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# Reverse Brain Drain

## Who Gains or Loses?

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In the age of knowledge and information, a nation's power is often measured by its capability to produce and distribute cutting-edge knowledge and technology. The gap between industrialized and developing nations in their capacity to produce advanced knowledge has remained wide, leading to the situation in which students from less developed nations go to industrialized nations for advanced degrees. These students often remain in the United States after completion of their degrees to pursue careers in academe or other professions—a phenomenon known as “brain drain.” However, very recently one can observe noticeable changes in the flow of human resources. Especially in Asia, brain drain has begun to reverse.

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Reverse brain drain refers to the phenomenon of those who study toward advanced degrees and work in their professions in the United States for a time, but ultimately return to their home countries permanently, taking an important position in academe or in research institutes. Reverse brain drain has been most noticeable in the case of the newly industrializing countries in Asia (NICs) where advanced science and technology is in high demand to upgrade industrial structures. When these nations accelerate the shift of the industrial base from labor-intensive to knowledge- and technology-intensive industries, they demand a large number of highly educated and experienced personnel. When they do not have enough advanced-level personnel, one of the ways to compensate for the paucity of human resources is to recruit native-born scholars who have been working abroad.

It is important to note that recruitment of scientists and engineers does not occur automatically. As is apparent in the case of NICs, reverse brain drain is a result of systematic efforts either by the government or the private sector. The serious commitment of governments in Asia to the utilization of human resources abroad has been one of the most effective ways to attract top-ranked researchers from abroad, either with permanent or temporary appointments. The Korea Institute of Science and Technology, established in 1966, exemplifies the crucial role of the government in facilitating the employment of personnel both at home and overseas. Furthermore, science cities in Asia, such as Tsukuba in Japan, Hsinchu in Taiwan, and Daeduk in South Korea, arise from an effort to support science and maintain a community of scientists.

It has recently been noted that the private sector also plays an active role in recruiting personnel working overseas for their own economic reasons. Many private industries in Asia are actively participating in the global economy and competing with industries of developed countries. In order to be competitive internationally, those private industries have made great efforts in keeping up with cutting-edge science and technology. When the private sector builds new research centers or laboratories, it needs high-level personnel in advanced fields of science. This is the reason for the great demand for researchers from developed countries with advanced training and work experience.

Reverse brain drain has been highlighted in magazines and scientific journals—presumably because, from the U.S. perspective, it implies a potential danger through the loss of high-level personnel who have been contributing to the advancement of scientific knowledge in the United States. There is a measure of truth in this belief, in that foreign-born Ph.D.s gain research experience in the United States, through which they may offer benefits to their home country after their return. However, this gain-and-loss formula is rather simplistic.

First of all, the actual number of scholars involved in reverse brain drain is tiny. For example, in 1990 36 scientists and engineers repatriated from the United States to South Korea, where they joined a workforce that already included 17,662 researchers holding doctorates. There are some eminent researchers with well-established reputations in the U.S. scientific community who have repatriated, and they are the ones that draw the most attention from the media. In other words, media reports are generally anecdotal, with a focus on several distinguished cases, and the larger statistical trend still remains to be seen.

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Secondly, reverse brain drain occurs not only because there are expanding opportunities to do research in Asia, but also because the job market in the United States is shrinking and the availability of money for research is declining. In general, the academic job market in the United States has had fewer openings. In addition, U.S. funding agencies have been cutting their support for university research, and the competition for these funds has increased. Reverse brain drain can be seen as a natural outcome to these circumstances, leading scientists to look for alternatives to the increasingly competitive funding process in the United States. Because of their cultural background and proficiency in the language, Asian-born scholars may feel more comfortable and confident in an Asian work environment. Their home country is able to offer a higher position in academe or a research institute with excellent perquisites. Thus, U.S.-based Asian scholars are more inclined to seek out opportunities in **this** new research environment in Asia.

Thirdly, reverse brain drain offers benefits not only for Asian nations but also for the United States and the international scientific community. To be concrete, advanced knowledge and technology brought home by returning scientists give Asian countries an important momentum for enhancing the level and quality of scientific works. The United States, in turn, benefits financially through exporting scientific equipment and is virtually assured of a continued scientific relationship with Asia through these U.S.-trained researchers. And of course, any technological advances made in Asia benefit the larger scientific community, particularly the less developed nations, by distributing low or intermediate technology. What I want

to emphasize is that repatriated scholars do not completely isolate themselves from their former colleagues in the United States. Rather, they are likely to strengthen scientific ties with U.S.-based scholars to keep up with the newest developments in the field.

The fact that some Asian scholars return to their country is not a major issue. My previous research shows that many scientists are involved in communication networks that are not limited by national boundaries. U.S.-based Asian scholars are frequently in contact with the scientific community in their home country. The dramatic growth in Asian economies has provided U.S.-based Asian scientists and engineers with more opportunities for cooperative research and consulting. No matter where the scientist is based, he or she will engage in scientific communication on a global level. The most important concern should be how successfully Asia will utilize its returning personnel for achieving scientific independence in the long term, and how effectively the United States will maintain scientific relationships with those who return home.

Reverse brain drain results from a set of complex factors. Its scope is likely to grow as long as socioeconomic growth in Asia is consolidated and the commitment to scientific development continues. One controversy is who benefits most from **this** change in the flow of human resources. I believe that as each society becomes increasingly interdependent, the scholars involved in reverse brain drain will play an important role as a bridge between societies through their scientific knowledge and intercultural perspectives.

*Notes*

1. Ministry of Science and Technology, *Science and Technology in Korea* (Seoul: Ministry of Science and Technology, Republic of Korea, 1994), 39-40; Ministry of Science and Technology, *Annual Report on Science and Technology 2003* (in Korean) (Seoul: Ministry of Science and Technology, 1994), 240.

2. Hyaewool Choi, *An International Scientific Community—Asian Scholars in the United States* (New York: Praeger, 1995).

**Association for the Study of Higher Education Annual Conference**

The main American organization concerned with higher education research, the Association for the Study of Higher Education (ASHE) will hold its annual conference from November 2 to 5, 1995 in Orlando, Florida. Further information can be obtained from Prof. Stanley Carpenter, ASHE, Department of Educa-

tional Administration, Texas A&M University, College Station TX 77843. E-mail: STANNC@ACS.TAMU.EDU.

Immediately prior to the ASHE conference will be an international pre-conference with a focus on higher education in an international perspective. ASHE meetings typically attract more than 500 researchers and others, and feature panels on a wide

range of higher education topics. In recent years, international participation has been expanding. For more information, contact Ken Kempner, Co-Chair of the ASHE International Pre-conference, at the University of Oregon, College of Education, Eugene, OR 97403-1215. Fax: (503) 344-5174. E-Mail: KENNETH\_KEMPNER@CCMAIL.UOREGON.EDU.