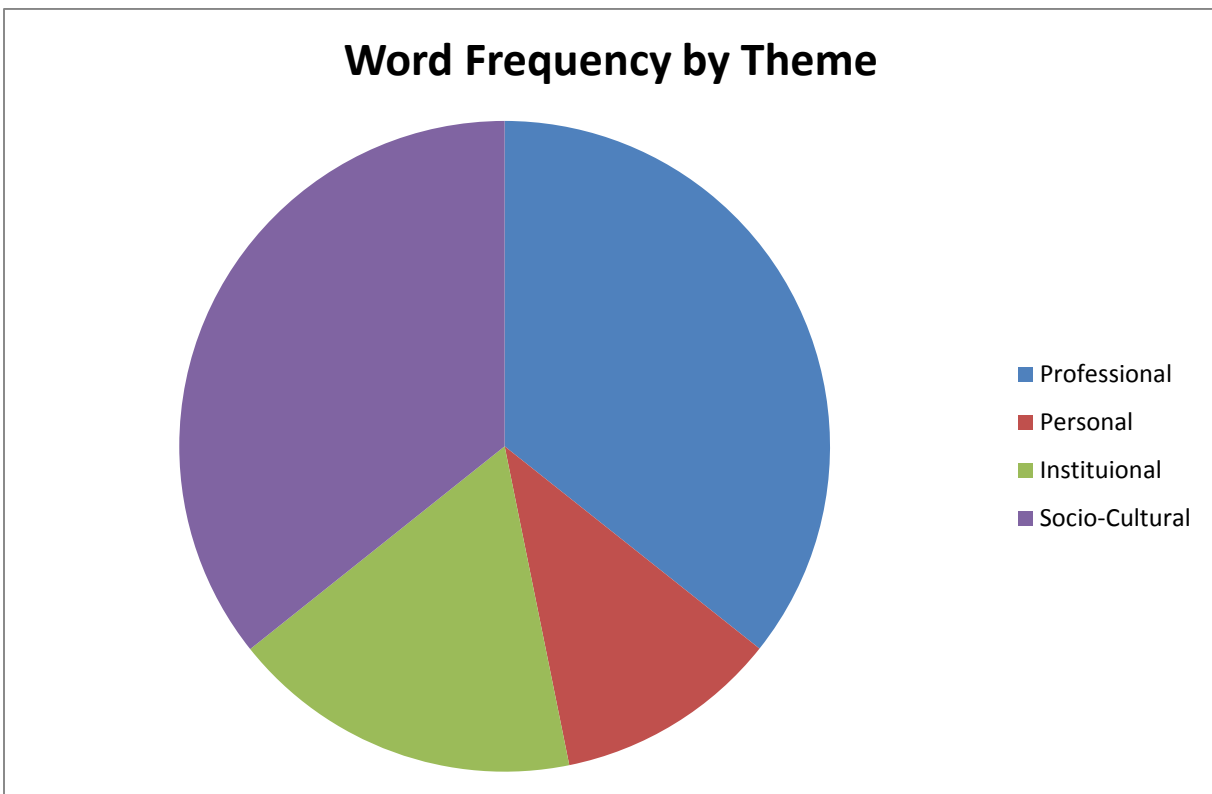
V is a metric for the level of correspondence between the values of the individual in the four factors influencing return (professional, personal, institutional, and socio-cultural) and conditions

in the country of origin or the destination country, and Pg is a metric for the sense of progress in country of origin that, while not itself a key component, shifts the function. Thus, for example, if the conditions in country of origin correspond well to the scalar values of the individual in the four areas described (professional, personal, institutional, and socio-cultural), and there is a general sense of progress in country of origin, then the individual will return. This model assumes a once and for all decision, however, which is rarely the case. For my purposes here, it suffices. In the future, however, a more complex model of multiple departures and returns that better reflects reality and would be preferred. This I leave for another work.

Conclusion

In this chapter I have attempted three things. First, I have sought to do a detailed analysis of the responses of returnees using qualitative coding methods. In that original search, I found

Figure 34: Word Frequency by Theme



that the several coded responses could be grouped under four themes: professional, personal, institutional, and cultural. Second, when I analyzed these grouping using statistical semantic analysis methods, I found that in terms of frequency, the proportional use of word frequency confirmed the results of the coding process, both in terms of frequency of use and use in context. There was, however, one additional theme detected through the statistical analysis that was initially included only in the socio-cultural theme that was found to have a broader application and should be treated as a cross-cutting theme.

As I take this into consideration, the original construal changes little. Figure 33 depicts not only the themes, but also now their proportional use based on the word frequency analysis. Surprisingly, however, in taking into account word frequency, the proportions of usage vary slightly from the coded responses. Socio-cultural issues take on a larger role and personal and institutional word usage take on a less important role, proportionally speaking. The discrepancy can be attributed to the fact that coded sections often can contain various themes around a central theme. In the normal coding process, these sub-themes often remain undetected or unreported. Here they are evident.

Finally, I ran one-way ANOVAs in order to detect the discreteness of the identified themes and to determine what affect certain demographic variables had on the four identified themes. have modeled the decision to return as scalar values consisting of a match between the values of the individual and the circumstances in country of origin and country of destination around the four factors discerned through the qualitative analysis process, these factors are themselves, in turn, influenced by a number of demographic variables that increase or decrease their intensity as detected by the quantitative analysis, thereby shifting the function. When making the decision to return, the potential returnee weighs these scalar values. The cumulative

weight of these values shifts the balance either in favor of the return decision or the non-return decision. This is also affected by the sense of risk associated with wide fluctuations in the conditions in the country of origin and by the sense of progress perceived by the decision maker in the country of origin. In the following chapter, I will lay out some of the implications of this model.

Chapter 5

Discussion and Conclusion: Implications for Theory, Policy, and Practice

Over the last several chapters I have drawn out the implications of the data that has been collected over the course of this research project. I have found that among the 36 among foreign-trained Chinese PhD returnees interviewed for this study, the microeconomic determinants for return migration are primarily professional, although personal factors, institutional factors, and socio-cultural factors all play a role. Each one of these four determinants are also influenced by key demographic variables, namely, age, marital status, number of children at time of return, time since return, and academic discipline, as well as one cross-cutting issue: the perception of progress in China. I have then depicted this decision-making model in a simple decision-making formula that reflects these determinants. In this final chapter I draw out the implications of this research for global higher education by looking at the implications of this research for theory, policy, and practice.

Implications for Theory

The fundamental theory that has been broached by this study is that of migration decisions. As was noted in the literature review in Chapter 2 of this study, the theoretical literature around the issue of migration decisions depends heavily on rational choice theory, economic rational choice theory, and utility theory – all based on the simple assumption that humans choose rationally. My research has implications for each.

Traditional economic theory assumes the existence of "homo economicus," economic man, who is ideally both "economic" and "rational." Such a person has complete information as to the choices that are available to him and makes his choices based on a clear and consistent set of preferences, based on which he is able to instantly calculate which of his many alternative

courses of action will allow him to maximize his utility usually expressed in economic terms. In other words, a rational person, acting rationally, will always seek to maximize personal “profits.” Ever since the work of Herbert Simon (Simon, 1955), however, it has been understood that “Broadly stated, the task is to replace the global rationality of economic man with a kind of rational behavior that is compatible with the access to information and the computational capacities that are actually possessed by organisms, including man, in the kinds of environments in which such organisms exist” (p. 99). Rational choice theory is an attempt to broaden this economic base of choice theory to include other values systems that might not be purely economic. These systems are not any less rational for not being economic. On the contrary, the chooser selects among alternatives based on a rational analysis of which of these alternative will render the highest measure of utility based on these more complex value choices.

The results of this study do not contest this basic paradigm of choice. My findings too show that return migration decisions are basically thoughtful and logical on the face of it. Nevertheless, current choice literature is overly focused on economic utility as the primary criterion of rationality (Arecchi, 2010; Blossfeld & Prein, 1998; Boon, 1964; Rex Brown, 2005). Utility theory has a long and well established tradition, and the theories are really much more nuanced than this brief description implies. The theory of utils is ultimately one of the science of preferences (Fishburn, 1968). Given a finite number of resources, how will the individual use those choices to maximize utility? There is nothing that demands that utils be understood to be purely economic in nature. On the contrary, in its origins, utility theory took into account a spectrum of values that motivated maximizing behavior.

Utility theory has its greatest play in economics, however, which implies a tendency to focus on the economic above all other values. This study challenges that prevailing paradigm in

that it demonstrates that people are willing and able to act against their own economic interests where there are higher values at stake (R. Brown, 2005; Newman, Bloom, & Knobe, 2013).

Repeatedly in the description of the return decision process, the returnees who participated in this study described their seemingly counterintuitive decision to return in spite of the short-term economic sacrifices that this decision implied in reasoned, multivalent ways. These decisions, however, were dependent on multiple factors that had varying value for the individual decision maker and those values were not purely economic. Thus, for example, although salary was frequently mentioned as a factor that influenced the return decision, salary by itself is not sufficient to explain the decision to return among this group of returnees since in all but a few cases the decision to return meant that the returnee would have to accept a salary lower than any unobserved earnings in the destination country at the time of the decision. In response, then, to the traditional economically based utility theories, my research suggests a utility model that is more comprehensive and nuanced in identifying and arraying the values matrices that deliver rational choices in the arena of higher education career choices.

Another area of theory affected by the results of this research is that of migration theory. As has been noted in previous chapters, according to current models prevalent in the migration choice field, the migration decision is ultimately a decision based on wage. If wage in country of destination, minus the cost of migration, is greater than wage in country of origin, and expected, unrealized wages in country of destination are greater than expected, unrealized wages in country of origin, then the person will emigrate. Conversely, if the proportions are reversed, the person will either not emigrate, or, being in the destination country at the time of the decision, he or she will decide to return. My research has shown that wage alone cannot explain the decision to migrate, and that if migration decision models are going to accurately reflect reality, then they

must be expanded to take into account values other than wage. As has been noted in the forgoing research, the decision to return is based on values that give highest place to professional considerations and, then, in varying proportions, allot value to personal considerations, institutional considerations, and socio-economic considerations. In the previous chapter, I attempted to model this decision-making matrix in a simple migration utility function that takes into account these four base factors and then weights them based on certain key demographic variables and the perception of progress in the country of origin. This, I contend, is a more comprehensive approach to the notion of the migration decision and takes into account a fuller spectrum of microeconomic determinants of that decision.

Implications for Higher Education Policy

What constitutes a developed higher education system? Although there are several systems for measuring the strength of individual higher education institutions, such as the Times Higher Education University World Rankings, the Academic Ranking of World Universities (the Shanghai Jiao Tong index), and the QS World University Rankings. In addition to these international ranking systems, there are also several regional and national ranking systems. Each of these ranking efforts includes a series of rubrics to measure the strength of the institution. There is, to date, however, only one ranking system that measures the strength of the national education systems as a whole rather than on an institution by institution basis: the Universitas 21 rankings. This relative newcomer to the rankings game, founded only in 2011, scores national education systems based on the strength of the system as a whole. The ranking system uses four criteria for ranking education systems – resources, environment, connectivity, and output – each of which is afforded 20% of the total score with the exception of output, which is double weighted at 40%. Resources is broken down into the following percentages:

- R1: (5%) - Government expenditure on tertiary education institutions as a percentage of GDP.
- R2: (5%) - Total expenditure on tertiary education institutions as a percentage of GDP.
- R3: (5%) - Annual expenditure per student (full-time equivalent) by tertiary education institutions in USD purchasing power prices.
- R4: (2.5%) - Expenditure in tertiary education institutions for research and development as a percentage of GDP.
- R5: (2.5%) - Expenditure in tertiary education institutions for research and development per head of population at USD purchasing power prices.

Environment is evaluated based on the following criteria:

- E1: (2%) - Proportion of female students in tertiary education.
- E2: (2%) - Proportion of academic staff in tertiary institutions who are female.
- E3: (2%) - A rating for data quality. For each quantitative series, the value is 1 if the data are available for the exact definition of the variable; 0.5 if some data are available which relate to the variable but some informed adjustment is required; 0 otherwise.
- E4: (14%) - Qualitative measure of the policy and regulatory environment.

The connectivity area is based on the following criteria:

- C1: (4%) - Proportion of international students in tertiary education.
- C2: (4%) - Proportion of articles co-authored with international collaborators. The data are a weighted average for each country where the weights are the proportion of output from each higher education institution.
- C3: (2%) - Number of open access full text files on the web, published 2008-2012, average for institutions.

- C4: (2%) - External links that university web domains receive from third parties, average for institutions.
- The data for C3 and C4, supplied by the Spanish research group *Cybermetrics Lab*, includes all tertiary institutions ranked in the top 10,000 in the world.
- C5: (4%) - Responses from business executives asked to rate the extent to which ‘knowledge transfer is highly developed between companies and universities’ in their country, in a survey run by *IMD World Development Centre*, Switzerland.
- C6: (4%) - Percentage of university research publications that are co-authored with industry researchers.

Finally, the output criteria are described as follows:

- O1: (13⅓%) - Total articles produced by higher education institutions.
- O2: (3⅓%) - Total articles produced by higher education institutions per head of population.
- O3: (3⅓%) - An impact measure calculated from the *SCImago* database, 2007-2011. The measure is a weighted average of the Karolinska Institute normalised impact factor for each higher education institution, where the weights are each institution’s share of national publications from higher education institutions.
- O4: (3⅓%) - The depth of world class universities in a country calculated as a weighted average of the number of institutions listed in the top 500 according to the 2013 Shanghai Jiao Tong index divided by country population. The weights used are the scores out of 100 for each university.

- O5: (3⅓%) - The research excellence of a nation's best universities calculated by averaging the 2013 Shanghai Jiao Tong index scores for the nation's three best universities.
- O6: (3⅓%) - Enrolments in tertiary education as a percentage of the eligible population, defined as the five-year age group following on from secondary education.
- O7: (3⅓%) - Percentage of the population aged 25-64 with a tertiary qualification.
- O8: (3⅓%) - Number of researchers (full-time equivalent) in the nation per head of population.
- O9: (3⅓%) - Unemployment rates among tertiary educated aged 25-64 years compared with unemployment rates for those with only upper secondary or post-secondary non-tertiary education . (Williams, De Rassenfosse, Jensen, & Marginson, 2014)

As is evident immediately from this index, the number of scientific publications produced by a higher education system still remains the single most important criterion for its success. One would assume that there is a direct correlation between the number of researchers publishing within a system and the overall economic progress of that system, although the Universitas 21 index does not attempt to draw this correlation directly.

The point of this brief exercise is to demonstrate that no higher education system can prosper, no matter what the measure of success, without the retention of top scientific talent. If it becomes impossible to retain highly skilled scientific talent, then the system will ultimately lose the ability to service the needs of the national agenda. Finding ways to attract and retain top talent should, then, be at the top of the policy priorities of developing governments.

In a recent study of the economic impact of higher education on the economic development of Sub-Saharan African nations, the authors concluded that “[poverty reduction

strategy papers] may shy away from mentioning higher education because of a widely held, and not baseless, perception that educating Africans at the tertiary level simply leads to ‘brain drain’” (Bloom, Canning, & Chan, 2006). And, in fact, they are correct. The United Nations Conference on Trade and Development (UNCTAD) estimated that roughly 30 per cent of the region’s university trained professionals live outside Africa (InterAcademy Council, 2004). If higher education systems in Africa and other developing regions in the world are to reverse these trends and begin to build a foundation for a robust contribution from higher education to the economic development of the region, the attraction and retention of world class higher education professionals becomes indispensable.

How then are higher education systems to respond to this crisis and how might the results of this research study assist in that process? In what follows, based on the results of my research, I lay out some policy directions for higher education system development that will be essential for higher education system development in developing countries.

Invest in the Higher Education System

In the early 1980’s, in response to a simple return on investment study undertaken by George Psacharopoulos on behalf of the World Bank (1988), there was a tectonic shift in education funding on the international donor scene that shook the developing world. Driven by the simple, and some would argue, simplistic argument that primary and secondary education give greater returns on investment in developing countries than tertiary education, international agencies turned their funding priorities toward the lower levels of education and neglected higher education. In 1997, Beintema, Pardey, and Rozeboom detailed in part this decline and its implications for Sub-Saharan African higher education. Real spending per university student had declined from US\$6,300 in 1980 to US\$1,500 in 1988. The number of books per student fell

from 49 in 1979 to only 7 in 1988 (by way of comparison, the average number in U.S. universities at the time was 78). During the same period, real faculty salaries had fallen by 30 percent and continued to decline thereafter in most countries. In Nigeria, for example, university faculty salaries in 1991 were only 10 percent of their levels in 1978 (Pardey, Roseboom, & Beintema, 1997).

There has been much reflection on this premise over the last two decades, some of it by Psacharopoulos himself (Psacharopoulos & Patrinos, 2004), most of it concluding that education investments are not an either primary and secondary or tertiary proposition (Independent Task Force on Higher Education and Society. & NetLibrary Inc., 2000; Stiglitz, 1998; World Bank, 2002). In fact, investments to primary education or secondary education at the expense of tertiary education have been shown to have a detrimental effect on incentives for education generally (Altbach, 2007a; Bindé, Matsuura, & UNESCO, 2005; Bloom, et al., 2006; Fleisher, et al., 2010; UNESCO Forum on Higher Education Research and Knowledge, International Association of Universities, Sörlin, & Vessuri, 2007). As a result, the pendulum is finally swinging back towards higher education.

This is a trend that needs to be encouraged. Among my key research findings was that although returning scholars do not need top dollar to return, nor even, for that matter, a competitive wage by international standards, nevertheless, the sense that a nation, a higher education system, or an institution is “progressing” is essential to attracting top talent. Returnees wager their future on systems that they perceive to be in the process of growth. In the case of China, there is no doubt that the major investments made by the Chinese government in the 211 project and the 985 project had given to these potential returnees the clear impression that China was committed to the growth and success of their higher education system and that a decision to

return was backed, so to speak, by the government's guarantee that the system would reach world class status by 2025 (J. Gu, et al., 2009; Ma, 2007)

Allow for Institutional Autonomy

Although a certain standardization in employment packages for higher education academic staff might be desirable to avoid impressions of favoritism or corruption, especially in developing higher education systems (Altbach, Reisberg, & Pacheco, 2012). Requiring a lockstep approach to contract negotiation is, however, a mistake. One of the key findings of my research is that the return decision is highly personal. Although there are broad patterns of response among returnees, no two return decisions are motivated by exactly the same criteria. One thing that Chinese universities have done well in the process of capturing these returnees is to work within the broader framework of government policies on compensation packages in order to craft individual offers that take into account the particular values and perceived needs of the returnees (Cao, 2008; Cao & National University of Singapore East Asian Institute, 2004). For some, the return decision hinged on adequate education for their child or children, for others it was employment for their spouse, for yet others it was the right to the prized *hukou*, a big-city residency permit, in the contested space of a large urban area, and for some it was the possibility of affordable campus housing in a Chinese housing market gone wild.

In order to address these needs, Chinese higher education institutions have been given broad autonomy in the negotiation of faculty contracts. Especially when combined with the lavish funding for those universities designated as recipients of the 985 project funds, the ability of these institutions to negotiate compensation packages that take into account the individual needs of returning faculty gave them a huge advantage in the competition for top Chinese talent on the international market (D. Zweig, 2006). If the intentional effort to develop higher

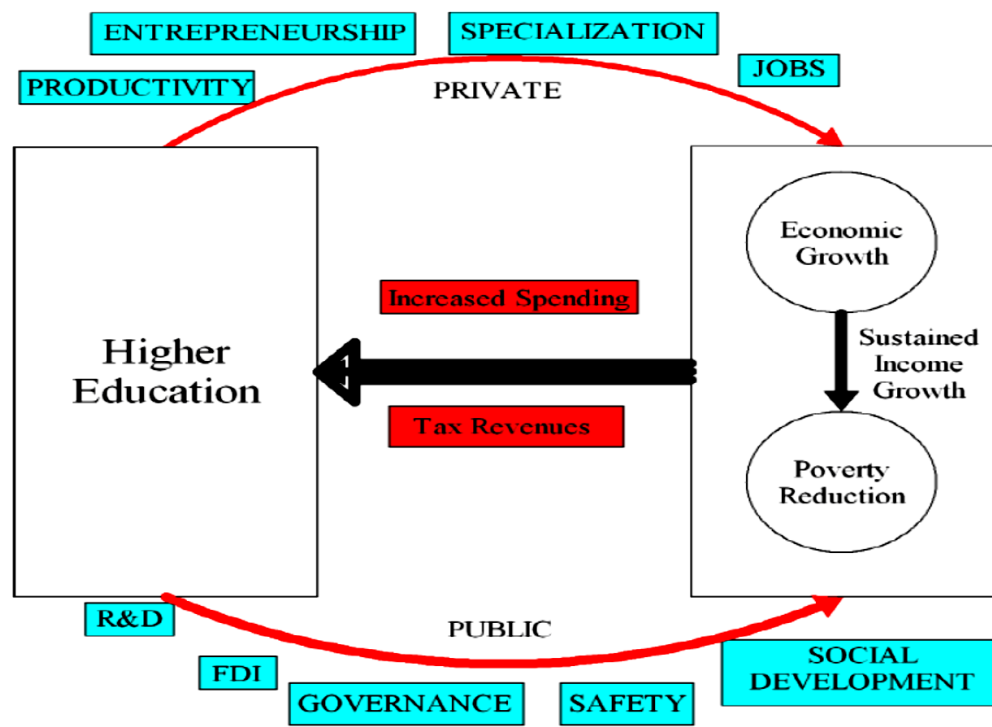
education systems is to have positive results, government policy around compensation packages has to become less of a cookie-cutter approach and more of an individualized approach. This requires, however, high levels of institutional autonomy (Altbach, et al., 2012). Governments that try to micromanage institutional budgets from a central location are both handicapping the ability of their institutions to compete for top talent, and are sending a strong message to independent-minded scholars that they are nothing but a cog in the wheel of the national machinery if they accept a return package to their country of origin (United Nations Educational Scientific and Cultural Organization Bucharest (Romania). European Centre for Higher Education., 1992). Is it any wonder then, under those circumstances, that many young scholars decide to seek their fortunes elsewhere? It is time for developing higher education systems to disabuse themselves of the mistaken notion that fairness demands uniformity in compensation packages. Although this may win Pyrrhic victories on the ideological plane, it will lock higher education systems into indefinite mediocrity. In order to give national institutions the ability to respond to the individual needs of scholars and to compete for their talents on the open international markets, it is vital that they be given the freedom to negotiate individualized packages for returning scholars (Altbach, 2011a, 2011b; Altbach, et al., 2012; Schütze, Bruneau, & Grosjean, 2012).

Engage the Higher Education Sector in Relevant Development Research

One of the most underutilized resources in the developing world is the higher education sector. In many developing countries the sector has been relegated to the role of a professional prep school for the children of the country's elite (Altbach, 2007b; InterAcademy Council, 2004). These dynamics are changing as both governments and international donor agencies are realizing the potential that these institutions have for research. This potential is only enhanced when

graduates from foreign education systems that specialize in research return to their country of origin with highly specialized research knowledge and skills. In 2006, Bloom, Caning, and Chan examined the role of higher education in economic growth in Africa. Based on extensive research of higher education and economic data, they came up with the model found in Figure 34 on how higher education affects economic growth. Among the key factor is the ability of

Figure 35 Higher Education and Economic Growth (Bloom, et al., 2006, p. 16)



higher education to contribute to the evidentiary base for analyzing potential solutions to chronic development issues. As can be seen from the graphic, there is a direct line from higher education, starting with R&D, which leads to social development, economic growth, and poverty reduction. One of the key findings of my research was that making an impact is one of the highest priorities among returning scholars. Their return was motivated in large part by the desire to make a difference in the lives of their fellow country men and women as well as in the disciplines and

institutions in which they worked. This is an opportunity that developing countries must not fail to grasp. If there is a concerted effort to draw direct links between the work of returning scholars and national development goals, the natural national affections will be sufficient to draw expatriate scholars back to country of origin. The sense that their work is somehow contributing to the advance of their national goals or to the well-being of their compatriots is a strong sentimental lure that ranks high in the matrix of values motivating return.

Fund Research

It is, of course, not enough that governments draw the linkages between the sectors in support of national development goals, there must be significant funding. Not only so, but that funding must be channeled in part, at least, to public and even private universities. In Latin America, for example, research has often been divorced from universities, funding being channeled into parallel research systems either sponsored by government or into private, for-profit research centers (Albornoz, 1993; Altbach & Balán, 2007; Levy, 1996). While the notion of government sponsored research centers devoted to national development issues is certainly a worthy endeavor, their divorce and geographical distance from university learning communities simply drives an unnecessary wedge between teaching, research, and service in the universities. Returning scholars are forced to choose between pursuing their academic careers or moving into a government research center which, although it certainly provides a stable career and plenty of national prestige, nevertheless deprives the scholar of some of the benefits of working in a cross-disciplinary setting. Moreover, the research center model is out of step with the research culture of most of the developed world, where the Humboltian model of university research has become the foundation for the modern university system. The disconnect leaves the research centers on the periphery of cutting-edge research dialogue, limits the number of publications they can

produce (since research centers are not held in as high esteem as universities in the publishing cultures of many journals), and deprives the broader scientific of important contributions that can be made by these researchers. Since the benefits of national research centers are clear to national development agendas, however, it is not a question of either universities or national research centers. Both systems can be strengthened by simply moving national research centers onto national university campuses (or even private campuses for that matter) and by moving them into the mainstream of the academic community where both the academy and the research centers can benefit from the synergy that accrues to both (Castro, Levy, & Bernasconi, 1997; Lebeau, Stumpf, Brown, Lucchesi, & Kwiek, 2012; Levy, 1996).

In like manner, private research firms have an important role in moving forward national research agendas, especially when it comes to questions of sustainability. Nevertheless, it is time for developing governments to end no-bid contracts, handed out as personal favors to those think-tanks that manage to position themselves closely enough to circles of power to be the beneficiaries of such contracts (Bloom, et al., 2006; InterAcademy Council, 2004). Funding for research should be allocated on a transparent, competitive basis and there should be plenty of it. As my study demonstrates, funding for research was among the highest motivations for return among foreign-trained scholars and even the mere perception that there is ample funding available for research was enough to draw top scholars back to China. These scholars know that their comparative advantage in the global education system is their newly minted research skills. Most scholars are loathe to lose these newly acquired skills and would resist efforts to draw them into an educational system that pulled them away from research. Most of these scholars also know and understand that they will have to compete for research funding, but most of them also have the necessary confidence to assume that they will be the recipients of funding given the

opportunity. It is not the competition that deters return, it is the lack of funding. Governments would do well to make available to the research communities in under their jurisdictions ample, targeted research funding that allows researchers to continue their research careers and at the same time addresses pressing national development goals, something like a Grand Challenges award system offered by the Bill and Melinda Gates Foundation, which specifies specific development challenges and then makes awards based on creative, scalable research proposals (The Bill and Melinda Gates Foundation, 2014). This would allow newly returned scholars to compete for the available funding while maintaining a presence in the nation's academic system.

Virtual, Events-based, and Short-term Return for Expatriate Scholars

The results of my research have demonstrated that the desire to make an impact in country of origin is one of the primary motivators for return. China is in a good position to compete for global talent because its higher education system has evolved to a point where even highly risk-averse scholars can envision long-term academic research careers (Bramall & Ebooks Corporation Limited., 2008; Cao, 2008; Cao & National University of Singapore East Asian Institute, 2004; Cao & Suttmeier, 2001; Chinese Academy of Sciences, 2010; J. Gu, et al., 2009; M. Gu, 2010; Ma, 2007; D. Zweig, 2006; D. Zweig, et al., 2004). The Chinese system has in a short period of time been able to generate the kind of stability and strength that a decision to return to one of the 39 elite 985 project sponsored universities is not much of a risk. This is not true of many, or perhaps most developing countries, where higher education systems are still not sufficiently stable to produce the kind of guarantees that larger developed higher education systems enjoy. Pulling scholars from world class education systems into unstable education systems represents not only an economic risk for those scholars who chose to return, but also presents the specter of extreme declines in scholarly productivity. Regardless of the apparent

attractiveness of welcoming scholars with world class skills back home and all the positive imagery it can generate, a return of a highly skilled scholar into an underdeveloped educational system can mean a net loss not only the scholar her- or himself, but also for the country of origin in that energies that would otherwise be applied to national development issues from an expatriate setting end up getting lost in what becomes an over-burdensome demand for teaching and administration. As I have pointed out elsewhere (Medendorp, 2012), the costs of such a return outweigh the benefits and are not advisable.

There are ways, however, to incorporate the world-class skills of expatriate scholars while at the same time allowing them to continue their high levels of productivity. By creating shorter-term opportunities that allow the scholar to make her or his contribution from a position of strength from outside the country, what has been dubbed in scholar migration circles “the diaspora option,” benefits both the individual scholar and the national education systems from which they had originally derived (Beine, Docquier, & Özden, 2011; Brinkerhoff, 2008; J.-B. Meyer, 2001; D. Zweig, et al., 2008). In the above cited work (Medendorp, 2012), I identified at least four different modes of return that can be employed to keep expatriate scholars involved with national development research issues yet do not require a permanent return, they include virtual return, where lines of communication are established, event return, where expatriate scholars are invited to multiple day events to engage with national scholars, short-term return, situations in which scholars return for extended periods, such as teaching a series of classes in one semester or giving a year-long series of special lectures while participating in a research project that has significance for national development goals, and, of course, long-term return. This is in effect what the Chinese government has put in place through such programs as the Distinguished Young Scholars Program (Cao & Suttmeier, 2001; National Natural Science

Foundation of China, 2010c), a program that provides short-term grants (3-5 years) for research in China. These types of grants allow recipients who may be working in a foreign higher education system to test the waters, so to speak, before making a decision to return permanently. Many developing country higher education systems would benefit from such interaction and governments would be wise to support it with funds.

Honor Scholars for Their National Contributions

Among other key finding in my research was the importance of opportunities for advancement and the importance of institutional prestige in the decision to return. In large part this is an institutional responsibility, which I will discuss in the next section, but it can also be fomented on the policy level. In short, returning scholars want to be recognized for their contributions both in the form of personal remuneration for their world-class skill set, but also in the form of recognition for their contributions to the national advance. As was reported in a recent international forum on retaining top talent in Africa, “In the consultative workshops, the Study Panel heard pleas from scientists for greater recognition and encouragement of their profession by the community and governments” (InterAcademy Council, 2004, p. 181). As was recently reported by the InterAcademy Council, “There was a sense in which [resident researchers] viewed the enhanced prestige this would generate as equal to, if not more important than, increasingly attractive financial rewards, in order for scientists to fully express their own potentials and contribute to Africa’s development” (2004, p. 181) This was not a form of vanity, but in some way a hope for recognition of the sacrifices that they made by returning home.

When expressing their hopes for the future and their reasons for return, many of the scholars referred to the opportunity to quickly make a contribution and an impact. In a developing higher education system like Chinas, where the disciplines are not fully developed,

these opportunities exist. This is an advantage that developing higher education systems do not fully exploit because they do not understand its importance for scholarly return. My research should change that. This will require two things, however, that must be intentional and public. The first, as I mentioned above, is the need clearly and publicly to connect academic research to national development goals. Scholars may not understand the potential importance of their work for the development of the nation. Especially scholars who have just come out of research programs and who have not yet found their way through the weeds of their very narrow technical expertise to the open vistas of what their research may imply on a grand scale, they may need help understanding the potential impact of their research on national development agencies.

Most developing nations now have national planning offices, a requirement for receiving international funding from such donor agencies as the World Bank, the United Nations, and the various related regional development banks. Perhaps it should also be a requirement for every national planning agency to also have an expatriate recruitment office whose work it is to find expatriate scholars (and other highly skilled émigrés) whose research may have applications to national development goals, make the case for their contributions, and make links with the national research community so that creative paths for return can be charted. Examples like Brazil (Ribeiro, 2007; Sobrinho & Brito, 2009), Chile, China, India and Malaysia (InterAcademy Council, 2004) all show that there can be successful intentional efforts to bring expatriate scholars back to country of origin. Brazil, in particular, which has a PhD return rate of nearly 60%, far outpacing most other developing countries in its retention of top talent, has been very intentional about pursuing its expatriate PhDs and finding ways for them to return. As Schwartzman noted, “In the end it is not sanctions or fines, but the provision of proper working opportunities that will bring those studying abroad home” (Schwartzman, 2013).

Develop Centers of Excellence

Finally, governments should find ways to develop pockets of excellence within the higher education system. Returnees have almost without exception been investing heavily in the acquisition of skills that put them in a very elite class of world researchers. Being part of this elite group is a deep sense of honor for almost all the scholars I interviewed. Among the biggest fears they expressed in the return decision-making process was the fear of losing their international connections and their connection with the broader community of scholars. Scholars do not work well in isolation from the scientific dialogue within their academic disciplines. Most scholars benefit greatly from the presence of fellow researchers who have similar research interests. The creation of small pockets of highly skilled researchers around specific topics of pressing national interest, also known as centers of excellence (Arimoto, 1997; Barrow, 1996; UNESCO Forum on Higher Education Research and Knowledge, et al., 2007). Such centers allow developing countries to produce world class research around issues that support national development goals without having to invest large sums in bringing the entire higher education system to world-class standards. Although there are some higher education systems in developing countries that have the luxury of expansive government support for higher education, such as China, and Malaysia, in most developing countries budget constraints do not allow for an across-the-board funding approach. The tendency in these developing systems is to distribute funding evenly throughout the system. The result is that funding that could be used in a more targeted fashion to support specific centers of excellence around research agendas that matter to the countries progress is diluted in its effect and becomes a subsidy for a mediocre system that will never, under those circumstances, have the ability to climb out of its mediocrity. Focusing

on centers of excellence allows a country to bring in world-class researchers for both short- and long-term appointments and brings the talents of the brightest and best to bear on intractable development problems.

Implications for Practice

In addition to these nationwide policy initiatives, there are also institutional practices, implied by the results of my research, which can complement and bolster the effectiveness of these macro-level policies.

Opportunities for Advancement

Related to the policy of national recognition described above, my research shows that scholars respond to the opportunity for advancement. Repeatedly my respondents mentioned that one of the factors drawing them to China was the opportunity to rise quickly through the academic ranks. They were well aware of the burgeoning nature of the Chinese higher education system and were prepared to exploit this emergent phase of the system to position themselves for long-term success. This was not necessarily a financial decision, since prospects of high pay were never really on the table (with a couple of very clear exceptions in the natural sciences), but it clearly was a strategic decision on the part of the returnees to seek an opportunity to rise quickly to positions of influence and authority within the higher education system. Some of them came to academic discipline in which they were one of few or even the first in the discipline to teach and do research in China. This opportunity to be a pioneer, in effect, of an academic discipline in China was very appealing. Institutions can capitalize on these sentiments by having clear, long-term plans for returning scholars. Institutions should be prepared to outline a possible trajectory for these returning researchers and provide them with sufficient securities to be able to induce even the risk-averse to return.

Job Security and Compensation

Although tenure systems may be beyond the scope and abilities of institutions with limited budgets (Altbach, 2003; Boyer, Altbach, Whitelaw, & Carnegie Foundation for the Advancement of Teaching, 1994; X. Chen, 2003), there is nothing to prevent institutions from developing individual contracts for returning scholars that provide employment guarantees and clear severance arrangements in the event that a return does not work out to the satisfaction of both parties. The respondents in this study put a high premium on job security, especially those with children. Although salaries are not paramount in the decision to return, relative purchasing power is, according to the respondents in this study. Building contractual packages that allow scholars to make a reasonable wage while at the same time providing amenities that may offset the lower salaries, such as housing, schooling for children, transportation – all of these measures combined can off-set any shortfall in salary. Most of the scholars I interviewed were not looking to get rich. In fact, they understood that they were making a financial sacrifice. The only regrets I heard expressed were from those scholars who felt that their pay did not allow them to live a minimally comfortable life or who felt that they were at risk in their current occupations. Institutions would do well to build job securities and guarantees into contracts for returnees. I am sure, based on my research, that it will have an immediate impact on the number of scholars who chose to return.

Workload

Another area of higher priority for institutions looking to recruit expatriate scholars is the question of workload. Many higher education institutions in the developing world are moving toward part-time, adjunct faculty as a result of the privatization schemes of the structural

adjustment trends of the 1990s (Agénor, 2004; Altbach & Ebooks Corporation Limited, 2006; Cummings, 2009; David, 1985; Enders & Weert, 2009; Konadu-Agyemang, 2001; Massey, Sánchez, & Behrman, 2006; Scherrer, 2005). This trend toward the privatization of higher education has brought dramatic improvements in access to higher education, it has also had the effect of eroding protections for the academic profession. The new emphasis on access has turned many institutions into teaching only institutions. Research has taken a back seat, become the private prerogative of the individual academic, or been eliminated altogether, a phenomenon that is not absent in even advanced higher education systems such as the US (Altbach & Ebooks Corporation Limited, 2006; Cummings, 2009; Fairweather, 2009; Judith M. Gappa, Ann E. Austin, & Andrea G. Trice, 2007).

As was evident from my research, workload issues are very important in the decision to return. Most expatriate scholars are well familiar with their home education systems and are aware of how quickly the energies of top researchers can be absorbed in time-consuming non-research activities such as teaching, student advising, and administration, not to mention the high demands placed on such scholars to contribute above and beyond their academic responsibilities to the advance of the national agenda. On more than one occasion the respondents in this study mentioned workload issues as a major reason for concern in the decision to return. Especially those who had recently left highly recognized research programs in major research universities were aware of and hesitant to return to academic systems that would deprive them, in the short- or long-term of the ability to pursue their research. Such concerns as the number of hours per week they would be expected to work, what percentage of their effort would they be expected to devote to administration, teaching, research, extension, service, and outreach, and what other

external expectations or obligations there would be were all questions that these returnees wanted answered before they would be willing to commit to return to country of origin.

Research Support

As noted in my research results, one of the issues that most attract scholars to country of origin was support for research. This support takes two forms. It takes the form of direct funding to support research, usually as grants, whether competitive grants that are available through government and other sources, or faculty grants that are available to researchers on a competitive or non-competitive basis. In addition, however, it comes in the form of departmental support for research. This can take many different forms, but it comes first of all in the form of workloads that recognize the importance of research and make room for it, as mentioned above (Cummings, 2009; Fairweather, 2009). It can also take the form of travel support for conferences, the hiring of graduate assistants, and the formation of a community of scholars around a research concept. Providing sufficient research infrastructure, both in the form of technology and access to data and scholarly literature, and in the form of laboratories and equipment where appropriate are also definite musts if the appeal to return is to have impact (InterAcademy Council, 2004).

Other ways that are less under the control of the institutions is the connection of researchers with the broader international research community. The loss of such networks was a major concern for returning researchers and, although the researcher needs to take initiative in such efforts, institutional climates can either encourage the development of such networks or can work to their detriment. For example, in one of the developing countries in which I currently work, foreign researchers who conduct research in country, whether with or without a national research partner, are expected to submit their research plans to a national institution which must approve those plans and, in turn, must submit them to the Ministry of Education for approval.

Such lengthy bureaucratic entanglements for international research collaborations is off-putting at best and makes for an unnecessarily cumbersome process for developing joint research proposals.

Community of Scholars

Being part of a community of scholars is an essential part of scholarly motivation and inspiration. It is therefore essential that institutions do everything they can to ensure that scholars have access to “professional networks with global reach and career-long impact” (InterAcademy Council, 2004, p. 180). As my research shows, maintaining professional networks is an important value for returnees and the prospect of losing professional connections is significant in the decision-making process. There are several ways in which to do this. I have already mentioned some above in the policy section, such as developing centers of excellence, where national and international scholars can congregate around pressing development research topics, a making provision for various forms of short-term and long-term return for expatriate scholars with key technical expertise in areas important to the national development agenda. I have also mentioned the need to provide support for conference travel and participation in scholarly gatherings on a regional and international level.

Institutions can also take steps to meet this need among their returning scholars. One topic of importance that was mentioned several times in the course of my interviews with returning scholars was that there was no provision made for reentry among the returnees. Several of the returnees said that they felt confusion and isolation upon their return because the assumption was that they were “coming home” and did not, therefore, need assistance with the readjustment process. Many of these returnees had been outside the country for periods up to a decade in their combined masters and PhD studies. The result was that they suffered a form of

reverse culture shock as they returned to a culture that had changed much in their absence. One of the most inexpensive ways would be to provide faculty mentors for the newly returned, especially for those who are joining the higher education system for the first time. It is far different to be a student and to be a faculty member. What may be obvious to a faculty member is not so obvious to a student. Many of the young returnees especially had no faculty experience at all prior to their return, much less experience in the academic faculty culture of their home country. Mentoring has proven to be an effective way to encourage and retain new faculty generally (Austin, Gamson, & ERIC Clearinghouse on Higher Education, 1983; Berk, Berg, Mortimer, Walton-Moss, & Yeo, 2005; J. M. Gappa, et al., 2007; Peters & Boylston, 2006; Sands, Parson, & Duane, 1991) and would have an important impact on returning scholars as well.

Another relatively inexpensive means of surrounding returning scholars with a research community is the already aforementioned support for conference travel. Academic conferences not only allow the researcher to get out of his or her context, albeit briefly, in order to see things from a new perspective, but also allows for the building of new networks and maintaining old ones (Camic, Gross, & Lamont, 2012; Mitchell & Nicholas, 2006). The returnees I interviewed frequently noted that they had been able to maintain their professional relationships with colleagues in their destination country due to interaction at conferences, some of them based on on-going collaborations that they had developed before their departure. Universities would do well to encourage and support attendance at academic conferences for their returning scholars.

Publishing Support

Finally, institutions can support their researchers by supporting and encouraging publication. This goes beyond the usual publish or die mantra, since in many developing higher

education systems it is easy enough not to publish. When looking at the world citation indices, it is obvious that publishing in developing higher education systems is not only not required, it is almost impossible due to the lack of support for research and the imposition of prohibitive workloads (Altbach, 2003; Berberet, 2002; Boyer, et al., 1994). For this reason, young faculty who are still looking to establish themselves as researchers may be reluctant to return. If returnee faculty are to be attracted to country of origin, institutions must make means to support both research and publishing. As noted in the international criteria for ranking institutions, there is, in the end, no substitute for publication.

Conclusion

At the beginning of this work I posed four research questions. It is time, now to return to these and address them specifically based on the preponderance of evidence that I have presented in this study.

What motivates Chinese PhDs that have received their degrees in a foreign country to return to China to pursue their academic careers?

My research shows that Chinese PhDs who have received their degrees in a foreign higher education system return for a variety of reasons which make up part of a personal values matrix. Almost without exception, however, the return was motivated primarily by professional factors. Paramount among those factors were two in particular: the desire to make an impact and the opportunity for advancement. Almost without exception, the group of returnees that I interviewed for this study mentioned these two factors in their responses. These two driving factors were surrounded by a wealth of other, diverse factors. For some, personal issues, such as family, were a strong secondary motivation for return. For others, socio-cultural issues drove the equation. And for still others, having a firm contract offer on the table was the tipping point for

return. As mentioned, these decisions were highly personal and no two decisions were the same, but generally speaking, the decision to return is made when the values matrix held by the individual was better serviced by conditions in the country of origin than they could be serviced by conditions in the country of destination.

Of the four factors motivating return identified in previous studies (personal, professional, organizational, and socio-cultural), on which do returning scholars put more emphasis?

There is no single answer to this question. All decisions were highly personal and no two decisions were the same. Nevertheless, there was a strong bias toward professional factors in the return decision. I think it is possible to say that all return decisions in this study were, in the end, professional decisions, but that the secondary decision-making structure was unique to each individual.

Do these emphases differ by age, gender, marital status, number of children, discipline or area of study? And if so, what patterns emerge?

Yes, I detected statistically significant variance among different demographic groups in the decision making process. The following functions detail those demographic variances.

$$f(Pr) = (T, R, A, E, \mathcal{E}; Ag, Ms)$$

The influence of professional factors varied by age and marital status. In effect, the older the returnee, the more significant the professional environment was in the decision to return. Also, married returnees valued professional factors more highly than single returnees. In the foregoing chapters I reflected on possible reasons for this. Most important among them is the probability that older, married students feel a greater weight of responsibility for their families and therefore are more keen to explore the professional environment before return in order to ensure that the circumstances can provide the kind of security that she or he needs in order to

care for his or her family. Younger and single returnees were less risk averse and less felt freer to uproot themselves and leave the country again if circumstances did not work to their advantage.

$$f(Pe) = (F, Fr, M, RA, \mathcal{E}; G, Ms)$$

Personal factors showed greater influence on the return decision among females and among the single. This I attributed in part to Chinese traditional culture, there is a certain stigma to single women living outside their family homes, whether alone or with others. It was clear in the interviews that single females felt less comfortable with the possibility of living alone in a foreign country. Desire for a Chinese partner also motivated some of these return decisions; this was true of single men as well as single women.

$$f(In) = (Pg, L, J, Sc, \mathcal{E}; Ms)$$

Institutional factors were more influential in return decisions among the married. This was not gender specific. I speculated that this may be due to the fact that the institutional factor was composed primarily of those factors that were part of a firm contract offered by the institution. This represented a level of job security that was, apparently, more attractive to married returnees than it was to single returnees.

$$f(SC) = (Im, C, Lg, Id, \mathcal{E}; Ms, Tr, Ds)$$

Socio-cultural factors were more important to those who were single, who had returned more than nine years prior to their interview, and who were part of the natural sciences. I speculated that this variance might be explained by the fact that those who were single were still keen on finding a spouse and allegiance to their own cultural was an important part of that search. I also noted that earlier returnees had gone through the Cultural Revolution, were, to a person, sponsored in their foreign education by government entities, and seemed to have a different, somewhat more nostalgic attitude toward China as a nation, toward the communist party, and

toward their own role in nation building than more recent returnees. Also, those in the natural sciences, to a person, mentioned the importance of math and science education in China. Being themselves a product of the Chinese math and science education system, they felt that they, as professionals, had been better prepared in their educational background than their counterparts in other education systems. They desired this same educational rigor for their children and this desire was influential in their decision to return.

How might this decision making process be modeled in a utility function?

In Chapter 4, I modeled the decision to return with the following function:

$$P = (\sum Vc0 - \sum Vc1) > 0 = 1 - \Phi(z; Pg)$$

The probability of return is determined by the sum of circumstances corresponding to the matrix of weighted values of the individual in country of origin less the sum of those circumstances in the destination country. If circumstances in the country of origin better service the values matrix of the individual in country of origin than they do in the destination country, the individual scholar will return.

Future Research Directions

This research process has yielded many rich veins for future research on the return of scholars in the area of scholar migration and higher education development. Among the future challenges for researchers implied by this study is to scale this qualitative study into a quantitative study on motivation for return. An initial study should be done in China, constructing a research instrument based on the findings of this research presented here. Yet, the potential of this study can only fully be realized if such a quantitative study were to be applied in various regions of the world in order to answer the question of whether this model is culture specific or whether it is capable of being generalized.

Another area of interest in this study is the role of gender in academic migration. Are men more prone to be risk takers than women? If so, in what way? I have shown, in the results of my research, that single women tend to be more prone to return to country of origin than single men. Is that phenomenon unique to Chinese culture or would that be true across cultures?

I also noted, but did not tap, the question of whether and which government policies affect return decisions. Is it possible for governments to set policies that result in higher return rates? Also, I assumed but did not test the assumption that the return to country of origin was better for the country of origin, but is that always the case. My research raises the question as to whether return is actually better for the scholar and better for the country of origin. Given the current age of mobility and virtual communication, does it really matter that much whether scholars physically return to country of origin?

Finally, would these conditions hold true for other developing higher education systems. The Chinese system is unique in the sense that it is currently financed at extraordinarily high levels by the central government and has the support of the policy makers in the pursuit of a world-class higher education system. Most developing countries do not have that kind of financial largess or public support to pursue the return of scholars so aggressively.

In conclusion, then, I have found that there is an increasing trend among foreign trained Chinese PhDs to return to China to pursue their academic careers. This trend is fueled by increasingly competitive conditions in the academic workplace in developed countries and favorably changing conditions in the academic workplace in China. Although economic rewards for returning faculty are improving, the decision-making process is an example of microeconomic decision-making. In pursuit of human capital accumulation within higher education systems, then, it would be wise for policy makers to avoid overly formulaic

approaches to scholar recruitment and to focus on the many non-economic factors that enter into the decision-making process.

It is my hope that these findings will be a significant contribution to the understanding in the scholarly community of the return migration decision among foreign trained PhDs. For countries hoping to build higher education systems that will effectively service national development agendas, this information will be vital. It is my hope, that, upon the completion of this degree process, I can begin to model this data across continents, regions, and localities, in search of a universal statement on modeling return decisions.

APPENDICES

APPENDIX 1

Strengths and Weaknesses of Different Methods According to Johnson and Onwuegbuzie

(2004)

Table 25: Strengths and Weaknesses of Qualitative Research (Johnson & Onwuegbuzie, 2004)

Strengths

- The data are based on the participants' own categories of meaning.
- It is useful for studying a limited number of cases in depth.
- It is useful for describing complex phenomena.
- Provides individual case information.
- Can conduct cross-case comparisons and analysis.
- Provides understanding and description of people's personal experiences of phenomena (i.e., the "emic" or insider's viewpoint).
- Can describe, in rich detail, phenomena as they are situated and embedded in local contexts.
- The researcher identifies contextual and setting factors as they relate to the phenomenon of interest.
- The researcher can study dynamic processes (i.e., documenting sequential patterns and change).
- The researcher can use the primarily qualitative method of "grounded theory" to generate inductively a tentative but explanatory theory about a phenomenon.
- Can determine how participants interpret "constructs" (e.g., self-esteem, IQ).
- Data are usually collected in naturalistic settings in qualitative research.
- Qualitative approaches are responsive to local situations, conditions, and stakeholders' needs.

- Qualitative researchers are responsive to changes that occur during the conduct of a study (especially during extended fieldwork) and may shift the focus of their studies as a result.
- Qualitative data in the words and categories of participants lend themselves to exploring how and why phenomena occur.
- One can use an important case to demonstrate vividly a phenomenon to the readers of a report.
- Determine *idiographic* causation (i.e., determination of causes of a particular event).

Weaknesses

- Knowledge produced may not generalize to other people or other settings (i.e., findings may be unique to the relatively few people included in the research study).
- It is difficult to make quantitative predictions.
- It is more difficult to test hypotheses and theories.
- It may have lower credibility with some administrators and commissioners of programs.
- It generally takes more time to collect the data when compared to quantitative research.
- Data analysis is often time consuming.
- The results are more easily influenced by the researcher's personal biases and idiosyncrasies.

Table 26: Strengths and Weaknesses of Quantitative Research (Johnson & Onwuegbuzie, 2004)

Strengths	Weaknesses
• Testing and validating already constructed theories about how (and to a lesser degree, why) phenomena occur. • Testing hypotheses that are constructed before the data are collected. Can generalize research findings when the data are based on random samples of sufficient size. • Can generalize a research finding when it has been replicated on many different populations and subpopulations. • Useful for obtaining data that allow quantitative predictions to be made. • The researcher may construct a situation	• The researcher's categories that are used may not reflect local constituencies' understandings. • The researcher's theories that are used may not reflect local constituencies' understandings. • The researcher may miss out on phenomena occurring because of the focus of the theory or hypothesis generation (called the confirmation bias). • Knowledge produced may be too abstract and general for direct application to specific local situations, contexts and individuals.

Table 26 (cont'd)

Strengths	Weaknesses
• that eliminates the confounding influences of many variables, allowing one to more credibly assess cause-and-effect relationships. • Data collection using some quantitative methods is relatively quick (e.g., telephone interviews). • Provides precise, quantitative, numerical data. • Data analysis is relatively less time consuming (using statistical software). • The research results are relatively independent of the researcher (e.g., effect size, statistical significance). • It may have higher credibility with people in power (e.g., administrators, politicians, people who fund programs). It is useful for studying large numbers of people.	

Table 27: Strengths and Weaknesses of Mixed Methods Research (Johnson & Onwuegbuzie, 2004)

Strengths

- Words, pictures, and narrative can be used to add meaning to numbers.
- Numbers can be used to add precision to words, pictures, and narrative.
- Can provide quantitative and qualitative research strengths (i.e., see strengths listed in Tables 3 and 4).
- Researcher can generate and test a grounded theory.
- Can answer a broader and more complete range of research questions because the researcher is not confined to a single method or approach.
- The specific mixed *research designs* discussed in this article have specific strengths and weaknesses that should be considered (e.g., in a two-stage sequential design, the Stage 1 results can be used to develop and inform the purpose and design of the Stage 2 component).
- A researcher can use the strengths of an additional method to overcome the weaknesses in another method by using both in a research study.
- Can provide stronger evidence for a conclusion through convergence and corroboration of findings.

- Can add insights and understanding that might be missed when only a single method is used.
- Can be used to increase the generalizability of the results.
- Qualitative and quantitative research used together produce more complete knowledge necessary to inform theory and practice.

Weaknesses

- Can be difficult for a single researcher to carry out both qualitative and quantitative research, especially if two or more approaches are expected to be used concurrently; it may require a research team.
- Researcher has to learn about multiple methods and approaches and understand how to mix them appropriately.
- Methodological purists contend that one should always work within either a qualitative or a quantitative paradigm.
- More expensive.
- More time consuming.
- Some of the details of mixed research remain to be worked out fully by research methodologists (e.g., problems of paradigm mixing, how to qualitatively analyze quantitative data, how to interpret conflicting results).

APPENDIX 2

IRB Determination of Exemption

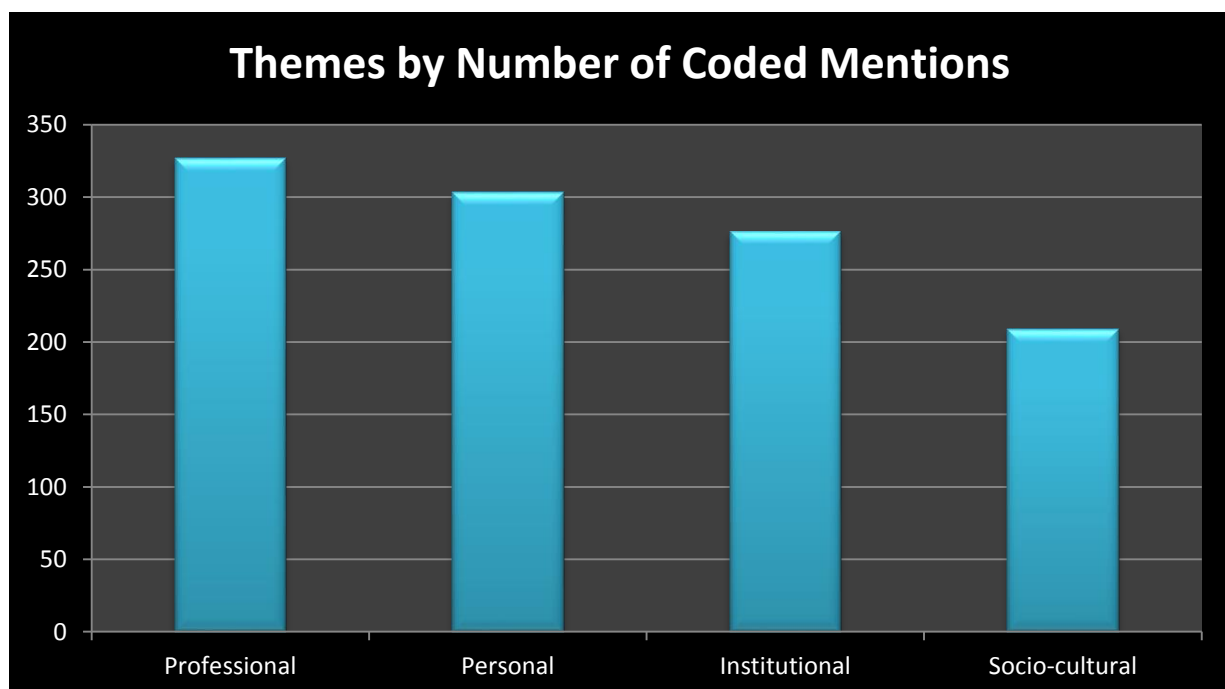
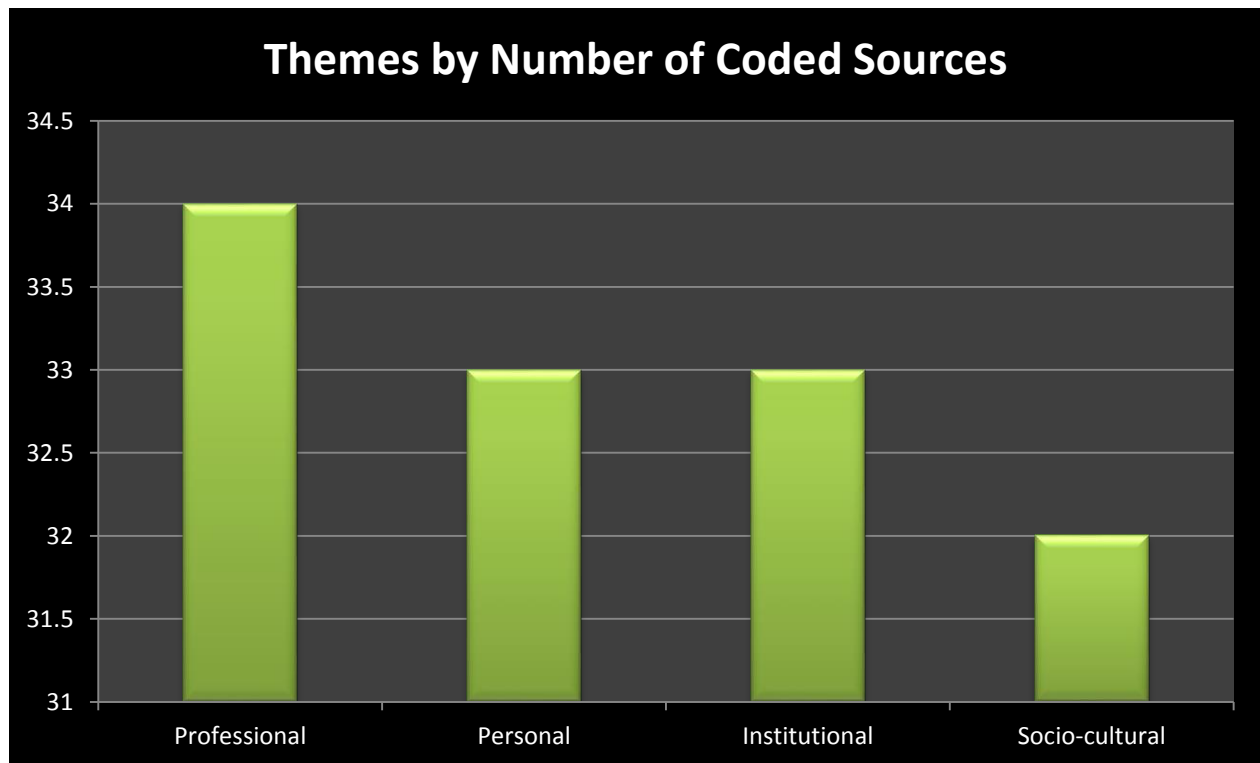
Figure 36: IRB Determination of Exemption

 MICHIGAN STATE UNIVERSITY	Initial IRB Application Determination *Exempt*
June 1, 2012	
To: Reimutse Mabohela 427 Erickson Hall	
Re: IRB#12-571e Category: Exempt 1-2 Approval Date: June 1, 2012	
Title: Migration and Motivation: Reasons for Return among Chinese Foreign Doctoral Recipients	
The Institutional Review Board has completed their review of your project. I am pleased to advise you that your project has been deemed as exempt in accordance with federal regulations.	
The IRB has found that your research project meets the criteria for exempt status and the criteria for the protection of human subjects in exempt research. Under our exempt policy the Principal Investigator assumes the responsibilities for the protection of human subjects in this project as outlined in the assurance letter and exempt educational material. The IRB office has received your signed assurance for exempt research. A copy of this signed agreement is appended for your information and records.	
Renewals: Exempt protocols do <u>not</u> need to be renewed. If the project is completed, please submit an <i>Application for Permanent Closure</i> .	
Revisions: Exempt protocols do <u>not</u> require revisions. However, if changes are made to a protocol that may no longer meet the exempt criteria, a new initial application will be required.	
Problems: If issues should arise during the conduct of the research, such as unanticipated problems, adverse events, or any problem that may increase the risk to the human subjects and change the category of review, notify the IRB office promptly. Any complaints from participants regarding the risk and benefits of the project must be reported to the IRB.	
Follow-up: If your exempt project is not completed and closed after <u>three years</u> , the IRB office will contact you regarding the status of the project and to verify that no changes have occurred that may affect exempt status.	
Please use the IRB number listed above on any forms submitted which relate to this project, or on any correspondence with the IRB office.	
Good luck in your research. If we can be of further assistance, please contact us at 517-355-2180 or via email at IRB@msu.edu . Thank you for your cooperation.	
Sincerely,	
	
Harry McGee, MPH SIRB Chair	
cc: John Medendorp	
 ODS Hall 408 West Circle Drive, #207 East Lansing, MI 48824 (517) 355-2180 Fax: (517) 432-4503 Email: IRB@msu.edu www.humanresearch.msu.edu	
MSU is an affirmative action, equal opportunity employer.	

APPENDIX 3

Graphic Depiction of Codes by Source and Mention

Figure 37: Themes by Number of Sources and Number of Mentions



APPENDIX 4

Word Count Analysis Results

Table 28: Words Expressing Feeling, Thought, Opinion, Valuation

Word	Count	Weighted Percentage (%)
think	1972	2.36
know	936	1.12
want	683	0.82
good	500	0.60
feel	365	0.44
better	341	0.41
important	275	0.33
wanted	231	0.28
thought	205	0.25
decision	199	0.24
difficult	163	0.20
hard	119	0.14
felt	116	0.14
thinking	115	0.14
care	108	0.13
decided	100	0.12
Total	6,428	7.72

Table 29: Words Expressing Migration, Geographies, Societies, Cultures

Word	Count	Weighted Percentage (%)
China	1272	1.53
back	1004	1.20
Chinese	858	1.03
come	591	0.71
came	348	0.42
stay	341	0.41
Beijing	262	0.31
culture	244	0.29
English	217	0.26
country	193	0.23
Shanghai	177	0.21
American	169	0.20
United States	134	0.16
stayed	132	0.16
international	128	0.15
city	127	0.15
abroad	119	0.14

Table 29 (cont'd)

language	113	0.14
Total	6534	7.83

Table 30: Words Expressing Academics, Work, Career

Word	Count	Weighted Percentage (%)
university	809	0.97
research	701	0.84
work	582	0.70
education	399	0.48
job	324	0.39
school	310	0.37
students	275	0.33
universities	223	0.27
professor	216	0.26
faculty	212	0.25
PhD	201	0.24
position	192	0.23
career	172	0.21
environment	172	0.21
working	172	0.21
funding	168	0.20
money	161	0.19
colleagues	145	0.17
salary	141	0.17
scholars	139	0.17
teaching	139	0.17
department	137	0.16
program	129	0.15
professors	121	0.15
study	121	0.15
course	120	0.14
area [of study]	119	0.14
company	110	0.13
institute	109	0.13
field	105	0.13
level	104	0.12
opportunities	103	0.12
future	102	0.12
writing	102	0.12
Total	7335	8.79

Table 31: Words Expressing Relationships

Word	Count	Weighted Percentage (%)
family	275	0.33
husband	251	0.30
parents	242	0.29
friends	150	0.18
wife	138	0.17
social	123	0.15
Total	1179	1.42

Table 32: Words Expressing Government, Law, Policy

Word	Count	Weighted Percentage (%)
government	186	0.22
law	169	0.20
system	113	0.14
policy	108	0.13
Total	576	.69

APPENDIX 5

Word Tree Analysis Graphics

Figure 38: Word Tree Analysis of the Word “China”

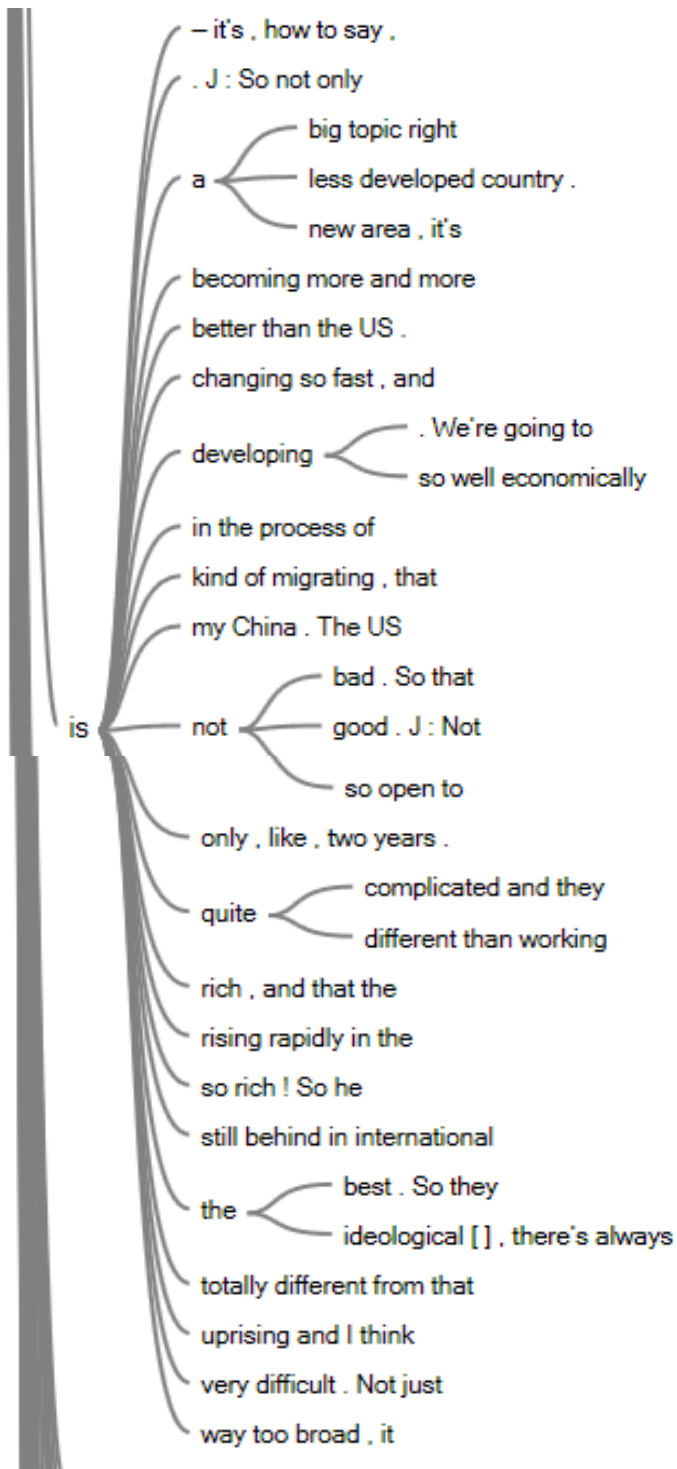


Figure 39: Word Tree Analysis of the Word “University”

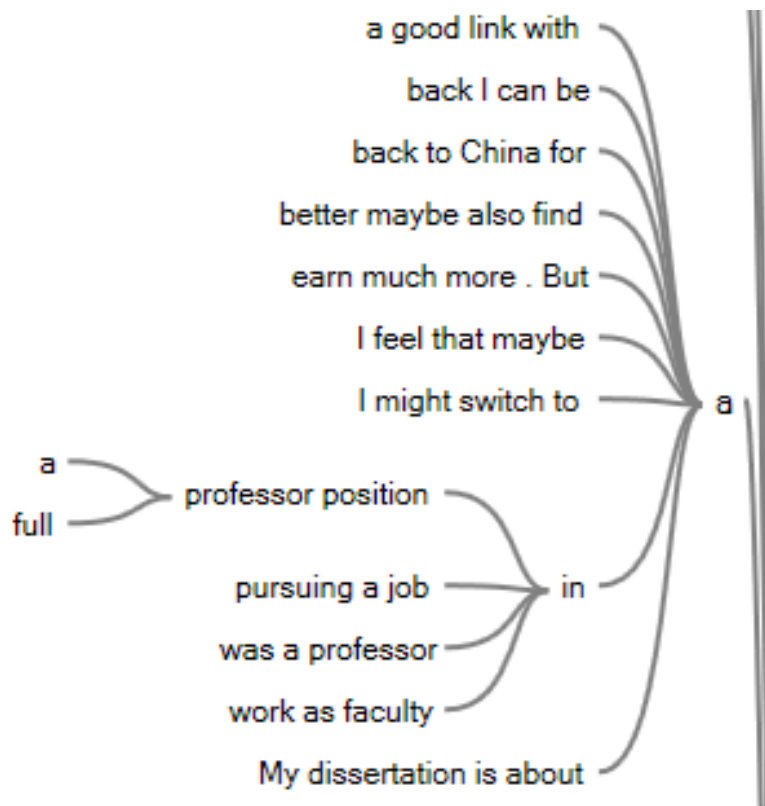


Figure 40: Word Tree Analysis of “Xinhua University”

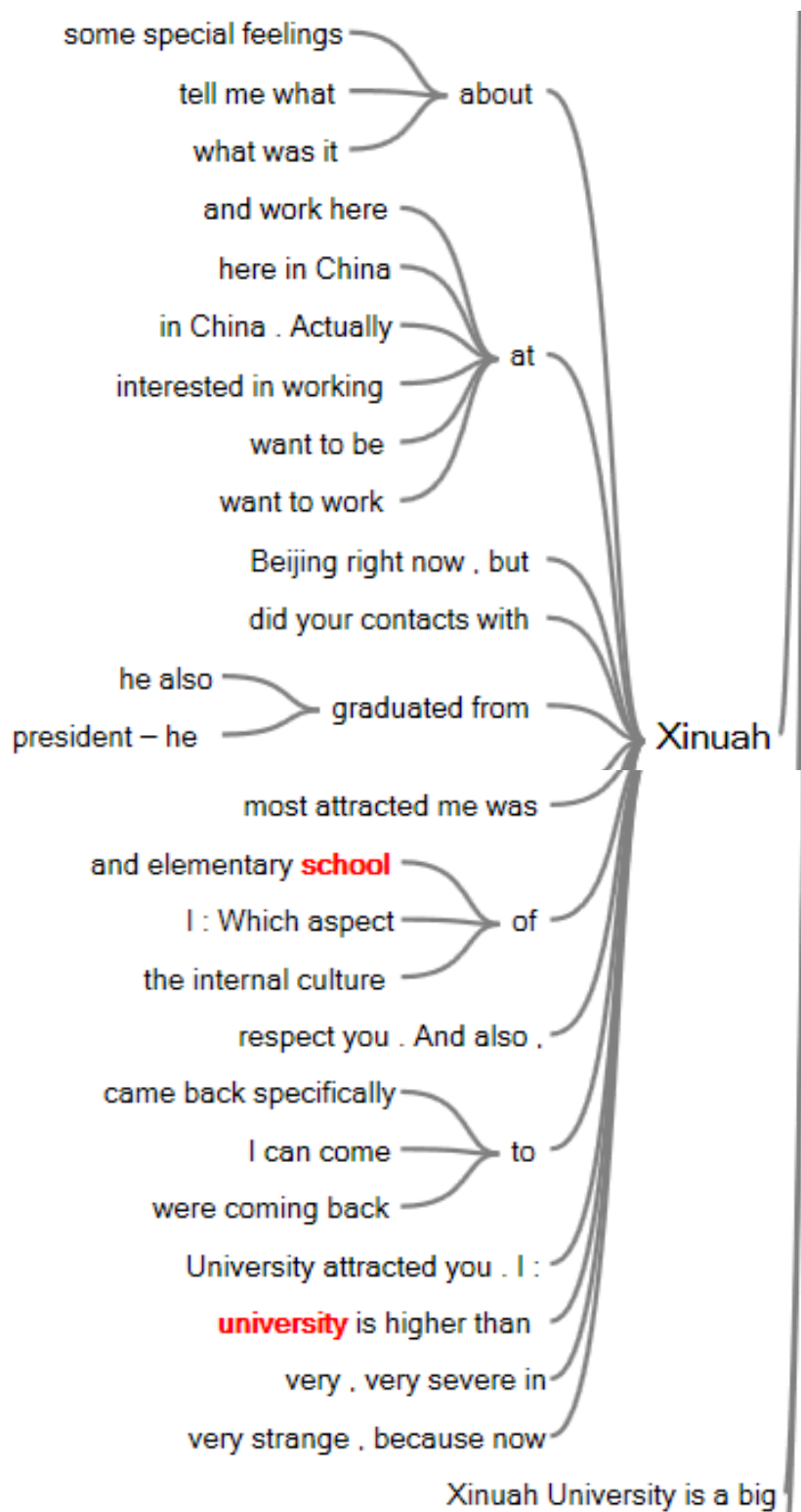


Figure 41: Word Tree Analysis of Peking/Beijing University

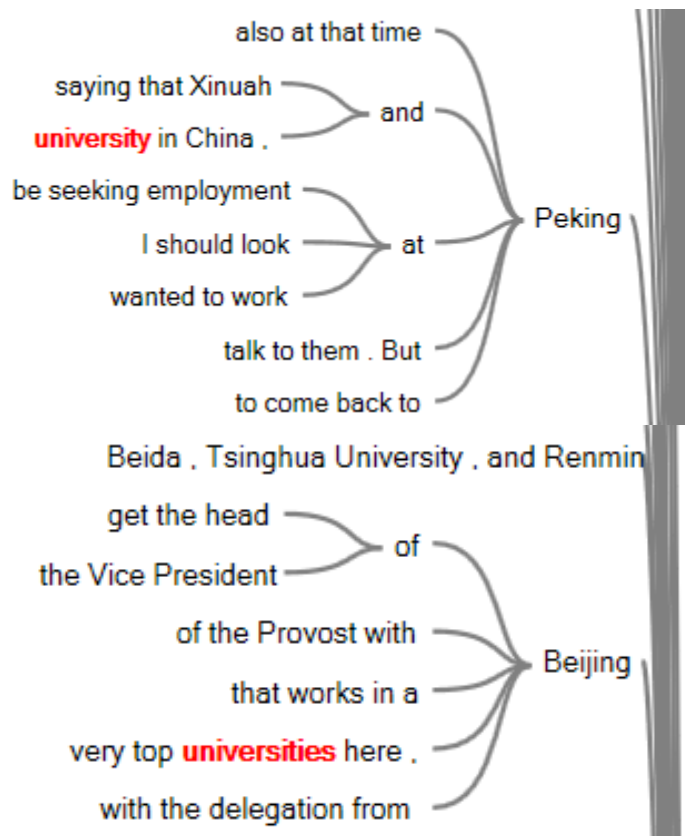


Figure 42: Word Tree Analysis of “Research”



Figure 43: Word Tree Analysis of Can/Could Work

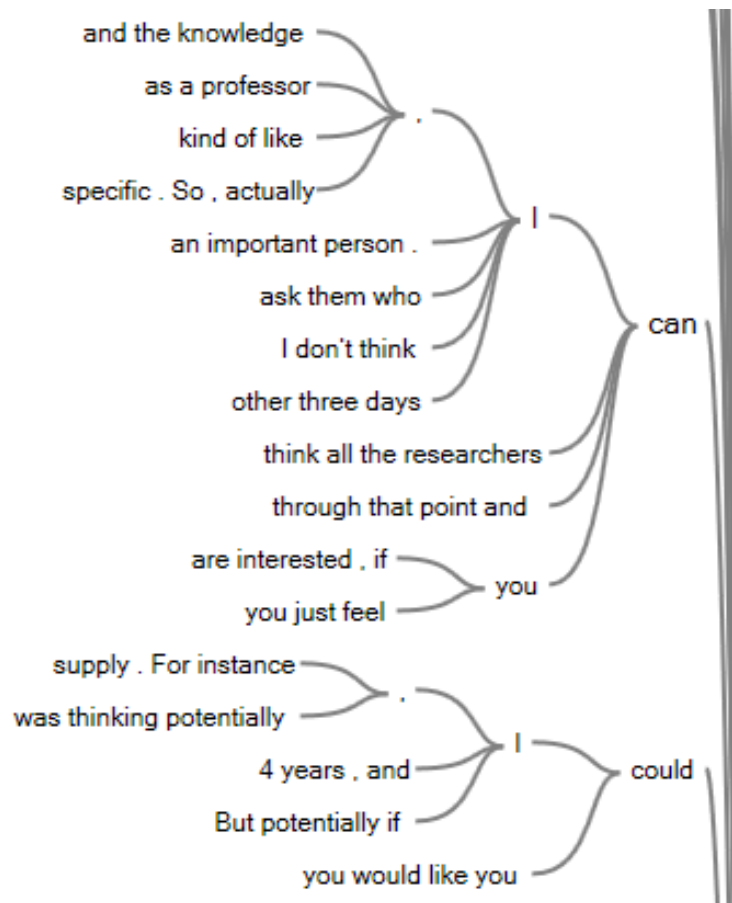


Figure 44: Word Tree Analysis of “Want/Wanted to Work”

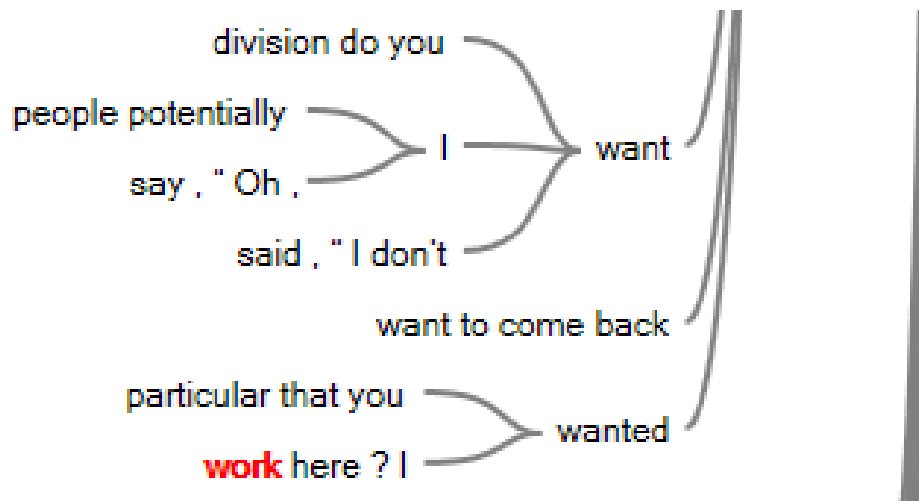


Figure 45: Word Tree Analysis of “Work with”

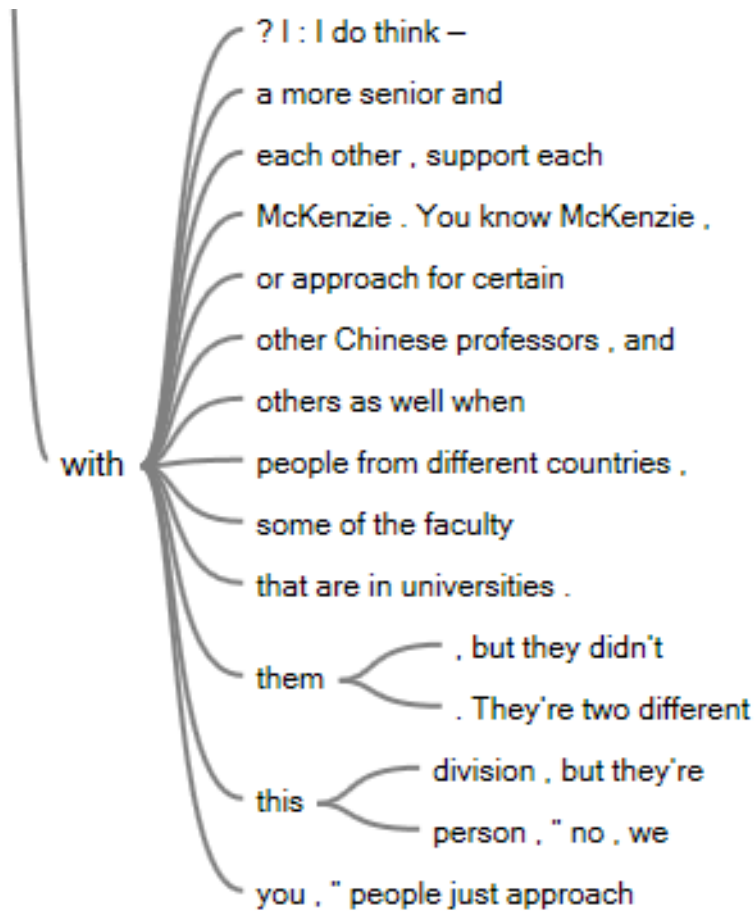


Figure 46: Word Tree Analysis of “Because my Husband”

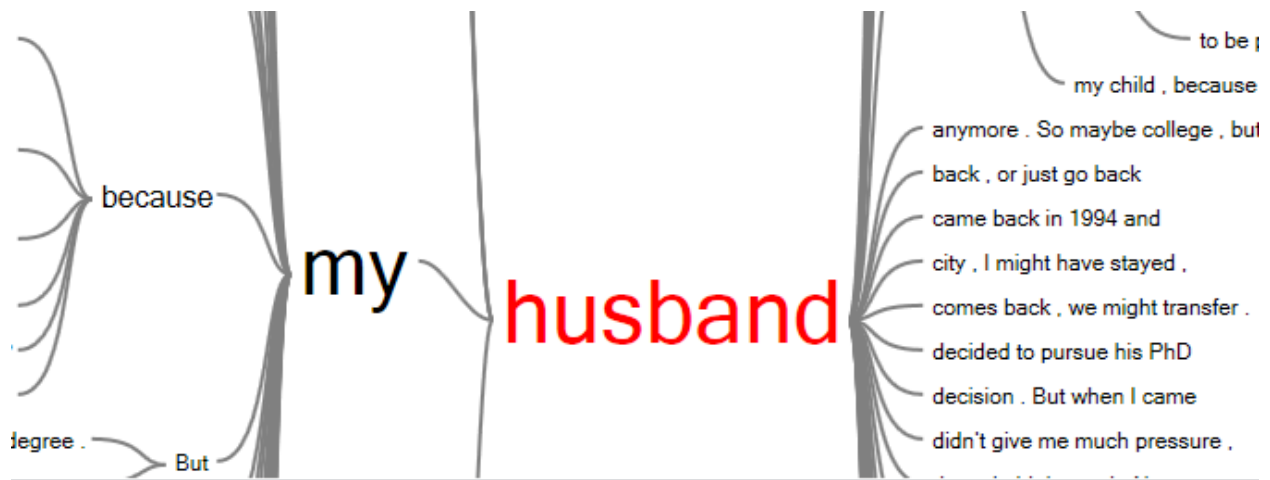


Figure 47: Word Tree Analysis of “Family”

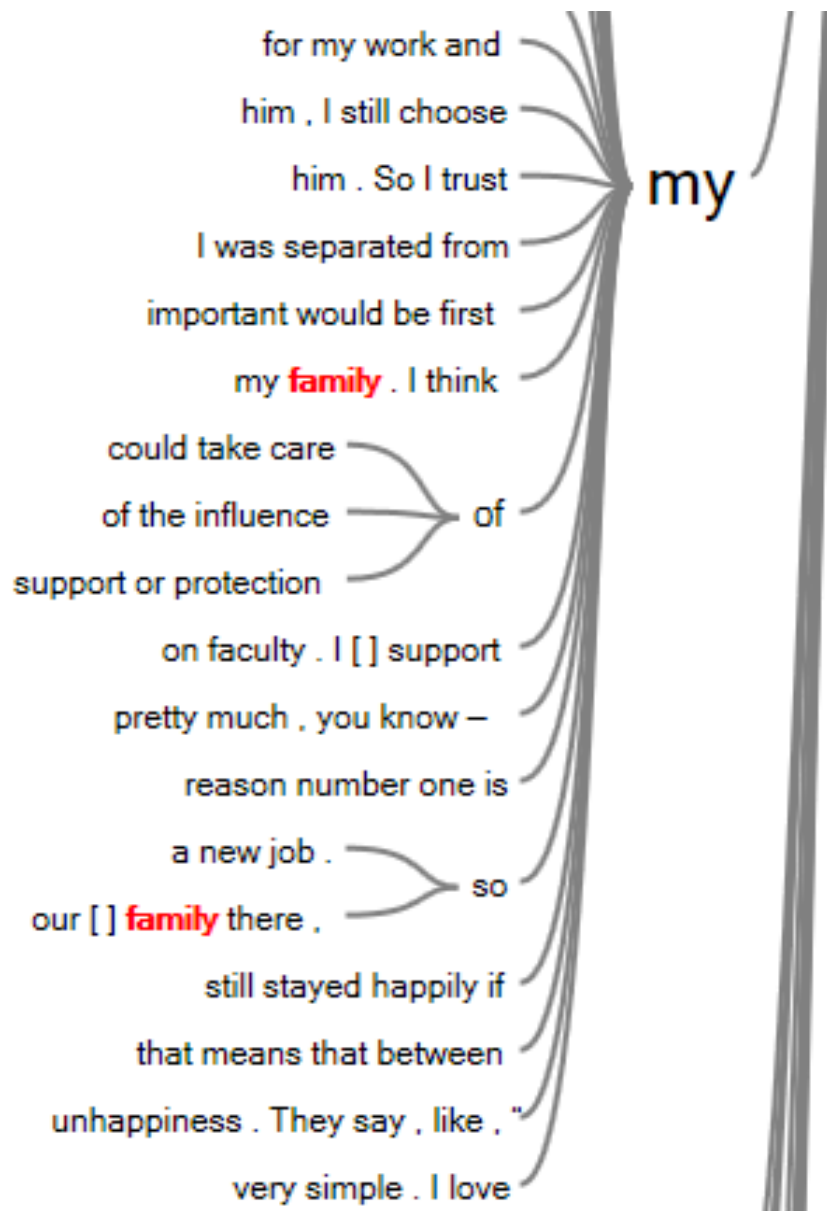
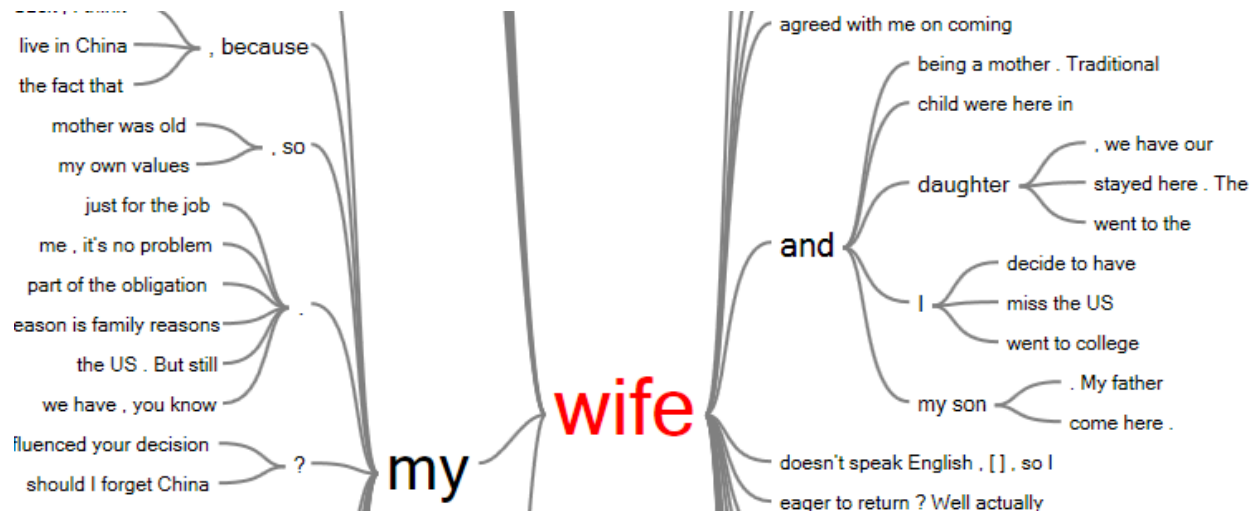


Figure 48: Word Tree Analysis of “My Wife”

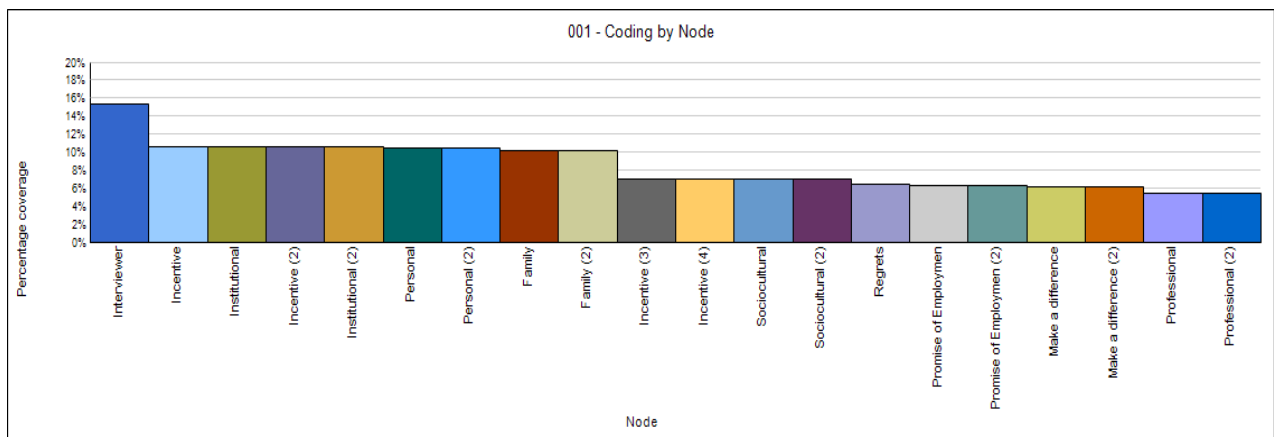


APPENDIX 6

Using NVivo Semantic Software to Generate Proxies

In Figure 47, I have included a readout of NVivo's coding analysis function. The display depicts the various percentages of the coded responses of a single theme. In other words, the percentages represent the total amount of coded responses that were devoted to each themes, category, and code. There are a couple of important things to note about this graphic in order to

Figure 49: NVivo Readout of Single Source Coding



avoid the misinterpretation of data. First, the blue column included in this graphic on the far left indicates the percentage of the transcribed text that was taken up by the interviewer's questions. In order to accurately measure the percentage of text devoted to each theme, this number must be removed from the calculation of percentages and percentages must be recalculated based on the resulting number. In other words, the following function must be applied to the results:

$$WP = \frac{OP}{100 - IQ}$$

where WP is the weighted percentage, OP is the original percentage detected of a certain coded theme, and IQ is the interviewer's questions. Thus, for example, in the case of the single source depicted above, if we wanted to find the weighted percentage for the Institutional motivation theme listed in the graphic as 10.59% of the total coded responses, we would take the original

percentage (10.59) and divide it by the 100 minus the percentage devoted to the interviewers questions, in this case, 84.64 percent. The resulting weighted percentage would then be 12.51 percent.

A second, similar issue is that not all the listed codes have to do with motivation. Thus for example, in this graphic, the code for “regrets” is included, which is not among the themes for motivation since it consists of a post-decision reflection on the correctness of the decision that was made. As a result, we must expand the amount of text that is excluded from the measure of percentage of motivation expressed by the subject on each of the themes. The new formula looks like this:

$$WP = \frac{OP}{100 - NMP}$$

where NMP refers to non-motivational content. Again, using the graphic above as an example:

$$NMP = IQ + R$$

where IQ is interviewer’s questions and R is reflections on regrets. Calculating the percentages represented by positive institutional motivation, we find that 15.36 (IQ) plus 6.5 (R) equals 21.86 percent of the text devoted to non-motivational issues. That means that the total coded text devoted to institutional motivation is 13.55 percent. If one looks at the transcript of subject 001, one finds that this relative percentage is an accurate reflection of the interests of the subject, for whom returning to his home institution in order to bring about change and reform was the greatest motivator for return.

One final issue with the interpretation of this data is that some of the measures appear to be repeated. Thus, for example, in the graphic above, the first four bars are duplicated and the percentage of text listed for each one of the bars is the same percentage. There are two reasons for this. First, the repetition of the first and fourth bar are due to the fact that in the hierarchy of

categorization, these percentages are contained under the overarching heading of motivation, and under the subheading of institutional motivation, and then again, under the further subheading of institutional incentive, as can be seen from Table 34, which gives the paths of the various percentages given in the graphic:

Table 33: Breakdown of Single Source Coding Percentages

Node	Percentage coverage
Nodes\\Interviewer	15.36%
Nodes\\Motivation\\Motivation\\Institutional	10.59%
Nodes\\Motivation\\Motivation\\Institutional\\Incentive	10.59%
Nodes\\Motivation\\Motivation\\Institutional\\Incentive\\Promise of Employment	6.39%
Nodes\\Motivation\\Motivation\\Personal	10.49%
Nodes\\Motivation\\Motivation\\Personal\\Family	10.24%
Nodes\\Motivation\\Motivation\\Professional	5.45%
Nodes\\Motivation\\Motivation\\Sociocultural	7.01%
Nodes\\Motivation\\Motivation\\Sociocultural\\Incentive	7.01%
Nodes\\Motivation\\Motivation\\Sociocultural\\Incentive\\Make a difference	6.15%
Nodes\\Motivation\\Institutional	10.59%
Nodes\\Motivation\\Institutional\\Incentive	10.59%
Nodes\\Motivation\\Institutional\\Incentive\\Promise of Employment	6.39%
Nodes\\Motivation\\Personal\\Incentive	10.49%
Nodes\\Motivation\\Personal\\Family	10.24%
Nodes\\Motivation\\Professional\\Incentive	5.45%

Table 33 (cont'd)

Nodes\\Motivation\\Sociocultural	7.01%
Nodes\\Motivation\\Sociocultural\\Incentive	7.01%
Nodes\\Motivation\\Sociocultural\\Incentive\\Make a difference	6.15%
Nodes\\Regrets	6.50%

The repetition is an unfortunate flaw in the way that NVivo generates its graphics, but can be easily corrected by examining only the percentages under “institutional incentive,” highlighted in red in Table 34. In this case, it is the same percentage in all four because there were no deterrents mentioned in conjunction with institutional motivation. That is, the subject did not consider any negative factors in describing the influence of the particular institution to which he was returning. The institutional motivation described in this case was all positive. In each of the readouts for the individual sources, I have calculated the weighted percentages for each one of the four themes and used these as the proxy for intensity of influence around each one of the four themes. As a result, for example, I have used the following four lines for calculating the proxy scores:

Table 34: Proxy Scores for Four Themes from a Single Coded Source

Node	Percentage coverage
Nodes\\Motivation\\Motivation\\Institutional\\Incentive	10.59%
Nodes\\Motivation\\Motivation\\Personal\\Incentive	10.49%
Nodes\\Motivation\\Motivation\\Professional\\Incentive	5.45%
Nodes\\Motivation\\Motivation\\Sociocultural\\Incentive	7.01%

Using the weighted percentages described above, these four themes are adjusted as follows:

Table 35: Weighted Proxy Scores for Four Themes from a Single Coded Source

Node	Percentage coverage
Nodes\\Motivation\\Motivation\\Institutional\\Incentive	13.55%
Nodes\\Motivation\\Motivation\\Personal\\Incentive	13.42%
Nodes\\Motivation\\Motivation\\Professional\\Incentive	6.97%
Nodes\\Motivation\\Motivation\\Sociocultural\\Incentive	8.97%

In other words, 42.91% of the subjects responses referred to positive motivation for return and of that percentage, 13.55 referred to institutional motivations for return, 13.42 referred to personal motivations for return, 6.79 referred to professional motivation for return, and 8.97% referred to socio-cultural motivation for return.

APPENDIX 7

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