

# Migration of Highly Skilled Chinese to Europe: Trends and Perspective<sup>1</sup>

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## ABSTRACT

Since China's economic opening and reforms in 1978, the country has broadened and deepened its exchanges and relations with other countries. This has contributed to the increase in the scale of international migration of highly skilled Chinese abroad. The impact of the migration of highly skilled Chinese on China and the relevant nations particularly deserve attention and study. Following the earlier migration flows mainly to the United States, Japan, Canada, Australia, and New Zealand, the migration of highly skilled Chinese to Europe has become a notable new trend.

Currently, the flow of international migration of highly skilled Chinese personnel is mainly oriented toward Europe and the United States. While studying abroad has been the main form of migration of the skilled, this has now been joined by the migration of technical and professional staff, and the trend is increasing. The main country of destination for Chinese students is the United States, which absorbs more than half of the total, while Australia and Canada receive the largest number of skilled Chinese manpower. The United States also receives a large number of Chinese technical personnel, but its proportion has declined, while the flow to Europe has sharply increased.

This development may be attributed to the global expansion of economic, scientific and technological, as well as cultural and educational exchanges and cooperation. But it is also the result of an increase in the educational investment made by the Chinese people following the continuous increase in China's economic strength and the population's personal income. Of greater importance are the gaps between China and Europe at the scientific, technological, and educational levels and the research and marketing environment. The intervening changes in labour market and immigration policies in European and American countries accelerate the trend further. For all of these and other reasons, the spatial

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distribution of Chinese students will become more balanced and play a positive role in the promotion of mutually beneficial exchanges between China and other countries.

## INTRODUCTION

Since China's economic opening and reforms in 1978, the fields in which it engages in exchanges and relations with other countries have broadened and deepened. This has also contributed to the increase in the scale of international migration of highly skilled Chinese abroad. The impact of the migration of highly skilled Chinese on China and the relevant nations particularly deserve attention and study. Following the earlier migration flows mainly to the United States, Japan, Canada, Australia, New Zealand, the migration of highly skilled Chinese to Europe has become a notable new trend.

With more than 460,000<sup>2</sup> Chinese students studying in more than 100 countries worldwide, China registers the largest outflow of students (Forum of Domestic and Foreign Presidents of Universities, 2002) Of these, some 30 per cent have returned home. Overseas study not only includes students wishing to pursue higher studies at overseas universities, but also academic exchanges and visits. According to our estimate, since 1978 the number of Chinese studying abroad stands at more than 500,000. They are mainly in Australia, Canada, France, Germany, Japan, New Zealand, the United Kingdom, and the United States. They are mostly self-supporting, government-supported, or unit-supported. However, official statistics do not classify them according to the area of studies pursued or the country of study. Official data on self-supporting students are available only as of 1990, from which date forward their numbers have increased steadily. At the same time, the share of publicly supported students has declined. For these, countries and fields of study are clearly defined and relevant information for 1996 is available from the National Committee of Overseas Study Foundation, which is in charge of selecting students to be sent abroad.

The period from 1978 to the present for studying abroad can be divided into four stages:<sup>3</sup>

1. 1978 to 1984 – the publicly supported system of foreign study is launched.
2. 1985 to 1988 – as the numbers participating in this programme increase steadily, growing numbers of self-supporting students are also going abroad.
3. 1989 to 1992 – it was a special and sensitive period; after an important address by Deng Xiaoping in the spring of 1992, the policy for studying abroad was adjusted to “support study abroad, encourage return home, go abroad, and come back unrestrictedly”. Many students went abroad at that time.

4. 1993 to present – the practice of studying abroad has become normal and is regulated by law. A further adjustment followed in 1993 and in 1996 rules and regulations were issued governing the selection process of students to benefit from government support while studying abroad. At present, the numbers of students pursuing advanced studies abroad is more or less stable.

International labour export (*guojilaowushuchu*) means that workers leave China to find work in a foreign country, either with the help of an organization, or independently. Their primary objective is to earn money rather than to establish themselves permanently. Among this group are also highly skilled Chinese professionals, including scientists, engineers, doctors, and teachers, to name only a few. In China this practice is referred to as *haiwaijuyue*, or overseas employment. Before 1978 the Chinese Government officially termed it *guojilaowuhezuo*, or international labour cooperation. The destinations for Chinese highly skilled migrants are more or less similar to those for students. Some of them eventually settle in the receiving countries.

However, there is also a considerable inflow of highly skilled professionals into China. These generally include senior technicians, professionals, and managers for large construction projects and enterprises; foreign teachers and researchers; and students who work at Chinese universities and colleges. As international relations and economic, cultural, and scientific exchanges between China and Europe intensified, the numbers of Chinese students and professionals arriving in European Union (EU) countries, in particular, also increased steadily, and while this was most marked in the United Kingdom, Germany, France, Italy, Holland, Spain, and Switzerland were also attractive destinations. Such increasingly strong ties were further enhanced through trade and cultural exhibitions and exchange programmes organized in China, and these attracted additional interest in Chinese students, academics, and professionals to move to these countries.

On the other hand, the numbers of technical or labour migrants to these countries remained below those for students and professionals. The cultural gap, labour market barriers in the countries of the western hemisphere, and restrictive immigration policies may explain this in part.

#### AVAILABILITY, AMOUNT, AND ACCESSIBILITY OF DATA

Since China's move toward a market economy is at an early stage and its statistical capacity still incomplete, statistics on the international migration of highly skilled Chinese are not fully available. The number of Chinese studying abroad can be found in the *China Statistical Yearbook* and *China Statistical Yearbook for Education*. However, the data provided by the Ministry of Education are incomplete and inconsistent, and not organized by nation, specialized subject, or year.

The Bureau of Entry-Exit Management (BEEM) of the Ministry of Public Security (MPS) is the government body charged with checking the qualification of those going to study abroad, and with issuing passports. Therefore, this body has more complete data available concerning study abroad and labour migration. However, MPS data are restricted. Moreover, since BEEM does not collect statistics, authors have only obtained rough numbers of citizens studying abroad between 1997 and 2000. The MPS data simply reflect the number of persons who applied successfully for passports to study abroad. However, some have their visas rejected by foreign embassies, while some applicants give other reasons than study abroad when applying for a passport. As a result, the data are somewhat unreliable.

The Ministry of Foreign Trade and Economic Cooperation (MFTEC) plays an important role in the management of international labour cooperation. China generally exports labour services at a technical level. Since 1995, however, labour services in foreign countries for project design and consultation have also been included.<sup>4</sup> This involves trained personnel undertaking highly technical work abroad. Though these new labour services represent a very small part of the international labour services or outflows of highly skilled Chinese, they are expected to grow rapidly in the future.

The technical migrant is a person with higher education who responds to a request from a foreign country, and gives up a domestic job and settles abroad. Recently this type of brain drain has grown rapidly in China. The relevant information could be in the hands of BEEM of MPS and is not in the public domain, so it is not possible to know the extent and characteristics of this development. No detailed analysis will, therefore, be given here.

Table 1 shows the number of students who are studying abroad and who returned home from 1978 to 1999, based on the statistics of *China Statistic Yearbook* (2001). These, however, are not comprehensive. It can be seen that over the period of 1978 to 1999, of the 171,636 students who went to study abroad, 60,788 returned to China. The table does not include data for 1979, nor for 1981 to 1984 and, even if estimated data are added for the missing five years, the total number of students studying abroad is smaller than the MPS figure of 400,000.

Table 2 presents the number of students who studied abroad from 1997 to 2000, according to BEEM and MPS statistics. They exceed those given in Table 1 by 56.5 per cent, 212.1 per cent, and 257.9 per cent, respectively. In absolute numbers, the differences are even more striking: 12,669; 37,378; 61,251. This seems to indicate that the recently published official figures differ substantially from the actual ones. The most important reason is the recent dramatic increase in self-supported students who are not controlled by the Ministry of Education.

TABLE 1  
NUMBER OF CHINESE STUDENTS STUDYING  
ABROAD AND RETURNING, 1978-1999

Year	Number of students who studied abroad	Number of students who returned to China
1978	860	248
1980	2,124	162
1985	4,888	1,424
1986	4,676	1,388
1987	4,703	1,605
1988	3,786	3,000
1989	3,329	1,753
1990	2,950	1,593
1991	2,900	2,069
1992	6,540	3,611
1993	10,742	5,128
1994	19,071	4,230
1995	20,381	5,750
1996	20,905	6,570
1997	22,410	7,130
1998	17,622	7,379
1999	23,749	7,748

Source: *China Statistic Yearbook*, 2000.

TABLE 2  
NUMBER OF STUDENTS STUDYING ABROAD, 1997-2000

Year	Total	Self-supported	Sent by government	Sent by units
1997	35,079	30,731	1,906	2,442
1998	55,000	50,000	2,000	3,000
1999	85,000	80,000	2,000	3,000
2000	85,000	80,000	2,228	2,724

Source: MPS, 2000.

Note: Data of 1998, 1999, total and self-supported are approximate figures.

Table 3 represents the cumulative total of students having studied abroad (1978 numbers plus Table 1 and Table 2 and numbers for 2001).

TABLE 3  
TOTAL NUMBER OF THOSE STUDYING ABROAD IN CERTAIN YEARS

Year	Cumulative total studying abroad	Self-supported	Sent by government	Sent by units	Total returns
1983	25,500	7,000	-	-	7,000
1987	65,000	20,000	-	-	20,000
1989	96,101	22,677	29,994	43,430	39,183
1992	170,000	-	-	-	-
1998	320,000	-	-	-	100,000
1999	400,000	-	-	-	-
2001	460,000*	-	-	-	140,000

Source: Based on Ministry of Education data.

Note: \*The data are based on Forum of Domestic and Foreign Presidents of Universities, 2002, but according to our estimates, the number exceeds 500,000.

Based on data from the Ministry of Education, using the figures in Table 3 as marginal total of control and referring to data in Table 2, the data in Table 1 are adjusted and disaggregated into three categories: self-supported, state-supported, and unit-supported, as seen in Table 4.

In terms of regional distribution, 75 per cent of the students go to Europe, North America, and Oceania and 25 per cent to the rest of the world. A large majority of self-supported students go to countries in Europe and North America, and also to Japan, Singapore, Australia, and New Zealand.

Among students sent by the government and units, 70 to 80 per cent study natural sciences, engineering and technology, medicine, agriculture, forestry and animal husbandry, the rest study the humanities, and social sciences (see Table 5 for the complete breakdown of students studying abroad by area of study and country). According to Table 5, the rate of return is only 30.4 per cent. However, there are important variations among the various countries where, for example, the United States shows the lowest rate of returns and Australia the highest.

Since 1995 China has actively developed foreign labour services for the design and consultancy in connection with project contracts. Until now, the scale of such

services is very small, involving 250 persons in 1995 and 451 in 1999, with only a few going to OECD countries, as Table 6 shows. However, the export of high-level labour services is increasing and will generate a return in foreign currency to China.

TABLE 4  
NUMBERS OF STUDENTS STUDYING ABROAD AND RETURNING  
(adjusted values)

Year	Number of students of studying abroad				Number of returns
	Total	Self-supported	Sent by government	Sent by units	
1978	1,187		860		248
1979	2,415		1,750		200
1980	2,931		2,124		162
1981	4,714		3,416		1,090
1982	6,129		4,441		2,500
1983	8,154		5,909		2,800
1984	8,092		5,500		3,684
1985	9,843		4,888		3,497
1986	9,546		4,676		3,409
1987	11,989	6,023	2,485	3,481	3,941
1988	14,496	7,175	3,786	3,535	7,367
1989	16,605	8,228	2,987	5,390	4,188
1990	24,656	17,009	2,244	5,403	6,063
1991	28,156		2,495		2,536
1992	21,087		2,574		4,426
1993	11,924	9,167	2,166	591	6,286
1994	21,169	18,754	1,962	453	5,184
1995	22,623		1,616		7,054
1996	23,205	15,900	1,905	5,400	8,054
1997	35,079	27,389	2,110	5,580	8,740
1998	36,000	29,821	2,639	3,540	9,046
1999	80,000	75,080	2,228	2,724	9,526

Source: Zhang and Li, 2002

Note: Data for 1999 are estimates.

TABLE 5  
BREAKDOWN OF STUDENTS STUDYING ABROAD  
BY AREA OF STUDY AND COUNTRY, 1978-2001

	Cumulative total of students who studied abroad	Proportion (%)	Total returned	Share of returned (%)
<b>Subject</b>				
Science and engineering	345,000	75.0		
Liberal arts	115,000	25.0		
<b>Country</b>				
US	242,700	52.8	33,978	14.0
Japan	69,610	15.1	25,755	37.0
Canada	36,400	9.9	13,468	37.0
German	32,800	7.1	11,808	36.0
UK	27,940	6.1	12,852	46.0
France	18,400	4.0	8,648	47.0
Australia	14,950	3.3	7,475	50.0
Others	17,200	3.7	1,984	11.5
Total	460,000		100,000	

Source: Based on Ministry of Education data.

TABLE 6  
NUMBER OF HUMAN RESOURCES IN SCIENCE  
AND TECHNOLOGY (HRST) WHO WORK ABROAD  
FOR PROJECT DESIGN AND CONSULTANCY

	1995	1996	1997	1998	1999
Total	250	349	425	277	451
To:					
Japan	4		5		
US	11		40	25	
Germany	23	21			
France			42		
Italy			12		
Holland				5	
Austria			6		

Source: *China Statistical Yearbook*, 1999.



## ANALYSIS OF THE SCALE AND DISTRIBUTION OF HIGHLY SKILLED CHINESE MIGRANTS IN EUROPE

### **Volume and distribution of highly skilled Chinese migrants in Europe<sup>5</sup>**

The number of highly skilled Chinese who migrated to Europe for study is considerably higher than for technical and labour migrants, although no official figures are available. The European destinations for Chinese students are mainly Germany, the United Kingdom, and France. Since 1978, the number of Chinese students studying abroad stands at around 460,000<sup>6</sup> with Europe receiving around 20 per cent of the total (see Table 5).

Though the number of Chinese students studying in Europe is relatively small, their growth rate and development trends are remarkable. Following the United States, Canada and Japan as the most popular countries for studying abroad; Europe, especially Germany, the United Kingdom, and France are becoming the favoured destinations for the highly skilled. According to the British Cultural Council, China has become the second largest country of origin of non-EU students studying in the United Kingdom. The number of Chinese students studying at British colleges and universities reached 3,580 from 1998 to 1999, 6,094 for 1999 to 2000 and 10,322 for 2000 to 2001 (excluding students at language schools). The director of the education and training centre of the Council said that it was a good thing and had been encouraged by British educational exhibitions which were held several times in China each year. He added that Britain needed foreign students to make British education more international and to contribute to scientific research. He also mentioned that internationalized education was the best way to establish high-level dialogue and partnership among countries (*China News Net*, 2002). According to statistics from the British Embassy in Beijing, in the first half of 2002 the number of UK-bound Chinese students increased by 70 per cent over the same period the previous year (*Huasheng*, 2000). In recent years, the number of French visas granted to Chinese students increased at an annual rate of 50 to 100 per cent. Five hundred visas were granted in 1997; 900 in 1998; 1,900 in 1999; 3,600 in 2000; and some 5,000 to 6,000 in 2001 (*Xinhua net*, 2002) Starting from late 1990, Germany has become the new favoured nation for Chinese students and professionals. Free public higher education, a stable social environment, and a robust industrial and economic sector are the most important factors that attract Chinese students. According to the newest statistics of the 2000 and 2001 winter semester published in Germany, 9,109 Chinese students enrolled in German universities, ranking it after Turkey (23,604) and Poland (9,328), and in terms of the number of Chinese undergraduates (2,744) it ranked second after Turkey (2,809). Apart from Germany, the United Kingdom, and France, the number of Chinese students in other EU countries is also growing rapidly.

## Background of migration of highly skilled Chinese to Europe

The United States is still the most favoured destination for Chinese, and in the past three years China was the most important source country of foreign students in the United States. According to the electronic edition of *HuaSheng* newspaper, the Educational and Cultural Affairs Office of the U.S. State Council published a report according to which 59,939 Chinese students went to the United States in 2000 and 2001, the largest number worldwide (*News Weekly*, 2002). Though the number of Chinese students in Europe is smaller than in the United States, it is gaining momentum for the reasons referred to earlier.

The United States attracts talent from all over the world because of its economic strength, advanced scientific research and education, mature labour market, and flexible and effective immigration policy. According to 1989 statistics from the International Education Institute, Chinese students obtained US\$ 2 billion in financial support (Blumenthal, 1993). In the early 1980s, many receiving countries changed their policies to limit the inflow of foreign students, but the US Government still encouraged foreign students to come and study. American schools offered financial support to domestic and foreign students alike, and charged them the same tuition fees (Williams, 1987). One of the key factors for this rapid development is that the United States is able to provide more opportunities for employment than other countries to attract worldwide talent to live and work in the United States. This, however, can result in a serious problem of brain drain for other countries – even the United Kingdom has been led to discourage brain drain from its own shores (Schuster, 1994). There are 1.5 million students studying abroad worldwide, of whom over half aim for the United States. However, data show that although in absolute numbers the inflow of talented migrants to the United States is still growing, the growth rate is decelerating. In recent years, access to the United States by Chinese students has become more difficult and the cost has increased. At the same time, the number of students returning is rising. In the fiscal year ending 30 September 2002, the US Congress approved 195,000 H-1B visas. Up to 30 June 2002, however, US immigration officials issued only 60,500 H-1B visas, a 54 per cent drop from the previous year. It is estimated that the quota of H-1B visas will decline to 65,000 in FY 2004 (Xinhua net, 2002). Starting from August 2001, the U.S. embassy in Beijing cut back the number of visas granted to Chinese students and in the spring of 2002 more students were rejected by embassy officials (*News Weekly*, 2002). The combination of prevailing economic conditions in the United States, the rise in unemployment, race discrimination, and the cultural monopoly of news media have made more and more Chinese uncomfortable (Lan and Jiang, 2000) and made them look toward European countries instead. Thus, Chinese students and technical migrants have been attracted by European history and culture, the scientific and technological advances and research opportunities, the modern education system, and, espe-

cially more recently, more flexible and positive employment and immigration policies for highly skilled foreign professionals.

Second, the existing gaps in the scientific, technological, cultural, and educational fields between China and Europe influence the flow of migration of highly skilled persons between both sides. As economic development, the further opening to the outside world at various levels, gains additional momentum in the near future, the importance of the outflow of highly skilled Chinese can be expected to gather further momentum. Since the economic reforms and opening to the outside world, China has achieved notable social and economic success attracting worldwide attention. Nevertheless, the obvious gaps in certain areas between China and the advanced European countries still maintain the outflow of highly skilled Chinese migrants well above the inflow of their foreign counterparts into China. In terms of investment theory, when highly skilled people invest their own human capital, they do so very much like any other investment, namely they seek the maximum return for a given level of risk. A country's ability to attract human capital depends on the anticipated return and the level of risk involved. Compared to China, European countries undoubtedly enjoy a dominant position in attracting highly skilled migrants from China to Europe because of their economic, scientific, and technological advantages. At present, China is still experiencing the phenomenon of a structural educational surplus, common to developing countries. That means that desirable and well-paying jobs are few and far between and cannot absorb the available job seekers, thus creating an educational surplus. A large number of people have to raise both their human capital input and risk in exchange for limited job opportunities. It is not surprising, therefore, that they would like to go abroad in search of educational opportunities and professional development.

Third, aware of the keen international competition for talent, European countries adopt measures and policies to attract the highly skilled. Against the background of economic globalization and the internationalization of education, the scale and speed of international migration of talent are unprecedented, and the United States is undoubtedly among the major beneficiaries of this competition. Even though in Europe, compared to China, the scale and the effect of the outflow of highly skilled manpower from Europe is smaller, the European countries are nevertheless also faced with the pressure exerted by the keen competition for talent with the United States. Data show that European countries such as the United Kingdom, France, and Germany see tens of thousands of their highly skilled nationals migrate to the United States for academic and professional reasons each year. According to a British survey, the elite of British universities are leaving for American universities, causing the number of highly talented people at those universities, together with their former excellent academic standards, to decline. Available data show that the number of well-known British scholars who left for America rose to 26 per cent, increased from 18 per cent 20 years ago. Naturally, British

academic circles are seriously concerned over this development (*Yangcheng Night News*, 2000).

China is anxious to contain the outflow of talented science and technology students and professionals, and to attract those of other countries to come to China (*Huasheng*, 2000). The Government noted that some European countries are introducing measures to attract foreign skills to meet some of the shortages appearing there. Such measures include better cooperation within European countries and efforts at improving the efficiency and competitiveness of European labour markets in order to not only attract their own skilled manpower to remain, but also those who have gone abroad to return. On the other hand, such measures also foresee enhanced cooperation and student and professional exchanges with various developing countries, including China. Thus, a number of European countries, e.g. the United Kingdom, Germany, France, and the Netherlands, have increased the available entrance visas for Chinese students and organized educational exhibitions in China. In addition, foundations and grants have been established to attract highly skilled Chinese students to come to Europe to study. In response, the number of Chinese students in the United Kingdom has risen sharply over recent years. In May 2001, the German Government approved a so-called green card programme which foresees preferential treatment for foreign IT specialists. France, Austria, the United Kingdom, and Finland have also provided facilitated access by foreign specialists to their high-tech production programmes. On the basis of such initiatives, future exchanges between China and European countries may be expected to intensify.

### PROSPECTS FOR COOPERATION REGARDING THE INTERNATIONAL MIGRATION OF HIGHLY SKILLED MANPOWER BETWEEN CHINA AND EUROPE

As seen earlier, China registers the largest number of students leaving to study abroad and this trend has increased even further over recent years. Public opinion in China regarding this development is divided and does not allow any clear conclusions to be drawn as to the desirability of this phenomenon. Thus, one school of thought holds that, as a proportion of the available total reserve of scientific and technological human capital in China as a whole, the outflow presents no cause for alarm. On the other hand, there are those who would argue that although the numbers may not be excessively high, they include the brightest talents and a large part of the Chinese scientific and academic elite. Such outflows, or brain drain, therefore, constitute a major cause of concern and pose a serious risk to China's economic, social, technological, and cultural development. It is also argued that the training of Chinese students incurs a total cost of RMB 200,000. If it is conservatively assumed that some 300,000 highly skilled academics and pro-

professionals leave China after they have completed their higher education, the total loss to China may well be over RMB 60 billion in terms of lost investment in human capital, or the equivalent of about 30 per cent of the total national budget for education in 1998.

Assuming further that the annual cost for each self-supported student abroad is around US\$ 20,000 and considering that in 2000 some 80,000 students were studying abroad, then the loss to China is the equivalent of US\$ 1.6 billion in economic terms only. Once the resulting social opportunity cost and the misallocation of scarce resources, as well as other contingent effects, are factored in, the actual compound cost as a consequence of the outflow of highly skilled manpower is very much higher.

The numbers of highly skilled Chinese academics and professionals are about the same as those for their European, Japanese, Russian, and US counterparts. But, the overall quality is not as high and is further aggravated by the brain drain, hurting China's development and international competitiveness.

According to a Report on International Competitiveness (2000) issued by the Lausanne International Management School (Switzerland), China ranks last for the "availability of qualified engineers" and second-to-last for the "availability of qualified information technicians". In terms of international competitiveness, China dropped from rank 13 in 1998 to 25 in 1999, and declined further to rank 28 in 2000. This is an indication that China is short of key technical talent owing in part to the outflow of highly skilled human resources. A migration research report covering 152 countries prepared by the International Labour Organization (ILO) suggested that brain drain had generated negative effects in developing countries. It pointed out that the outflows of young highly skilled people increased the risk of economic stagnation in these countries and reduced their international competitiveness (Ynet, 2000; Xinlang Keji, 2000).

In 1998, a market survey firm in Beijing conducted interviews with a sample of 301 students from Beijing University (BU), Tsinghua University (TU), Beijing Normal University, North Communication University, and Beijing Aerospace University, all of which are well known in China. Seventy per cent of such students intended to migrate abroad, three-fourths of them to the United States. Since the 1990s, Chinese who obtained a Ph.D. in science and engineering in the United States exceeded those in China. In 1995, 2,751 Chinese students obtained their Ph.D. in the United States, accounting for more than 10 per cent of all foreign Ph.D. holders, ranking first among all foreign nationals (*Life Times*, 2000). Over the past 20 years one-third of the students from the BU Dept. of Physics went abroad, 500 to the United States (Ynet, 2000). In 1997, 457 college graduates from Beijing University went abroad, representing 15.3 per cent of all graduates,

and in 1998, 302 students left, representing 13.6 per cent of the total. In 1997 and 1998, 357 and 379 students, respectively, from TU went abroad, representing 14.5 per cent and 15.4 per cent of the total, respectively (*Zhonghuadushubao*, 2000) Therefore, these universities have already come to be referred to as “Chinese universities run for foreign countries”. The president of a university said sadly that the phenomenon of “planting trees domestically, bearing fruits abroad” existed to a certain extent in many well known universities in China (Xinlang Keji, 2000). International migration of human resources is a result of the differentials in economic, social, scientific, technological and cultural developments worldwide. Although the outflow of highly skilled Chinese manpower has a considerable impact on China, taking a long-term perspective, the Chinese Government still upholds the policy of “supporting study abroad, encouraging return home, going abroad, and returning home unrestrictedly”. To accede to the general trend of globalization and the international migration of human resources, the Chinese Government has called off or reduced the formalities regarding examinations and approvals, and policy restrictions. Meanwhile, facing up to the international competition for talent, the Government is actively improving the domestic environment for innovation and scientific research to encourage students to return home.

Vice Minister Wei Yu (Ministry of Education) had this to say: “Since the economic reforms and the opening process, the scale and strength of Chinese students studying abroad<sup>7</sup> are unprecedented in modern Chinese history and in the world.” The government policy for studying abroad has met with success. Among the overseas Chinese students, 100,000 have already returned to China, while the others who are still abroad are also anxious to put their skills at the service of China in various ways. They have been praised for their efforts by both the Government and the people. According to statistics, the “sixth generation of overseas students” represent 50 per cent of all academics of the Chinese Academy of Engineering, specialists of Hundred Persons Plan under the leadership of the Chinese Academy of Natural Sciences, National Scientific Foundation for Outstanding Youth under the leadership of the National Committee of Natural Science Foundation, National Main Scientific and Technologic Project, 863 Plan, 973 Plan under the leadership of the Ministry of Science and Technology, and others (Jiang, 2001).

With further improvement of the government policy of encouraging studies abroad, it became a practice that not only benefited the Government but also the individuals and the people themselves. By now, the growing share of self-supporting students studying abroad is evidence that not only state-sponsored students take the opportunity of pursuing their studies abroad, but that many do so also for their own benefit. As such, overseas study has become an expression of the freedom of choice and movement, enjoyed by Chinese citizens.

In addition, the Chinese Government has established preferential policies to also encourage and support foreign students to come and study in China. Currently, there are some 300,000 foreign students studying in China. Given that China and European countries share similar views, attitudes, and policies in regard to the international migration of human resources, this may be seen as encouraging further cooperation between China and Europe in this area of mutual interest. Even though, for the time being, the degree and scope of such cooperation is still modest, there is a large potential for further expansion for the mutual benefit of both societies.

### **Economic, social, scientific, technological, and cultural differences and complementarities between China and Europe**

The driving force behind the international migration of human capital, similar to the circulation of capital, is to maximize benefit at a given risk level, or to minimize the risk for a given benefit. Compared to money, though, human capital is also quite distinct in that it is an inherent part of the human being itself and, unlike money, it cannot be separated. Thus, for human capital to migrate, it has to do so with its humble abode – the person in whom it is lodged. Seen from that angle, the impact of the international mobility of human capital on sending and receiving countries is both more profound and complicated. For China the current negative impact of the continuing large outflow of Chinese talent must not be underestimated. However, at present the relative education surplus and underutilization of human resource must be seen as an inevitable social phenomenon in China. Therefore, a certain proportion of the outflow of talent may be a meaningful process in both the national and individual interest. In Europe, the immigration of foreign skilled manpower into European countries may possibly create some social problems such as employment pressure, cultural conflict, pressure on social security and welfare programmes, and so forth, while it also makes up for particular manpower shortfalls. It is necessary, therefore, for China and the European countries to build and reinforce closer international cooperation and to strengthen communication with the immigrants. Although China and European countries are positioned at different levels of economic and social development, there are complementary areas in, e.g. the economic, scientific, technological, and cultural fields. That provides ample scope for the development of a mutually beneficial international exchange of talent and know-how. Presently, for example, European economies and labour markets experience a shortage of IT specialists. Therefore, there is the possibility of drawing on Chinese science students and professionals. China, on the other hand, stands mid-way toward industrialization and, though it can count on a vast pool of skilled human resources, it still lacks state-of-the-art experts in a number of areas, which may encourage it to invite skilled academics and professionals from Europe to train its students and assist to advance its scientific and technological development to meet high international standards.

## **Increasingly close economic ties between China and Europe**

In more than 20 years China's economy has become a close and inseparable part of the global economy, and Europe has become a significant partner of China. Many well known European transnational companies have opened their businesses and built their factories in China, and consider China to be an important base within their global strategy. With China's economic development, it can be expected that Chinese enterprises will be moving in greater numbers to Europe also. After China's accession to the World Trade Organization (WTO), China and Europe will establish closer economic ties that will encourage international migration between China and Europe on both a larger scale and in more fields than in the past.

The closer economic ties between China and Europe require that each side have a large group of highly skilled people who are also well acquainted with European and Chinese conditions. It is necessary for both sides to strengthen their international exchange with a vision toward training this kind of human resources.

## **Exchange and cooperation in science, technology, education, and culture between China and Europe**

Thanks to China's development efforts and access to outside expertise for reference, China has been able to create its own distinct and integrated economic, scientific, technological, educational, and cultural system. Although, as already stated above, China is still lagging behind other countries in its scientific and technological advance, in some high-tech areas, such as, e.g. aerospace technology, biology, innovative materials and polymers, as well as the environment and new sources of energy, all of which have a profound effect on the national economy and economic development in general, China may be proud of the level of its technical and research capacity. In this area, European countries also have a record of outstanding achievements, and can look back on a long history of path-breaking technological advances. The same is true with regard to cultural and educational developments. China also looks back on a civilization whose history goes back thousands of years. Yet, for a variety of intervening events, today China has to accept that it still has to catch up in some areas, compared to European countries. In doing so, it will be able to rely and call on its long tradition and history, profound culture, and good education. It will, thus, be able to build a strong and mutually fruitful relationship with Europe to advance further and succeed in its efforts.

The scope of common interests and the fruitful exchange of their distinct scientific, technological, educational, and cultural heritage and achievements will allow both Europe and China to further strengthen and develop their cooperation



to the benefit of their respective development objectives. The international migration of skilled personnel can, therefore, be expected to grow both in quantity and quality.

### **The international exchange of labour services and cooperation between China and Europe**

The international labour services exchange is an important part, and has become an independent branch of, international trade. For historic reasons, in China this is referred to as foreign labour cooperation. The form of international labour services normally assumes the form of labour export, usually in connection with project contracts, design, and consultation, where Chinese investments abroad are normally accompanied by Chinese manpower, such as specialists, technicians, and others.

Over the last 20 years and more, China has sent 2.3 million persons to more than 180 countries (Xu, 1999), but predominantly to South-East Asia, the Middle East, and Japan (70%); Africa (10%); Europe and North America (5% each); and Oceania and South America (3% and 2%). So far, labour export from China not only increased substantially in numbers but also in the variety of services provided. Since the economic reforms and China's opening to the West, they have expanded from construction and textile industries to manufacturing, agriculture, services, environmental protection, IT, etc., and the personal profile of the manpower involved has changed from the original construction workers, waiters and cooks, etc. to computer technicians, project consultants and designers, nurses, athletes, coaches; and business managers (Xu, 1999). Nevertheless, in terms of variety, growth, and speed in this rapidly developing area, China still lags behind and is held back by economic and social constraints, as well as by policy, legal, and institutional mechanisms that need to be developed further.

### **SOME CURRENT PROBLEMS**

Clearly, the international migration of highly skilled manpower can bring with it negative and positive consequences, particularly if it occurs in a largely inchoate and spontaneous manner, not subject to any regulations. It is in our mutual interest, therefore, to enhance those aspects which are beneficial and to curtail and eliminate those that are harmful to the parties involved.

The language barrier is one of the main factors affecting the international migration of highly skilled personnel between China and Europe. An overwhelming majority of Chinese students choose English as their first foreign language, while French, Spanish, and German, are less popular in Chinese schools; nor is Chinese

very popular in Europe. Thus, the language barrier impedes effective communication and restricts what might otherwise be fruitful exchanges. Cultural differences can also present some difficulties. While both China and Europe can look back on a long history with a rich culture and traditions, much in their respective living and social traditions and habits, manner of communicating and doing things, and opinions and aspirations are diametrically different and can lead to conflict.

Thus, the different educational systems in China and Europe are a significant factor influencing the international migration of students abroad, as such differences and difficulties can result in the non-recognition of respective academic achievements and degrees. Moreover, channels of information need to be improved to more rapidly and clearly convey necessary information on study programmes and opportunities. Some, like the Internet, are not used to its full advantage. Moreover, access to information may sometimes be manipulated and can cause Chinese students and their families to be misled and cheated. Finally, concern over ultra-nationalistic trends and racial discrimination may also inhibit the natural flow of international migration of skilled manpower between Europe and China, and will have to be watched closely by both Governments.

## CONCLUSIONS

The international migration of skilled manpower means that human capital is looking for the best opportunity of investment worldwide and to realize maximum benefit at minimum risk. Unlike international financial flows, the flow of human capital (still) occurs together with the person possessing it, and has to be evaluated in a human and social dimension. In terms of the scale, distribution, growth rate, form, and direction, international migration of skilled manpower not only follows its own natural inclinations and laws, but is further influenced and oriented by the policies of sending and receiving countries, as well as their economic, scientific, technological, and cultural characteristics.

Currently, the flow of international migration of highly skilled Chinese personnel is mainly oriented toward Europe and the United States. While studying abroad has been the main form of migration of the skilled, this has now been joined by the migration of technical and professional staff, and the trend is increasing. The main country of destination for Chinese students is the United States, which absorbs more than half of the total, while Australia and Canada receive the largest number of skilled Chinese manpower. The United States also receives a large number of Chinese technical personnel, but its proportion has declined, while the flow to Europe has risen sharply.

This development may be attributed to the global expansion of economic, scientific and technological, as well as cultural and educational exchanges and co-

operation. But it is also the result of an increase in the educational investment made by the Chinese people following the continuous increase in China's economic strength and the population's personal income. Of greater importance are the gaps between China and Europe at the scientific, technological, and educational levels, and the research and marketing environment. The intervening changes in labour market and immigration policies in European and American countries accelerate the trend further. For all these and other reasons, the spatial distribution of Chinese students will become more balanced and play a positive role in the promotion of mutually beneficial exchanges between China and other countries.

As we have seen, the migration of highly skilled Chinese personnel to other countries affects China and the receiving countries in both positive and negative ways, and to varying degrees.

For China, which is a net emigration country, the international migration of its highly skilled manpower has the following positive aspects.

First, international migration promotes international academic exchanges, which allow Chinese scholars to be quickly informed about scientific and technological developments. Second, studying abroad not only provides the opportunity to become familiar with advanced technology, management, trade, etc., but also to broaden the students' horizons as they absorb more advanced and sophisticated work experience and enhance their human capital. Those who return to China and start a business at home not only bring their advanced knowledge of business, trade, science, and technology to bear, but also precious resources of information and business networks which can help the development of China's economy. What they can offer far exceeds the invested outlay in their study or work abroad. Third, the outflow of highly skilled personnel also introduces changes in the personnel management system of China. Over time, as China recognizes the importance of talent the personnel management system will also change and introduce policies that encourage the return of talent and make full use of the advanced skills. Fourth, China's economic development and social progress will make Chinese people realize that property rights need to be well defined and protected so that those who return and invent or innovate may profit from their work. If people are deprived because such protection is lacking, the result will be a "tragedy of the commons" and an acceleration of the brain drain.

However, in terms of China's huge population, the scale of outflow of highly skilled Chinese may appear insignificant, but its negative impact cannot be ignored as they are a well educated and talented human resource, including those who play a leading role in some academic fields. The outflow of highly skilled Chinese definitely hinders China's scientific and technological progress and reduces its international competitiveness. Moreover, in the 1990s, the fact that a

large number of excellent students who graduated from well-known Chinese universities went abroad will continue to have a far-reaching impact on China's potential for future scientific and technological research and development. Even now, the outflow of excellent young researchers from the best universities and research institutions in China are a very serious problem, as universities and other educational institutions are finding it difficult to keep the best of their talented students. Thus, for the time being, the effect on China of the outflow of its best and brightest is still negative, as it still exceeds the benefits that may be derived in the longer term. Regarding the effect on the receiving countries, inflows of foreign students can make up their current talent shortage, for instance in information technology, and contribute to make more efficient and fuller use of their educational resources.

In sum, the benefits of international migration of highly skilled personnel on sending and receiving countries are unevenly distributed, but mutual advantages can certainly be seen. Thus, international migration of the highly skilled brings with it the international transfer of technology, capital, knowledge, information, and so forth, while it also promotes international trade relations and academic and cultural exchanges. This can increase the social welfare of both sending and receiving countries.

## POLICY SUGGESTIONS

China and Europe should focus on the long-term mutual benefits and development requirements and cooperate to further improve the current uneven mobile model, which is still more or less a one-way affair, to become a mutually beneficial conveyor of scarce and necessary human resources and know-how. Therefore the author would like to make following suggestions:

1. To establish scientifically classified database systems concerning the international migration of the highly skilled in order to provide the scientific foundation for analysis, forecast, and management of such movements and their trends, scale and composition between China and Europe. Such efforts should be accompanied by a long-term plan for mutual exchange, cooperation, and training.
2. To build a mechanism of regular and institutional negotiation and dialogue among Chinese and European Governments and academic institutions. To change the present passive, unfocused, spontaneous, and disorderly international migration flows into an international migration model of highly skilled people who focus on the long-term benefits for both sides, with active guidance and dynamic management.
3. For China and Europe to consolidate their cultural and educational exchanges and cooperation on the basis of mutual agreements to reduce

and eliminate existing difficulties for students as a result of the gaps between the respective educational systems. Similarly, strengthening the existing historical and cultural relations and promoting exchange and cooperation between the sending and receiving countries can not only reduce the language barriers, but also improve mutual understanding and respect between the two sides.

4. For China and Europe to enhance their exchange and cooperation in the high-tech fields and to regularly determine high-tech research projects in which both sides have a strong research background and to pool such available assets for their mutual benefit.
5. For each side to encourage and support its transnational enterprises to establish scientific research centres in order to favour the localization of scientific research and highly skilled manpower.
6. For both sides to enhance cooperation on intellectual property rights, thus contributing to the improvement of the existing investment environment and the encouragement of technological innovation.

Against the background of China's accession to the WTO, economic globalization, and the international migration of talent, the necessary option for China is to go with the tides of time and support the international migration of its skilled manpower. Although the international migration of the highly skilled between China and Europe still encounters a number of problems, these can be overcome with mutual goodwill with a view toward enlarging the scope and mutual benefit in a long-term perspective.

## NOTES

1. This chapter concerns mainland of China.
2. The data are based on Forum of Domestic and Foreign Presidents of Universities, 2002. However, by our estimates the figure exceeds 500,000.
3. Please refer to Table 4.
4. Please refer to Table 6.
5. The relevant data are based on: <http://www.sina.com.cn20/7/2000>, <http://www.Chinanews.com.cn20/5/2002>, <http://www.sohu.com21/7/2002>, and <http://www.people.net.cn20/5/2002>.

6. The data are based on Forum of Domestic and Foreign Presidents of Universities, 2002. However, by our estimates the figure exceeds 500,000.
7. They are viewed as the sixth generation of overseas students.

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## MIGRATION DE CHINOIS HAUTEMENT QUALIFIES EN EUROPE: TENDANCES ET PERSPECTIVES

Depuis l'ouverture économique et les réformes de la Chine en 1978, le pays a élargi et approfondi ses échanges et ses relations avec le reste du monde. Ceci s'est répercuté sur l'ampleur de l'émigration des nationaux hautement qualifiés. L'incidence de cette émigration sur la Chine et sur les autres pays concernés mérite une attention particulière. Après les premiers flux migratoires, essentiellement à destination des Etats-Unis, du Japon, du Canada, de l'Australie et de la Nouvelle-Zélande, l'émigration de Chinois hautement qualifiés vers l'Europe apparaît comme une nouvelle tendance notable.

A l'heure actuelle, le flux de migration internationale concernant la main-d'œuvre chinoise hautement qualifiée est principalement orienté en direction de l'Europe et des Etats-Unis. Si la principale forme d'émigration des personnes qualifiées a été jusqu'à présent celle des étudiants partant parfaire leur formation à l'étranger, on assiste à présent également à l'émigration de cadres et de techniciens et cette tendance s'accroît de plus en plus. Ce sont les Etats-Unis qui ont surtout la faveur des étudiants chinois, ce pays en absorbant d'ailleurs plus de la moitié, tandis que l'Australie et le Canada accueillent le plus grand nombre de travailleurs chinois qualifiés. Les Etats-Unis accueillent également un grand nombre de techniciens chinois, mais cette tendance est plutôt en baisse, l'Europe suscitant en revanche un intérêt nettement plus marqué de leur part.

Cette évolution peut être attribuée à l'expansion mondiale des échanges et de la coopération sur les plans économique, scientifique et technologique, mais aussi sur les plans culturel et éducatif. Elle résulte également d'un accroissement de l'investissement éducatif de la population chinoise à la suite des progrès constants accomplis par l'économie chinoise et de la hausse de revenus des habitants. Le point le plus saillant dans ce domaine est l'écart séparant la Chine de l'Europe dans les domaines scientifique, technologique et éducatif et sur les plans de la recherche et du marketing. Les changements que traversent le marché du travail et l'évolution des politiques d'immigration en Europe et en Amérique accélèrent encore cette tendance. Pour toutes ces raisons, l'on peut s'attendre à une répartition plus équilibrée des étudiants chinois dans le monde, ce qui devrait jouer un rôle positif dans la promotion des échanges mutuellement bénéfiques entre la Chine et les autres pays.



## LA MIGRACIÓN DE CHINOS ALTAMENTE CALIFICADOS HACIA EUROPA: TENDENCIAS Y PERSPECTIVAS

Desde la apertura y reformas económicas de China en 1978, el país ha ampliado y ahondado sus intercambios y relaciones con otros países. Ello ha contribuido a un incremento de la emigración de chinos altamente calificados hacia el extranjero. El impacto de la emigración de chinos altamente calificados en China y en las naciones pertinentes merece una atención y estudio particulares. Tras las antiguas corrientes migratorias, principalmente encaminadas hacia los Estados Unidos, el Japón, el Canadá, Australia y Nueva Zelanda, la migración de chinos altamente competentes a Europa se ha convertido en una tendencia notable.

Actualmente, la emigración de personal chino altamente calificado se encamina principalmente hacia Europa y los Estados Unidos. Si bien la realización de estudios en el extranjero es el principal motivo de emigración de las personas competentes, cabe añadir a ésta la migración de personal técnico y profesional, que registra una tendencia al alza. El principal país de destino para los estudiantes chinos es los Estados Unidos, que absorbe más de la mitad del total, mientras que Australia y el Canadá reciben el mayor número de mano de obra calificada china. Los Estados Unidos también reciben bastante personal técnico chino, pero esta proporción ha disminuido, al tiempo que las corrientes hacia Europa han registrado un raudo aumento.

Este hecho puede atribuirse a la ampliación global de los intercambios y cooperación económicos, científicos y tecnológicos, además de culturales y educativos. Pero también es el resultado de un incremento en la inversión educativa que hacen los chinos tras el continuo aumento de la fuerza económica en la China y de los ingresos personales de la población. Revisten particular importancia las brechas entre China y Europa a nivel científico, tecnológico y educativo y en el entorno de la investigación y el comercio. Los cambios que se están produciendo en el mercado laboral y en las políticas de inmigración de los países europeos y americanos han acelerado aún más esta tendencia. Por consiguiente, la distribución espacial de los estudiantes chinos será más equilibrada y desempeñará una función positiva en la promoción de intercambios mutuamente benéficos entre China y otros países.