

International Education and Economic Cooperation in Asia and the Pacific

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1 Introduction

The purpose of this paper is to discuss various aspects of educational cooperation among the Asia and Pacific region and implications for economic development. Recent years have witnessed a dramatic change in the styles of research and education conducted at university due to a rapid development of information technologies. Especially in the field of international education, a proper use of the information technology may contribute not only to reducing the cost of human resource development but also to improving the quality of international education. It will be useful to examine the various issues related to cooperation in international education from an economist's point of view.

Indeed several academic economists have recognized the importance of higher education on the long run economic growth of a country or a region. New economic growth models developed by Romer (1986, 1990) and Lucas (1988) explain the divergence in per capita income between developed countries and developing countries in the long run by focusing on the research

* The author gratefully acknowledges that this research has been partially supported by Science Research Fund of Japanese Ministry of Education, Science, Culture, and Sports. An earlier version of this paper appeared as a Discussion Paper of APEC study center at Otaru University of Commerce.

and development activities as an important factor. There are many excellent higher educational institutions in developed countries that continuously conduct new scientific researches. R & D in developed countries provide ample opportunities for new businesses especially in the field of manufacturing sector. Universities train people with new technology based on new scientific findings. Universities supply human capital to society through their educational activities. Developed countries accumulate these human capitals that contribute to the long run economic growth.

On the other hand, developing countries do not have enough capacity to establish sufficient number of universities and could not accumulate desired level of human capital. Bright young people of developing countries often choose to go to the universities of developed countries and stay in the countries because of more opportunities for a higher personal income. Brain drain is a serious problem for policy makers in developing countries.¹⁾ Continuous one-way flow of human capital from developing countries to developed countries diverges the potential economic growth rates for the future. Rich countries become richer and poor countries remain to be poor. In order to prevent this vicious cycle from happening, one has to think about a wider cooperation in the Asia-Pacific region.

In the process of modernization of Japanese economy that started in the last half of the 19th century, the government sent young students to universities of developed countries in those days, namely, Europe and North America and also invited foreign professors to Japan in order to create her own university system. Learning new knowledge and technology has certainly contributed to the continuous development of Japanese economy.²⁾ While

1) See Wong (1995) pp651-653 for the Problem of Brain Drain.

2) See Ito (1991) Chapter 2 for Policies of the Meiji Government during the transition.

traditional theory of economic growth had emphasized the role of saving and accumulation of physical capital, new economic growth theory stresses the role of human capital. Effectiveness of higher education becomes an important economic policy issue. One way to help developing countries is to assist human resource development by accepting students from those countries or by sending professors to universities of those countries. Academic economists in the field of international trade have long been studying the mobility³⁾ of commodity and factor of production in detail but not paying too much attention on the mobility of university.

In the real world, university administrators and policy makers in higher education have come to realize the potentially important role of university in economic cooperation. After the World War II, United States has been the center for higher education and attracted many foreign students to attend US universities. Students in the Asia-Pacific region went to US for post-graduate degrees. Some of them stayed in US but many others returned to home countries. This process served for transferring knowledge and technology discovered in US universities to the rest of the Asia-Pacific region. Many countries adopted the US style university system and created the network of universities through the student and faculty exchange.

Corresponding to the development of APEC, the Australian Vice Chancellors' Committee (AVCC) took the initiative to take a step toward the establishment of UMAP (University Mobility in Asia Pacific) and sponsored two conferences on cooperation of universities in the region which were held in Hong Kong and Camberra in 1991. Then the Korean Council for university Education organized the next conference in Seoul in 1992 and agreed on the objectives of UMAP. Subsequent meetings have been held in Taipei

3) See Wong (1995) for detail discussion.

in 1993 and in Osaka in 1994. In the UMAP meeting held in Auckland, New Zealand in 1996, the Vice-President of Japan Association of National Universities, Dr. H. Imura made a proposal to set up a secretariat office of UMAP at one of national universities in Japan. Then the reference group meeting held in Bangkok, Thailand in 1998, the constitution of UMAP was adopted and the setup of the international secretariat in Japan was agreed upon. An experimental introduction of UMAP credit transfer scheme has been also agreed. In order to facilitate the student exchange in the Asia-Pacific region, the introduction of the effective use of recent information technology is essential. Unlike the concept of a virtual university where all the education is conducted through the distance learning, this paper argues that on-line education tools strengthen the existing international education program such as the junior year abroad program that involves learning through real experiences. On-line distance education is not a substitute to the study abroad program but a useful complement to the face to face experience based international education.

The organization of this paper is as follows. Section 2 reviews the recent discussion on human capital accumulation as one of the engines of economic growth and points out an importance of international cooperation in university education. Section 3 documents the development of UMAP and discusses the direction for future development of formal exchange program in the Asia Pacific region. Section 4 describes the Japanese government policy towards foreign students from abroad. Section 5 discusses the US-Japan Initiative to promote the student exchange in Asia and the Pacific. Section 6 suggests the wise use of distance education tools that could be useful complement to the existing study abroad program. Final section presents conclusion and suggestions for the future research.

2 Human Capital Accumulation as the Engine of Economic Development

Recently, academic macroeconomists have presented the models that emphasize the role of human capital for economic development. If we define the economic development in a narrow sense, the continuous growth in per capita income will be one of measurements for a policy maker. In the early studies on the economic growth, technology in aggregate production was assumed to be same everywhere in the world. What makes the economic growth rate different is the difference in physical capital accumulation. Since funds for physical capital come from domestic saving, the personal decision on how to consume or save becomes an important factor. After Becker (1964) found the concept of human capital, the importance of education has been recognized in the literature of economics. However, the relation between the economic growth and the accumulation of human capital has not been formally modeled until recently. Lucas presented two interesting models where human capital accumulation is the crucial factor for economic growth. In the simplest form, the pattern of economic development depends on the initial condition. If the country is wealthy, it has more opportunities for providing higher education and accumulating human capital that contributes to the long run economic growth. If the country is poor, it cannot afford to set up higher educational institutions and therefore few human capitals accumulated. Thus, initially rich country becomes richer and poor country remains poor in this setting.

The other model incorporates the learning by doing. If the country specializes in the particular industry and continues to produce, it can improve the production technology through learning by doing. This model can possibly explain high growth performance by export oriented countries such as Japan, Korea, Hong Kong, Taiwan, and Singapore. Since Japan

opened the ports to outside in 1855 and started trading with other countries, many young people went abroad to study the advanced technology and brought it back to Japan. Although the manufacturing sector is small and less competitive in the beginning, it becomes efficient and more competitive after acquiring the knowledge by producing.

Some of the narrow minded universities in advanced countries in the past may not have widely opened the door to foreign students. Without an opportunity at higher education, it would have been extremely difficult for young leaders in poor nations to formulate policies necessary for catching up with the advanced nations. University has two features in its character. It is research institution that tries to discover something unknown to human being. Through scientific research activities, new technology is invented and new industry may be created. The second feature of university is that of educational institution. It trains young people through organized curriculum.

In the case of Japan, a person of 18 years old has a choice whether she should go to university or go to work after 6 years of elementary school, 3 years of junior high school, and 3 years of high school. The direct cost of attending 4-year college in the form of tuition and fees would range from 2.5 million yen to 4 million yen.⁴⁾

The opportunity cost is a lost income caused by attending a college. It ranges from 10 million yen to 15 million yen in four years. Therefore, total cost of going to 4-year college in Japan today would be from 12.5 million yen to 19 million yen depending on the quality of university and job opportunity for a high school graduate. Increasing number of Japanese people is attending university today.⁵⁾

4) See table 1 for tuition and fees at Japanese universities.

5) See Table 2 for change in college enrolment in Japan.

Table 1 Tuitions in National University and Average Private University

(Yen per Year)

Year	National University	Private University	Ratio
1975	36000	182677	5.1
1976	96000	221844	2.3
1977	96000	248066	2.6
1978	144000	286568	2.0
1979	144000	325198	2.3
1980	180000	355156	2.0
1981	180000	380253	2.1
1982	216000	406261	1.9
1983	252000	433200	2.0
1984	252000	451722	1.8
1985	252000	475325	1.9
1986	252000	497826	2.0
1987	300000	517395	1.7
1988	300000	539591	1.8
1989	339600	570584	1.7
1990	339600	615486	1.8
1991	375600	641608	1.7
1992	375600	668460	1.8
1993	411600	688046	1.7
1994	411600	708847	1.7
1995	447600	728365	1.6
1996	447600	744733	1.7
1997	469200	757158	1.6
1998	469200	770024	1.6
1999	478800	783298	1.6

*In addition to the tuition, students must pay entrance fee and examination fee.

Entrance Fee and Examination Fee for National University in 2000 are 277000 yen and 33000 yen.

Source : Ministry of Education, Science, Culture and Sports, Japan.

Table 2 Proportion of the Age Group Going to the Higher Education

1955	1960	1965	1970	1975	1980	1985	1990	1995
10.1%	10.3%	17%	23.6%	37.8%	37.4%	37.6%	36.3%	45.2%

Source : Ministry of Education, Science, Culture and Sports, Japan.

If people are assumed to be rational, there should be a benefit from attending university as an increment in the lifetime income. People are investing themselves by attending universities. If the role of university is just to educate own people within a national boundary, its effect does not spillover from that country to the rest of the world. Works by educated people will mainly serve only for the economic growth of that country.

What will happen if university accepts students from other country? Many other countries sending students oversea will share the spillover effect by educational activities. In terms of human resource development, international exchange program organized by universities will serve as a vehicle for transmitting new scientific knowledge throughout the world. In Asia and Pacific Economic Cooperation, this point has been recognized and creation of UMAP (University Mobility in Asia and the Pacific) has been discussed.

3 University Mobility in Asia and the Pacific

Since Japan opened herself to outside world in the middle of the 19th century, she has been sending young students to universities in Europe and North America. After the World War II, many countries became independent and started developing own educational systems. Many students have chosen to study at universities in United States of America. While there has been a tradition of two-way exchanges of students between European universities and American universities, student flow across the Pacific was mainly one way from Asia to US.⁶⁾

6) See Table 3 and 4 for the number of foreign students accepted by major countries.

Table 3 The Number of Foreign Students Accepted by Major Countries

	Total	Africa	North America	South America	Asia	Europe	Oceania
United States	453787	20844	48601	22296	290876	66461	4202
France	170574	73688	5772	4162	19612	35775	175
Germany	146126	12361	6026	3874	57513	63710	251
United Kingdom	128550	10189	10095	1749	50041	54646	1220
Russian Federation	73172	3762	287	522	39190	29411	0
Japan	50801	449	1520	683	46635	1073	318
Australia	42415	828	1101	76	31409	1353	6246
Canada	35451	5842	4580	933	17029	6175	359
China	22755	277	2573	69	16790	2334	574
New Zealand	5883	96	242	37	3262	306	1379
Korea	1983	30	379	121	914	91	21

Source : UNESCO, Statistical Yearbook, 1997.

Table 4 The Number of Foreign Students in 12 Countries

	USA	France	Germany	UK	Russia	Japan	Australia	Canada	China	New Zealand	Korea
U. S. A.		5710	9017	7799	5589	45531	2244	23005	72315	848	36231
France	3392		5949	4194	784	1157	108	1091	1508	25	1642
Germany	4617	5453		3191	1979	1497	185	430	5821	47	4826
U. K.	6284	7861	9407		212	2521	848	1810	2089	263	752
Russian	3	2	96	0		5	0	2	146	0	5
Japan	1243	139	211	178	0		239	137	23291	51	17074
Australia	903	73	160	526	65	675		176	2657	4457	704
Canada	2687	2199	594	1334	179	774	225		3241	106	252
China	2213	457	460	402	214	8526	535	301		33	6433
New Zealand	183	10	118	111	0	234	317	35	65		84
Korea	328	5	53	2	9	350	21	47	278	0	

Source: UNESCO, Statistical Yearbook, 1997.

As the economy in Asia has developed, the trend has been changing. Some Asian countries such as Malaysia intentionally started sending students to Japan as a part of "Look East Policy." Stimulated by the success

of ERASMUS program in European Union, the Australian Vice Chancellors' Committee took the initiative to organize the conference towards the establishment of UMAP in 1991. A reference group was set up through the conference and stated the objective of UMAP. This reference group met in Seoul in 1992, in Taipei in 1993, and in Osaka in 1994. After the meeting in Auckland, New Zealand in 1996, the reference group has agreed to meet every two years. Bangkok hosted 1998 meeting and Seoul hosted again in 2000. The purpose of UMAP is to promote the student and faculty exchange in the Asia-Pacific region. Similar to the program designed in Europe, UMAP is expected to create community atmosphere throughout Asia and the Pacific. As for economic development, the exchange of potential human capital is a kind of the investment for the future prosperity of the region. Study abroad experiences will contribute to the creation of more open-minded people who can work together in the region.

The necessity for establishing a small but efficient international secretariat was proposed by Dr. H. Imura, Vice President of Japan Association of National Universities at that time. In the Bangkok meeting, the establishment of international secretariat in Japan was agreed upon.

In order for UMAP to be effective, there are at least three priority issues we must tackle rigorously to facilitate the student exchange. One is to move to the multilateral scheme for the student exchange. Most of exchange programs between universities have been bilateral in nature. Universities try to exchange equal number of students in a given period and try to balance the number. However, the number does not balance in most of the cases and a bilateral balancing of the number of students constrains the student exchange. We need to develop a scheme for multilateral exchange that allows a bilateral imbalance in the number of exchange students. Since the essential part of the bilateral student exchange agreement is to waiver

the tuition at the host institution, we need to develop the multilateral scheme to compensate the universities receiving more students than sending their own students.

The second issue we have to address carefully is to develop the means to overcome the distance. We must realize the geographical distance in Asia and the Pacific. In the case of Europe, the transportation cost between countries is relatively cheap. In Asia and the Pacific, students must rely on the air travel to participate into the study abroad program. In order to enhance the university mobility in Asia and the Pacific, we need to reduce the travel cost of students by providing a scholarship which covers at least travel expenses. The other way to overcome the distance is to introduce the on-line education tools to complement the study abroad. Before students arrive at the host institutions, necessary information can be provided through the Internet and even several courses can be offered through the Internet. After students finish the study abroad program and return to the home institution, they can continue to study the subjects taken at the host institution through the on-line supervision by a professor at the host institution. Joint development of the on-line course in the UMAP framework will be useful to overcome the distance in Asia and the Pacific.

The third issue is to facilitate the credit transfer in Asia and the Pacific. Toward this end, the UMAP credit transfer scheme (UCTS) has been developed. Each university uses the different credit requirements for the undergraduate degree. In order to calculate the equivalent credit hours of course work, a common calculation formula has been developed. We need to promote the wide use of this formula so that the university administrator has fewer headaches to approve the credit transfer.

4 Japanese Policies for Foreign Students

Japan has a long tradition of sending students abroad. In the 7th and 8th century, students selected by Emperor went to China for studies. After the Tokugawa period of isolation policy for two and a half centuries, Japan has been sending many young students to Europe and North America in the process of modernization. In 1995, the number of students who went abroad for studies was 165,257. Among them, 49.6% went to the United States and 11.8% went to United Kingdom.

In 1983, Japanese government set up very ambitious plan to increase the number of foreign students studying in Japan from 10,428 of 1983 to 100,000 by the year 2000. This plan has been successful until 1995 in a sense that the actual numbers were more than projected figures. However, there was a decline in the number of foreign students in 1996 for the first time. The number of students studied at Japanese higher educational institutions in 1996 was 52,921. It was the decline of 1.7% from the previous year and more than 10,000

Table 5 The Total Number of Foreign Students in Japan

Year	Number of Foreign Students
1981	7179
1982	8116
1983	10428
1984	12410
1985	15009
1986	18631
1987	22154
1988	25643
1989	31251
1990	41347
1991	45066
1992	48561
1993	52405
1994	53787
1995	53847
1996	52921
1997	51047
1998	51298
1999	55755

Source : Ministry of Education, Science, Culture, and Sports, Japan.

short of the projected numbers.⁷⁾ The reasons for decline can be attributed to the economic slowdown of Japanese economy and establishment of universities in developing countries.

Among foreign students studying at Japanese universities, 91.5% of them are from Asia. Only 1,238 (2.3%) came from North America in 1995. This imbalance in the number of foreign student's destination may have a negative effect for economic cooperation of the region in the future. We need to develop human resources in North America that are familiar with Japan and other Asian countries.

Ministry of Education, Science, Sports, and Culture (Monbusho) tries to correct this imbalance and has been introducing some policy measures. One of them is a promotion of the short-term exchange program. In Europe and North America, it is quite common for students to study aboard for one year or one semester. Usually, students can transfer credits from foreign universities to the home university. Japanese Ministry of Education has been encouraging Japanese national universities to develop the short-term exchange programs with foreign universities. Japanese language is one of the most difficult languages for foreign students to acquire in a short period of time. Language barrier could be the significant factor to explain the small number of students from North America and Europe to come to study in Japan. In order to overcome the language barriers, some Japanese universities have started a special program where the core subjects are offered in English. The Association of International Education, Japan (AIEJ) offers scholarships under "Short-term Student Exchange Promotion Program" for international students. Scholarship covers the travel expense and monthly payment of 80,000 yen. Tuition and fees are exempted through the student exchange

7) See Table 5 for a trend.

agreement between a Japanese university and a university in foreign countries.

When we consider the future development of economic cooperation in Asia and the Pacific, Japanese universities may play an important role. Since there have been already many Asian students studying in Japan, students from North America can meet Asian students at Japanese universities. Those who studied at Japanese universities will have better understanding on the Japanese market and other Asian markets. In order to promote trade and investment in this region, we need the stock of human capital with international mind. Japan could contribute to this end through the multilateral student exchange program in Asia and the Pacific.

5 The US-Japan Initiative to Promote the Student Exchange

Japan Association of National Universities (JANU) and American Association of Colleges and Universities (AACU) have jointly developed the project to increase the number of student exchange programs between two countries for the last two years. This project was set to increase the number of American students studying at Japanese universities. First, JANU selected the Japanese national universities that offer the special short-term program that is taught in English. Then the detail descriptions of the short-term program were circulated among the American colleges and universities. Those who would like to develop a new relation with Japanese universities applied through AACU. Three candidate institutions have been selected for each Japanese national university. Representatives of universities from both countries meet in Washington D. C. and start discussing a possible student exchange agreement. This project has been conducted in 1999 and 2000 and proved to be very successful. The matching process has

been quite smooth and the project saved a significant amount of the negotiation time comparing with the case where an institution has to find a suitable partner for itself.

An interesting development that could follow this initiative is to introduce the on-line education tools into the study abroad program. Since the extensive use of the Internet related to educational technology has been developed in the United States, joint efforts to overcome the time difference and the geographical distance are important for both countries. A collaborative learning model between a Japanese university and an American university has already been reported.⁸⁾ The use of the on-line education tools will be developed further in the next ten years. Some may speculate that the distance education will be substitute to the traditional study abroad program. Most of the university education could be provided through the computer assisted learning. It will require a careful observation of the further development of the on-line education tools before we make a final judgement on this issue. In the meantime, we need to develop the means to incorporate the distance education tools to enhance the quality of the existing study abroad program.

6 Distance Education as Complement to Study Abroad

Recently Hara and Kling (2000) have reported some negative aspects of a Web-based distance education course. Computer-mediated distance education could be indeed distressing for both students and faculties in some cases. Since the information technology has been rapidly changing the styles of various activities including business practices, university educators

8) See for example Hamada and Scott (2000).

are under pressure to teach courses related to basic tools of the Internet to undergraduate students. Although the traditional way of face to face teaching is much more efficient way to teach in a larger classroom, university teachers feel obliged to use the most recent information tools available in the market.

Some of learning processes in university education are truly experience based. Study abroad is a typical example. We can teach Japanese economy through a lecture class or a seminar class. However, coming to Japan and actually living in Japan are powerful motivation for studying various problems of Japanese economy. In the field of the business education, internship at a company is the most popular way for an international student to learn actual business practices.

When we design the short-term exchange program for international students, we should be aware of the experience-based nature of the study abroad program. Trying to replace the educational content of the study abroad by a concept of the virtual university will not be successful. Having said this, how we should incorporate the web based distance education into the study abroad program?

In the formal student exchange program, the selection of the students is normally conducted from three to six months prior to the departure. During this period of time, students are highly motivated to study and a web based distance education can be effective. Correspondence through the E-mailing puts a heavy burden on the part of faculty members involved. Student-Faculty ratio under this kind of environment should be at most 5. Ideally speaking, one to one tutoring is the best arrangement for an exchange student.

On the contrary to a general perception, a good on-line education program can be very costly. Therefore, in order to develop a successful on-line

education program together with the study abroad program, the size of the program should be small. Smaller colleges may have advantages. In this sense, a matching between Liberal Arts Colleges in the United States and National Universities in Japan will be a good one. Considering the difference in academic calendars, we should design a suitable on-line course in the spring semester for the second year students who have already committed to come to Japan.

Joint on-line seminar with Japanese students who have been already selected will be useful as well.

7 Conclusion

This paper has discussed the implications of increased university mobility in the Asia-Pacific region. University can play an important role in economic cooperation. It can contribute to development of human resource based on scientific findings. New theory on economic growth emphasizes the Research & Development as an important engine for sustainable economic development.

In order to increase the students and faculty exchange among Asia and the Pacific, professors and university administrators have been meeting to formalize UMAP (University Mobility in Asia and Pacific). International secretariat to UMAP has been established in Japan since 1998.

Japanese Ministry of Education, Science, Sports and Culture (Monbusho) has been promoting the short-term exchange program by offering the scholarship for students from Asia and the Pacific through the Association of International Education, Japan. National universities in Japan have started special short-term programs lectured in English. Inclusion of internship program at private companies in Japan will enhance attractiveness of study

abroad program in Japan. More than 90% of foreign students studying at Japanese universities are from Asia and only 15% of Japanese students go to universities in Asia. We have to correct this imbalance by encouraging Japanese students to study at Asian universities and inviting more students from North America. Japanese universities can be a meeting place for students from Asia and the Pacific. It is desirable to organize this kind of student exchange programs with close association of APEC study centers in Japan.

University can play an important role for economic development. New scientific findings contribute to create new businesses and to improve the productivity of existing industries. University develops human resources that are necessary for the sustainable long run economic growth. University mobility in a multi-country framework can contribute to economic cooperation in Asia and the Pacific.

Some negative aspects of the web based distance education has been reported. Considering the experience-based nature of learning process in the study abroad program, one needs to carefully design an on-line education course that can be useful complement to study abroad. One of the strategies for course development could be targeting the pre-departure period of the exchange student. The small size on-line course designed for exchange students prior to departure should be useful.

References

1. Becker, Gary, *Human Capital : A Theoretical Analysis with Special Reference to Education*. New York : Columbia university Press for the National Bureau of Economic Research, 1964 ; 2nd ed. 1975.
2. Hamada, Tomoko and Kathleen Scott, "Anthropology and International Education via Internet : A Collaborative Learning Model", *The Journal of Electronic Publishing*, September, 2000 Volume 6, Issue 1.
3. Hara, Noriko and Rob Kling, "Students' Distress with a Web-based Distance Education Course", *Working Paper, Indiana University*, March 2000.
4. Ito, Takatoshi, *The Japanese Economy*, 1992, The MIT Press.
5. Lucas, Robert E. Jr., "On the Mechanics of Economic Development," *Journal of Monetary Economics* 22, 1988, 1-42.
6. Ministry of Education, Science, Sports and Culture, Japan (Mombusho), "Outline of the Student Exchange System in Japan," 2000.
7. Reily, John, "European Inter-University Co-operation and Student Mobility-The SOCRATES-ERASMUS Experience," 1996, Paper presented at UMAP meeting at University of Auckland, New Zealand.
8. Romer, Paul, "Increasing Returns and Long Run Growth," *Journal of Political Economy* 94, 1986, 1002-1037.
9. Romer, Paul, "Human Capital and Growth : Theory and Evidence," Carnegie-Rochester Conference Series on Public Policy, 1990, 32, 251-86.
10. UNESCO, *Statistical YearBook*, 1997.
11. Wong, Kar-yiu, *International Trade in Goods and Factor Mobility*, 1995, The MIT Press, Cambridge, Massachusetts.