Public and Private Endeavours to create World-Class Universities in Korea

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One of the primary objectives of top universities in South Korea (hereafter Korea) for the last decade or so has been to reach the level of so-called world-class university. It is widely known that Korea has made a very significant progress in the development of higher education during the last few decades. The proportion of 20 year-old students in higher education institutions increased from less than 5% during the 1970s to more than 80% in the turn of the 21st century. At the same time, the quality of higher education institutions has improved dramatically. In particular, the research capabilities of major Korean universities have been enhanced substantially because of government policy initiatives as well as market competition among universities. Top Korean universities have been moving up steadily in international rankings.

Recently, the Korean government has allocated substantial resources in order for research universities to enhance their research capabilities by offering competitive grants. Most notable programs are Brain Korea 21 (BK21) that started in 1996 and the World Class University (WCU) program that started in 2006. Before going into the detail of those two major initiatives, some background information on Korean higher education system would be helpful.

Background

The higher education system in Korea is highly privatized. More than 80% of students are enrolled in private universities, and out of the 2.6% of the gross domestic product (GDP) devoted to higher education, only 0.6% is provided by the government. In terms of the share of private funding, Korea ranks first among the OECD countries.

While public universities receive substantial government subsidies, and several top private universities (such as POSTECH, Yonsei, and Korea University) are on par with top national/public universities (such as Seoul National University and Korea Advanced Institute of Science and Technology) in terms of domestic and international reputation, and effectively compete with them for students, faculty members, and research funds.

In the development of Korean higher education, internationalization has played a major role. The phenomenon of study abroad has a long tradition in Korea, and it has been a major channel for the successful accumulation of high-level human capital in a relatively short period. The outbreak of the Korean War in 1950 and the consequent US involvement created many opportunities for Korean students to study in the US since the 1970s; many of the graduate students who studied abroad came back to Korea. It is estimated that about two thirds of those who received Ph.D. degrees in the US returned to Korea during the period between 1970 and 1990. Korea, along with Taiwan, is one of the few countries that have not suffered from “brain drain”, as they have successfully attracted many highly educated professionals back to the home country.

In this “brain gain” process, the Korean government played a very active role. When the Korea Advanced Institute of Science and Technology (KAIST) was established in 1965...
with American help, deliberate attempts were made to recruit talented researchers who already had been established in the US by offering a salary three or four times higher than the domestic counterparts and other fringe benefits such as housing and education allowances. High returns to study abroad generated a large outflow of graduate students. Many talented Korea students went to the US and other advanced nations to obtain Ph.D. degrees in major universities with the hope that they will get favourable employment upon returning.

**Brain Pool program**

One of the main problems identified in hiring freshly moulded PhD degrees from major research universities abroad was their practical utility. While their educations were considered to be solid, they tend to function poorly in less organized Korean working environment. Certain equipment may be missing, and the bureaucratic institutional structure may not be amenable to perform their activities effectively, and they do not have enough experience to initiate promising new research projects.

Attentions were shifted to more established researchers. The Brain Pool program that started in 1994, allowed Korean universities or research institutes to invite experienced researchers abroad. The invitees must have a prior experience of more than five years, and are committed to work in Korea for the period between 3 months and 2 years. The Ministry of Science and Technology was allocated substantial funds to support the program, but the program has not been very successful, reaching only a few dozen invitees who are not considered to be high calibre.

There were several major problems in the design of the program. The first significant problem was the level of support. The invitee was paid about US$2,000 - 3,000 per month and round trip airfare. Although the main purpose was to attract mid-level researchers who are established in foreign workplaces and be productive in Korea, not many Korean expatriates were interested in it. If they are established outside of Korea, particularly in a very advanced nation, such as US or Germany, the level of support was simply not enough an incentive.

The second problem was the length of the invitation. Established researchers in mid-career typically cannot afford to be away for two years, and come back to their original jobs without sacrificing their regular employment and ongoing research projects. In essence, the program was not geared to attract promising mid-level researchers at all. Effectively, it was only desirable to those who are thinking about permanently move back to Korea or those researchers whose pay is lower than the amount paid in Korea. Consequently the program has been downsized, although it was not dismantled completely.

**Brain Korea 21 (BK21)**

The Kim Dae-Joong administration that captured the power in 1998 was the first left-centre regime in Korea. In 1999, it initiated BK21 program with the annual budget of KRW 200 billion (about US$177.68 million). The main objective of the BK21 program was to groom domestic scholars and researchers rather than inviting foreign educated researchers.

It was a reaction to the previous policy favouring returnees to domestically produced Ph.D. degree holders. The change in policy direction was due to the several reasons. First, the utility of the fresh Ph.D. degree holders from abroad, even the ones from very well known institutions, has declined. Second, despite of the improvement and expansion of the graduate faculty of leading Korean universities over the previous two decades, students still wanted to go abroad for their Ph.D. studies. Third, due to the ideological shift toward egalitarianism, the government started to pay more attention to the graduate students from low and moderate income households
who cannot afford study abroad.

According to the program, departments or programs apply for multi-year grant for graduate program development. The fund can be used to subsidize graduate student scholarship/stipend, hiring temporary instructors or researchers, and some research related activities, such as funding seminars, attending conferences, books, journals, lab equipment and so on.

The strategy of BK21 was based on three pillars. First, the prizes were awarded to programs not to students directly. Second, the emphasis was to select and concentrate smaller group of graduate programs. Third, the support was primarily on graduate education, not research activities. The size of the program was substantial. With two three-year budget cycles, the program continued until 2005. The BK21 program has been authorized to continue in the succeeding left-leaning Roh Moo-Hyun administration and right-centre Lee Myung-Back administration. Currently, it is supposed to continue until 2012 with increased budget to KRW 300 billion (about US$266.51 million) per year.

During the seven years, 90,000 students, post-docs, and faculty members received benefits. During this time period, scholarly output from Korea has increased substantially. The number of papers published in journals listed in Science Citation Index (SCI) increased from 9,444 in 1998 to 23,515 in 2005. Among those, 3,765 (40%) papers in 1998 and 7,281 (30%) in 2005 are from the BK21 centres supported by the government fund. At the same time, national ranking of Korea improved from the 18th in 1998 to 12th in 2005.

Although it is not clear how much of this improvement of research output can be attributed to the government policy, it played a pivotal role in making top universities pay more attention to research productivity. While the BK21 program was designed to support graduate education and the major beneficiaries were graduate students, the program design that awards funds to selected programs (not to students) created substantial competition among institutions. In the competition among institutions, the quality of faculty members in terms of their measured research output becomes the most important criterion. While the actual amount of the prize was quite insignificant for large institutions, the selection (or non-selection) may determine the success in recruiting good graduate students. Hence, institutions invest substantial amount of their own resources to attract faculty members with noticeable research output, and provide incentives for more research output to the existing academic staff.

During this time period, many universities started to implement merit-based salary schemes, and tenure and promotions became much more rigorous in evaluating research output. Up until the mid 1990s, virtually all universities in Korea have length of service based salary scheme. Moreover, although evaluations and reappointment procedures were in place, virtually 100% of all faculty members were retained until the mandatory retirement age of 65 and promotion was almost automatic. As soon as KAIST employed much rigorous tenure standards and started to implement them in 2007, many top universities introduced similar measures. The lateral movements (i.e. switching positions from one university to another in mid-career), which was extremely rare in previous decades, become much more common as more universities took away top faculty with bigger salaries from others in order to boost their research output immediately.

In addition to BK21, the Roh administration initiated the New University for Regional Innovation (NURI) in 2004. NURI is a government funded project to strengthen the capabilities of colleges and universities located outside of the Seoul Metropolitan Area. The policy initiative was a reaction to the fact that most of the BK21 beneficiaries are located
within the Seoul metro area, and was also the government’s commitment for decentralization of economic activities. The fund can be used for graduate student scholarships, curricular development, training programs, on-site internship programs, hiring teaching and research staff, purchasing laboratory equipment, and so on. NURI also encouraged matching funds from local governments and industry by giving them extra points in the evaluation.

**World Class University**

The recent World Class University program (WCU) started as a government initiative to increase the research capability of Korean universities to the level of leading research universities in the world. While Korea’s research output increased to the world rank of 11th in 2006, research quality has not increased as much. The number of citations per paper in 2006 was still 28th in the world, and the number of “star” researchers from Korea whose publications are cited most frequently around the world was only three, where US has 3,923, Germany 256, and Japan 253.

The emergence of a knowledge-based economy and Korea’s advancement to the technology frontier demand original research and development, as major Korean companies such as Samsung, Hyundai, and LG caught up with the leading manufactures of the world. The pro-business Lee Myung-Back administration started WCU program in 2006.

The program supports three types of projects. Type 1 supports the establishment of new department of specialized major by providing funds to hire new faculty members. Type 2 supports the recruitment of foreign scholars to existing programs for joint research and/or teaching (for minimum of three years, one semester per year). Type 3 supports the invitation of distinguished world-class scholars (for minimum two months except Nobel laureates). The government allocated the annual budget of KRW165 billion (about US$146.58 million) between 2008 and 2012.

As is in BK21, the prize is given to academic units to preserve the principle of “selected few”. The second important design element is to encourage “network externality”. The cooperative research projects collaborated by both leading researchers of the world and Korean researchers were very much promoted. The funding requires extended stay of foreign researchers. But the specific design of the program is much more realistic than the previous Brain Pool program. The level of salary support was quite high (higher than their regular appointment) in order to attract them to visit Korea, and allows flexibility for them to arrange their profession and personal lives.

For the three years in implementation, WCU was able to recruit 351 foreign scholars (163 US, 53 Korea, 28 Japan). Also, it invited 10 Nobel Laureates, 35 members of the US National Academy of Engineering and 29 US National Academy of Science. Many of them are from top universities in the world: 8 from Harvard University, 6 from Stanford University, 8 from the University of Michigan, and 5 from Massachusetts Institute of Technology. As was in BK21, WCU has been highly competitive. In the first round of 2008, 26 out of 92 Type 1 applications, 26 out of 222 Type 2, and 79 out of 161 Type 3 applications were selected. While the competition remains stiff, the number of applications decreased in the subsequent rounds.

**Conclusion**

Recently the Korean government has invested a substantial amount of public resources in order to make its top universities “world-class”. While not a single Korean university has yet to be recognized as one of the top 100 research universities in the world, their research output has grown quite substantially for the last two decades. The reason for the advancement is not only the direct government subsidy for research activities, but also increasing competition among universities. The institutional
competition made several important innovations in personnel policy. Salaries of professors are becoming more merit-based, and tenure and promotion of top Korean universities become much more vigorous, similar to American universities.