

RETAINING THE BRAINS, POLICIES ADOPTED BY P.R.CHINA TO ATTRACT AND RETAIN RESEARCH TALENT

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ABSTRACT

The major dilemma of developing countries is that they are continuously facing the Brain Drain. "Brain drain" is defined as situation where people with high skills, qualification, and competency, level quite their native countries and emigrate. The foundation of the interest for skilled migrants is economic. The resultant factor is that the economically countries with developed economies routinely exchange high level skills, while less developed world is being brought into skill shortage and talent from these regions shift to developed regions often on permanent bases. Due to this phenomenon the number of researchers is much higher in the developed countries as compare to developing countries. This paper is an effort to give overview of brain drain of researchers from developing countries mainly focusing on China, mention the factors for which people leave their countries and go abroad, policies adopted by China to address the issue and some suggestions regarding policies that can be adopted to retain the talent that is being continuously drained from the developing countries in form of migration of researchers from the developing to developed countries.

Keywords: *Brain Drain, Migration, Developing countries, Researchers*

INTRODUCTION

Reason of migration of people across national boundaries is globalization process. Migrants on family reunification or some other humanitarian reason (asylum) and low-skilled labor represent the bulk of international migrations. Today, with the Globalization, increased demand of scientific & technological skills in international markets is much more than before which even more *critical* for developing countries. Political situations, low job opportunities and social problems, insufficient health facilities and low quality educations are main reasons of these migrations. China is also suffering from the same problem of brains drain. China because of its incorporations with the international markets and the increasing cross-boundary struggle for talented people is helping in transferring more and more educated Chinese technicians and executives to foreign lands. In previous 25 years, many best and brilliant people have left China and moved to western world with anticipation that studying and working abroad offer prosper opportunities. A report compiled by the Academy of Social Sciences in Beijing reported that about two-third of Chinese who have studied abroad since 1980s have chosen not to go back home. According to the report, about 35m people of Chinese origin are living in more than 150 countries around the world. The fast growing economy of china needs to have more and more skilled workforce day by day. In this regard Chinese government and higher education institutes/ universities have taken some steps to attract and retain the scientists and engineers to China for utilizing their capabilities.

LITERATURE REVIEW

'Brain drain' is identical to mobility of human capital where the overall stream of expertise is heavily in one direction (Salt, 1997). The word 'brain' is concerned with skill/competency or any quality that is considered as a possible asset. 'Drain' involves greater exit than 'normal' or desired. Connecting the two entails the departure of talented people at an increasing rate (Bushnell and Choy, 2001). Initially brain drain was exemplified as a developing-developed country issue (Carrington and Detragiache, 1999). And was set on the perception that the phenomenon was disadvantageous to the native country (Carrington and Detragiache, 1999), but then it was observed that brain drain is conditioned with political and economic disparities in the world (Portes, 1976; Lidgard and Gilson, 2001). High demand for researchers and scientists has led to an increase in skilled migration in recent years (Kristian Thorn and Lauritz B. Holm-Nielsen, 2006). In Internationally available data about the migration of skilled proves an increase in migration flow during 1990s, from Asian countries to the

US, Canada, Australia and UK. This is due to increased organizational demands for Economic Co-operation and Development (OECD) countries in area of IT and other skills as well as the advantages that are being offered to migrant workers. The extent of the brain drain especially of the emigration of researchers has always been hard to assess, due to the lack of comparable statistics across diverse countries. However partial assessments during 1970s and 1980s, showed that 825,000 skilled immigrants came to American countries during these years (UNCTAD 1987), number of people from developing countries is also increased in developed countries. The SESTAT database (NSF) reveals that in 1995, 12% of the 12 million people with science and engineering degrees or occupations in the U.S.A. are of overseas origin (More than 72% were born in a developing country). Due to this brain drain developing countries are facing the problem of low efficiencies. Approximately foreign researchers from developing countries generate 4.5 more publications and 10 times extra patents than their native counterparts. What is the reason of difference in productive competence? The major limitation for developing countries arises from their inadequate resources to boost investments in R&D. If we consider an overview of the International R&D, we will come to know that in R&D maximum funds are coming from tiny number of developed countries. According to Science and Engineering indicators by NSF, in 2000, global R&D expenditures were amounting at least \$729 billion, US and Japan was contributing to half of it. The R&D performance of OECD countries rose to \$652 billion in 2002. This heavy investment in R& D sector is great attraction for the researchers for moving themselves from developing to developed countries. There is a need of fostering of creative basic research to promote scientific advancement through increasing the R&D budget. Brain drain is having many negative effects for developing countries like losing talent especially in the areas of education and health (J. Crush, 2010, Sally 2004) Countries can generate opportunities for research and innovation at home to motivate a return flow of migrants (Guellec, 2002)

OBJECTIVES

The basic objective of this research is to:

1. Exploring the reasons and impact of Brain Drain in contexts of developing countries.
2. Taking People Republic of China as an example to draw and suggest some recommendations for reducing and reversing the Brain Drain phenomenon.

China Actions and Policies for Attracting back and Retaining the Researchers

Chinese's governments at irrespective of national, provincial, or municipal level are actively putting efforts to get overseas scholars back to China. China's leaders are aware of the importance of the "reverse brain drain," they support it, and make it significant element of the national strategy of "building the country through science and education. At the beginning of reform and opening up, the total level of Chinese talents of science and technology was low, which had a great distance comparing with other foreign countries. thus, it became one of the key constructions in Chinese talents of science and technology to send them go abroad to study. On one hand, the government support students to go abroad to study, and on the other hand, the government take many measures to encourage the talents both at home and abroad to work in China. Government set up special institutions for task of studying abroad and importing talents and drew up many related policies. China Scholarship Council is an organization that is responsible for organizing, supporting and managing those Chinese who going abroad to study and those foreigners who come to China to study, benefiting the co operations between Chinese and other countries in fields of education, science and technology, culture communication and economy trade, and strengthening the friendship and understanding between Chinese and people in other countries. a series of prescriptions, regulations were drawn up to ensure that these people who are going abroad for study will come back to serve china etc. With the attachment and supporting of the government, the talents importing have made great progress. From 1978 to 2007, there were 121,170,000 people going abroad to study, among whom 31,970,000 came back to work in China. China is quite successful in creating a positive environment for returnees. Expect the number of returnees to continue to grow increases in the number of returnees is result of the efforts in this regard (Fig-1)

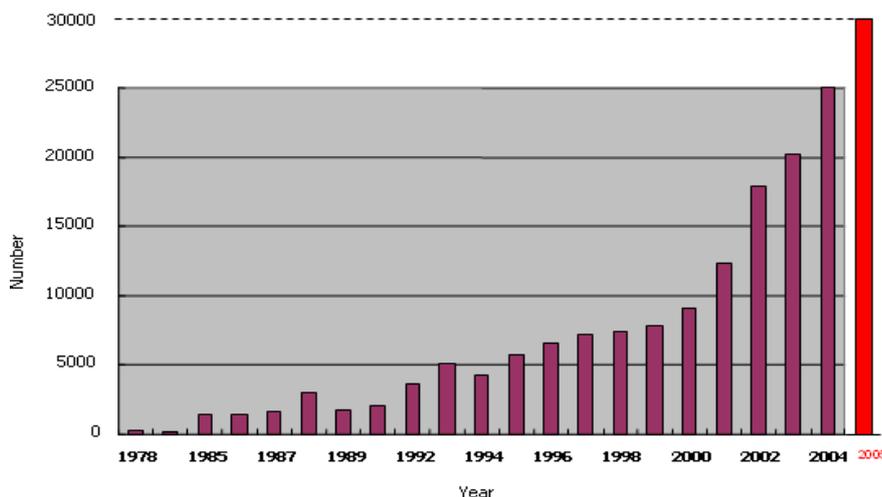


Fig 1- Source: *China Statistical Yearbook, 2004*, p. 781.

Fundamental Strategic Policies adopted to Fulfill the Objective are of two main types one is to rejuvenate China through Science and Education” and second to develop China through Talent” Chinese government has taken 2 measures to guarantee the implementation of Strategic Policies for training high-level talents to attract overseas Chinese Students and Scholars through International Brain exchange. Interviews with CAS Scientists, 2002 and 2004, showed that main reasons behind the return decision are freedom to come and go, changes in the domestic environment like Political stability, and the way the government uses people in research. The access to high-quality education and research opportunities are the main sources for retaining and attracting talent. Clearly China’s government has successfully created an environment attractive to returnees. From 1978 to 2003, 700,200 Chinese students and scholars went to 108 countries around the world, in various disciplines. Both the measure and level was unprecedented in the China’s history. Attracted to efforts made by Chinese policy makers’ total of 172,800 returned back, but 527,400 who haven’t returned yet, 356,600 are still studying, doing researches or visiting as scholars in foreign HEIs. China has developed and implemented many programs and policies offer premium salaries, generous research budgets for luring back the talent gone abroad and to make the young talent stay home. Here we will discuss the three most prominent programs that are developed to attract and retain the researchers:

- a) 100 scholar program:
- b) National outstanding youth fund:
- c) The Changjiang Scholar Project

a) 100 scholar program:

In order to have fast cultivation of academic leaders, to construct high-level talents, and overcome the gap of talents, Chinese Academy of Sciences proposed “The program of 100 Distinguished Scientists”, which aimed to recruit 100 academic leaders in all fields. Such program is an important practice of talents policy in Chinese Academy of Sciences, and it is the earliest plan of supporting excellent talents. In 1994, fourteen people were selected into program. In 1997, base on specific requirements of “The program of 100 Distinguished Young Scientists”, Chinese Academy of Sciences decided to “expand the army”, and brought sponsors of National Science Fund for Distinguished Young Scholars under the management of the program. In 1998, Chinese Academy of Sciences started pilot project of knowledge innovation, made big adjustment to “the program”, and “the outstanding young research fund”, planned to introduce one hundred outstanding talents abroad during three years, and brought out academic leaders at home. The Central Finance allocated the fund for introducing one hundred outstanding talents abroad. During this period, Chinese Academy of Sciences integrated “the program”. They enrolled talents, whoever is from institutions of higher learning at home and broad, research institution or enterprises according to program plan. The candidates were supposed to come from other units except Chinese Academy of Sciences.. Chinese Academy of Sciences issued the recruiting guide of “one hundred people program”: during five years, introduce 500 outstanding oversea talents; introduce 100 domestic much-needed talents for western region development; introduce 200 outstanding talents for key projects of science and technology innovation; and give continual support to winners of “National Science Fund for Outstanding Youths in Science”. Until the end of 2007, all together 1417 talents were trained among whom 987 are talents from abroad, 25 have been elected as academician, 27 have been leading scientists in national important projects, and 53 have occupied the directors of key laboratory. Talents returning from abroad have become an important part in Chinese talents group. Following table shows the number of researchers who came back through this fund from the year 1998 to year 2005.

Young Scholars Selected into CAS Hundred Talents Program

Year	Number of scholars selected	Domestic” Hundred	Bring in outstanding talents from abroad
1998	104	32	72
1999	115	13	102
2000	203	13	190
2001	116	11	105
2002	108	23	85
2003	84	9	75
2004	175	19	156
2005	175	17	158

Source: annual report Chinese Academy of sciences, 2006

Main objectives of the Academy's "brain gain" precautionary gauges include, the introduction of talented people from abroad; to further support international S&T cooperation and exchanges and development in important disciplines, and to lift the Academy's academic status and competitiveness through out the world. The program constituted of two approaches: recruiting Chinese talent from overseas to carry out research at CAS institutes and other was regarding promoting eminent overseas scholars to carry out short-term studies in China. China to have economic development is now having more focus mainly on science, technology, and education, which in the long run, will lead to a "much more attractive environment" for overseas Chinese scientists. China has newly launched a project to develop 100 universities into world-class institutions that are not only providing higher education training, but are also source employment and research opportunities. Another incentive is in the form of short stay visits, where Chinese scientists are offered project grants to do research in China for a period of one to two months.

b) National outstanding youth fund:

On March 1994 National outstanding youth fund was established for the researchers less than 45 years of age for providing the funds to young scholars to employ them part time or full time status for the basic research institutes. The applicant needs to be doctorate degree holder, high academic level, and strong organization ability. In very first batch 49 people got this fund. Aim of this fund is to train the high level scientists in order to manage the innovation and ability to face new century. The special fund is increased three times successively and the accumulation amount of fund is 1, 170,000,000 Yuan, increase in the fund has increased the allocation amount per person also and it now it is 1, 000,000 from the 600,000 Yuan per person initially. Numbers of people selected for this fund are also increased every year, initially they were 50 in number to about 160 people every year now. For ten years, the national outstanding youth science fund altogether 1174 researchers are accepted out of total 5469 who have applied for this fund, some 1116 people have the doctorate out of which 750 (67.2 %) are having domestic doctorate degree while 366 (32.8) are overseas doctorate degree holders; Some 71 young woman scholar, 29 national minority scholars are also among the selected group. After ten year success practices, this fund became one to be highly appraised by the scientific circles and is inspiring everywhere outstanding young scholars to make them devoted for the motherland science and technology enterprise, it has played vital role in providing stability to basic research people, attracting the personnel went abroad and studied their to return to serve homeland, produced outstanding leaders in different scientific disciplines, cultivated outstanding innovation research community as well as promoted different aspects of overall level of basic research. From 1997 to 2003, some 23 national outstanding youth science fund winner were elected as academician of Chinese Academy of Science, 7 people were chosen as academician of Chinese Academy of engineering. Chinese Academy of Science has altogether 73 unit 414 people to obtain the national outstanding youth science fund; they already became nucleus of the knowledge innovation project. According to Academia Sinica chemistry statistics, during period of 2000-2003 altogether 282 papers in high impact factor were published in 179 are published by outstanding youth science fund subsidized researchers it accounts for 63.5%; in 2004, this fund holders published 18 (94.7%) papers in more than 5 impact factor.

c) The Changjiang (Yangtze) Scholar Project:

In the August of 1998 "The Changjiang Scholar Project" was launched. The program is meant for attracting, selecting, and creating a group of world researchers for advanced research in all fields of higher education. It is the highly recognized program from the Ministry of Education. The appointments are made based on highly competitive criteria at national levels among the nominees made by Chinese universities. Chang Jiang" scholars are given specific financial funding for research and development from a foundation mutually commenced by the Ministry of Education and the Foundation of Li Kai-sing, one of the most renowned entrepreneurs in Hong Kong. Awardees of Chang Jiang Chair Professor need to possess an outstanding research record with internationally recognitions in their area, and are able to develop highly effective research program. Up to now,

the project has gone through two phases. The first phase is from 1998 to 2004. It consists of policy of Distinguished Professor, Chair Professor (for collaborative research in various Chinese universities) and the Changjiang Scholar Award. The second phase is from 2004 to the present. Changjiang Scholar Incentive Program grants financial supports to young and middle-aged top scholars of certain disciplines who are foreign qualified and are invited by Chinese HEIs as Special Professors or Lecture Professors. With the combined efforts made by institutions of high learning and Changjiang scholars program, China have effectively recruited high-level talents to engage in science research and teaching in colleges and universities, especially attract a batch of outstanding overseas scholars returning to make contribution at home. So far, 1030 Changjiang scholars are employed, 473 Chair professors, among which 17 scholars won the Achievement Award, and 233 overseas scholars with the average age of 42 years old. 90% of them are doctors and 90% have overseas studying and training experience; in 2007, 14 of Changjiang scholars were selected as academicians. The "Changjiang Scholar Program" implements the plan of combined development of philosophy and social science and science, increases the number of Chair Scholars, and vigorously attracts more famous overseas scholars. The implementation of "Changjiang Scholars Award" has been greatly readjusted, and the scope of Award was enlarged to include colleges and universities in Hong Kong and Macao, and CAS-affiliated research institutes.

CONCLUSION AND RECOMMENDATIONS

The risk of a brain drain is valid, but still countries can try to create opportunities for researchers at home that can inspire a return flow of migrants and human capital. Returnees also can bring valuable management experience, entrepreneurial skills and access to global networks. The circumstances and conditions in which science and technology can prosper require political support, sufficient funding, developed infrastructure, and a scientific community; which are unavailable in developing countries. Various approaches regarding strengthening the home country's research environment and system are required to attract and tempt back researchers. But this is not an easy task and it is really difficult for countries to lure their talented people back home, people's Republic of China has gained success to some extent in this regard and have adopted different policies discussed in former section for attracting back the talent that has been shifted to developed countries, China has done a lot in this regard like grants for setting up laboratories and research setups. The success experience of China supporting talent to study abroad and import talents from abroad is worth other developing countries to learn and they can consider these steps as an example and can apply these for the restriction of brain drain of researchers from the country and can use this sort of program. Financial and non financial rewards both are important for researchers (Clarke, 1996). High salaries, incentives, supportive culture and environment can be used to achieve such objectives that may include, income supplement from government project grants, are expected to lure back the drained talent and retain the young talent in country. From the review of policies we conclude that the policies and programs implemented by China to retain the talent and attracting talent from abroad are fruitful and have positive impact. We can conclude that we can retain and attract the researchers' talent by providing them:

- **High salaries:** High salaries can act as motivational tool for retaining the young talent at home and also for attracting the talent from abroad. If we can provide the high salaries to the researchers coming from abroad more than the domestic researchers it can be source of attraction for researchers to get back to home. These high salaries can be justified as reward to the international experience of researchers.
- **Research Funding:** it is not necessary that the salaries are important for all researchers some time the research itself is source of motivation for the researchers. Providing the research funds to the researchers to carry out research, to hire research staff for setting up labs and other research setups can also be used for attracting the talent that has been gone abroad back to the homeland, as done by the Changjiang Scholar Project, by China.
- **Collaborations and networking:** some of the researchers if find it more better for their skill application to be staying abroad then through international collaborations and networking their skills can be utilized for the development of science and technology in home country and they can provide the mentoring to the young researcher inside the home country in order to polish the ability of this young talent. These Collaborations between the home and abroad researchers can be good way to share knowledge and countries to have good research.
- **Promotion and reward:** Policies and practice with respect to career progression and promotion need to be optimized to ensure that the most capable and ambitious researchers are not forced to look outside the country in order to progress their careers. Performance based rewards can act as source of attraction to the effective, efficient and progressive research

The relative success of Chinese and other developing countries is attributed in fostering return migrations by formulating the policies for the betterment of returnees and giving them the incentives that are main reasons for their going abroad. No doubt international experience is required to have more productive researchers, in order to have international exposure and continuous learning from the developed countries and to give performance at home developing countries can adopt policies like one created by Dr Abdus Salam (The Nobel Prize in Physics 1979, Pakistan) At the ICTP, Trieste, he instituted the famous "Associate ships" which allowed deserving young physicists to spend their vacations there in an invigorating atmosphere, in close touch with their peers in research and with the leaders in their own field, losing their sense of isolation and returning to their own country for nine months of the academic year refreshed and recharged.

REFERENCE

1. Bushnell, P., Choy, W.K., (2001). Go west, young man, go west!? Treasury Working Paper, 01/07 (Treasury, Wellington).
2. Brain Drain International Encyclopedia of Human Geography, 2009, 342-347
J. Crush, C. Hughes
3. Carrington, W., Detragiache, E.,(1999). International migration and the "brain drain". The Journal of Social, Political and Economic Studies 24, 163–171.
4. Cervantes, M., Guellec, D. (2002), http://www.oecdobserver.org/news/printpage.php/aid/673/The_brain_drain:_Old_myths,new_realities, 7 May, 1–4.
5. George F. Farris (2002), What Do We Know About Managing Scientists And Engineers: A Review Of Recent Literature Graduate School Of Management Rutgers University Newark, N. J. 07102
6. Kristian Thorn1 And Lauritz B. Holm-Nielsen (2006), International Mobility Of Researchers And Scientists Policy Options For Turning A Drain Into A Gain
7. Lidgard, J., Gilson, C., (2001). Return migration of New Zealanders: a profile. In: Proceedings of PANZ Conference, June, 1–20.
8. Sally Davenport (2004)Panic and panacea Brain Drain and science and technology human capital policy Research Policy, 33(4), 617-630
9. Portes, A., (1976). Determinants of the brain drain, In: Kubat, D. (Ed.), The Politics of Return: International Return Migration in Europe. Centre for Migration Studies, New York, 269– 275.
10. Salt, J., (1997). International movements of the highly skilled, OECD Occasional Papers 3.
11. Thomas E. Clarke (1996) , Focus And Expected Impact Of Rewards, Recognition And Incentives For Research Engineers And Scientists In Canadian Government R&D Laboratories
12. International Mobility of Scientists and Engineers To The United States, Brain Drain Or Brain Circulation? National Science Foundation Nsf 98-316, June 22, 1998 Directorate For Social, Behavioral, And Economic Sciences
13. "International Mobility of Highly Skilled Workers (OECD): From Statistical Analysis to Policy Formulation", organized in Paris in June 2001 by the Directorate for Science, Technology and Industry (DSTI) and the Directorate for Education, Employment, Labor and Social Affairs (DEELSA).
14. Human Resource Contributions to U.S. Science and Engineering From China National Science Foundation Directorate for Social, Behavioral and Economic Sciences NSF 01-311 January 12, 2001
15. http://www.moe.edu.cn/english/international_2.htm (Ministry of Education China)
16. Chinese Academy of Sciences(CAS) Annual Report 2006.