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CHINA'S COMPETITION FOR GLOBAL TALENTS: STRATEGY, POLICY AND RECOMMENDATIONS

by Huiyao Wang

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By all accounts, China's human resource in aggregate terms is substantial, but its human capital continues to suffer huge deficits. China currently has over 1.4 million returned students and 50 million overseas Chinese abroad with major influence and tremendous intellectual, technological and financial resources. However, China has not attracted an adequate number of overseas talents to make up for the loss of human capital. This report examines China's position in the global competition for talent and outlines measures for China to attract top talents from abroad.

Over the past 62 years since the founding of the People's Republic of China, the country has made huge progress, especially on the economic front. It has the largest foreign exchange reserves in the world and has become the second largest economy. The cultivation of human capital, however, lags behind its economic growth. Arguably, the key factor that drives China's growth is not a high tech industry, a knowledge-based economy or innovation and creativity, but rather a cheap labor force, inexpensive land and low-end manufacturing. As a result, while China has become a major engine driving world economic growth, it has yet to fully realize the gains from global economic integration.

To gain a competitive edge in the market for skilled labour, a country must have the three following features. First, the source and composition of human capital must be internationalized in order to attract and utilize a large number of talented people from abroad. Second, the concept and quality of human capital must be internationalized because it can demonstrate that the country has the capacity to cultivate homegrown talent to compete overseas. And third, mobility and competition of highly-skilled labour force should be internationalized. On the one hand, international talent will compete with domestic talent for the same job within that country. On the other hand, the increase in competition can encourage domestic talents to compete abroad and help lead local enterprises to compete on the global market.

By all accounts, China's human resource in aggregate terms is quite substantial, but in terms of human capital, it is lacking. There are a significant number of people in China with higher education, but the total size of the skilled labour force is quite limited. China's education and training system are also insufficient given new social demands. For example, in the field of natural science where there are no cultural or ideological differences, a Chinese citizen has yet to be awarded a Nobel Prize. In addition, a number of those in the skilled labour force are aging, which would lead to uneven distribution of human capital across regions, sectors, industries and departments. What is more, a large number of highly-skilled professionals have left

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China either by way of studying abroad or through immigration. Meanwhile, China has not attracted an adequate number of overseas talents to make up for the loss of human capital. According to the Ministry of Education in China, by the end of 2011, the total number of students going overseas has reached 2,244,100 and the number of returned only reached 818,400,[1] about 36%. In terms of competing on the global market for highly-skilled labour with developed nations like the United States and Europe, China does not fare as well in its efforts to attract talent from abroad. It has focused too much on short-term

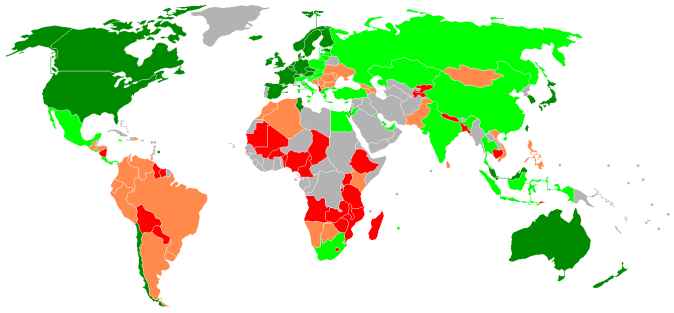
work and has neglected the long-term integration of foreign talent. It was not until 2004 that China issued the registered green card system as a means to attract and retain highly-skilled workers, but it has yet to develop a policy to naturalize foreigners. At present, overseas recruitment has mainly focused on Chinese students who left to study abroad as well as overseas Chinese professionals. Now, China has a total number of over 1.4 million returned students and 50 million overseas Chinese, who have tremendous intellectual, technological and financial resources.

China has witnessed a positive turn in terms of knowledge transfers. Since the turn of the new century, the CPC Central Committee and the Chinese Government, with the launching of the "Thousand-Talent Project"[2] and relevant programs, have carried out the strategy of strengthening China through human capital development, which will benefit China in the global market for highly-skilled labour. In order for China to become a strong nation that develops industrially and innovates, China must develop a pro-active response to the global competition for talent.

I. The status quo of China's strategy in the global talent competition

The cultivation and recruitment of skilled labor in China continues to lack in competitiveness and lag behind on social and economic development, even though China claims the richest human resource in the world. According to the report of "China's Human Resources" published by the State Council of PRC in September 2010,[3] by the end of 2008 the total number of talented people in China had reached 114 million, including government officials, people who have professional knowledge or special skills. It had a total number of 73.9 million talented workers of various types, ranking first in the world. Among them, over 6.6 million were Party and government officials; 17.7 million were at the managerial level of enterprises; 4.5 million were at the managerial level of government bodies and institutions; 42 million were professional and technical specialists; 8.4 million were highly qualified personnel; and 5.8 million were rural workers with practical skills.[4] In addition, China's aggregate number of human resources in science and technology stood at 42.5 million, ranking first in the world, ahead of the United States' 42 million.[5] The number of PhD graduates each year also surpassed that of the United States and the number of PhD students currently enrolled in school also ranks first in the world. Therefore, most research findings show that China's aggregate human resources are quite impressive, but the average per ten thousand is still low in the world.

In fact, human resources are not synonymous to human capital. The Global Competitiveness Report 2007 by the World Economic Forum indicated that China ranked 34th, behind Hong Kong (12th place) and Taiwan (14th place).[6] Research findings made in 2007 by the International Institute for Management Development (IMD) at Lausanne, Switzerland noted that the total number of China's R&D personnel ranked first globally, gross expenditure on R&D ranked



2006-2007 Global Competitiveness Index *Photo Credit: Ultramarine*

sixth and total spending on enterprise R&D ranked sixth. According to the report of "China's Human Resources", in 2008 the full-time R&D personnel in China reached 1,965,400, among which 1,593,400 were full-time scientists and engineers, 3.4 times the 1991 figure. It shows that China's investment in R&D and total investment in human resources are quite considerable, but China's patent output rate only ranked 23rd and basic research to enhance long-

term economic development only ranked 17th. The reason of this paradox is because China lacks global competitiveness and human capital. According to this report, its global competitiveness ranked the 15th among 55 counties and regions.[7]

With regards to the training of PhD candidates, the total number of PhD candidates each year ranked first in the world. The official report of "China's Human Resources" writes that by the end of 2010, a total of 2,146 centers for post-doctoral studies and 1,642 post-doctoral workstations were set up in China, and the number of post-doctoral researchers exceeded 70,000.[8] There were only 1,900 doctoral-granting institutions in 2004, and in 2005 schools of

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higher learning reported an additional 2700 joint-program and doctoral-granting institutions. As a result, the application number in a year was 1.4 times higher than the original number and the number of doctoral-granting institutions even exceeded that of the United States. It should be noted that over half of the American universities are among the world's top 40 universities and they have produced a third of the Nobel Prize winners. The increase in the number of doctoral-granting institutions is by no means due to the enhancement in the quality of education.[9] With the number of doctoral-granting institutions in 2004, China could train one PhD out of 4.2 Masters whereas the United States could produce one PhD out of 10 Masters.[10]

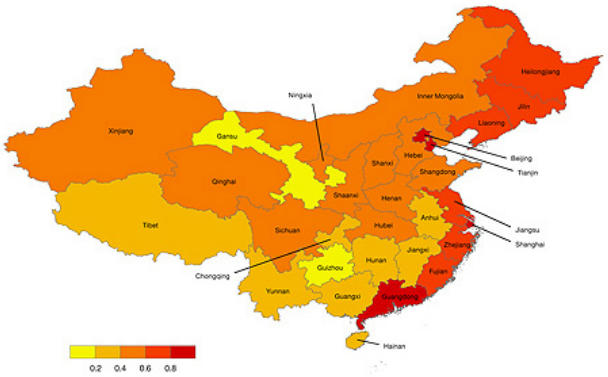
The education and training system in China lags behind the demand for social development and it lacks global competitiveness. In 2007, among the world's top 100 universities, the number of Chinese universities ranked on the list only amounted to half of the number of Hong Kong Universities (two for mainland China and four for Hong Kong).[11]

The number of graduates with higher learning is quite significant. According to statistics by the Ministry of Education, there were 6.1 million university graduates in 2009, but most of them were general personnel who lacked the skills to compete in the global labour market. A survey by McKinsey & Company indicates that Chinese university students have not received the practical skills which enable them to work in a multinational environment and only less than 10% of university graduates have the international professional skills to work in foreign enterprises. In comparison, 25% of university graduates in India are capable of working in foreign enterprises. Each year, China could train as many as 600,000 engineers, which is nine times that of the United States. However, among the 1.6 million young engineers, only 160,000 of them have the practical skills and language ability to work for transnational companies. With regard to corporate CEOs, it is estimated that China will need 75,000 managers with international qualifications in the next 10 years, however, there are currently only 5,000 personnel qualified in China.[12] The negligence in cultivating personnel with international qualifications and competitiveness has made Chinese enterprises in foreign countries play the part of ordinary laborers instead of highly-skilled laborers, which has become a major obstacle for Chinese enterprises wanting to go global.

The age-structure of human capital in China is experiencing an imbalance, leading to an uneven distribution of human capital across various regions, industries and sectors. The Chinese Academy of Sciences and the Chinese Academy of Engineering are leading scholars in the fields of science and

technology and engineering in China. From 1955 to 2007, the number of scholars that were elected at the two institutes had increased to over 1800 (not including foreign academics). At the Academy of Sciences, the number of academics under 60, which was determined according to their age when they were elected and not according to their present age, was only 530, less than half of the total number. At the Chinese Academy of Engineering, the aging issue is more serious and only about 30.6% engineers under the age of 60 were elected academics. It can be said that the total number of leading researchers in China is quite limited and aging.

In addition, the distribution of human capital is uneven. First, uneven regional distribution means that most of talent is concentrated in the eastern region, while the central and western regions do not attract highly-skilled labour. Second, there is uneven



China's Creativity Index by Region, 2008
Map by: Zara Matheson
Source: China Data Online http://chinadataonline.org

distribution across sectors and industries in the fields of finance, information, international trade and high tech being short of well-trained and well-experienced personnel. These sectors got off to a late start and more than half of the PhDs in related fields have left to work for the government to become civil servants. Third, the market economy requires a free flow of labour so that talents can be allocated efficiently in the job market. However, there are still many systematic obstacles obstructing the free flow of labour related to challenges of citizenship, green card, the household registration system, and bureaucracy in obtaining social security.

2. The loss of talents

Apart from China's challenge in cultivating its own human capital, another problem is brain drain. In 2006, 571 and 507 PhD graduates from Tsinghua University and Peking University respectively, which was larger than the number of PhD graduates from the University of California-Berkeley, had settled down in the United States according to a paper from Science Magazine. These two Chinese universities have become the two major institutions to send Chinese PhD graduates to American universities. Despite the benefits of studying abroad, the challenge China faces is that about 90% of its PhD graduates who majored in science and engineering have chosen to stay and work in the United States. They have followed the pattern of studying in the United States, looking for employment opportunities, applying for green card after securing visas and obtaining American citizenship. It is no wonder that the *American Science Magazine* had in July 2008, referred to Tsinghua and Peking Universities as "the richest base for cultivating American PhDs."

By 2010, China had sent a total number of 1.9 million students to study abroad and 630,000 of them had returned home. It should be noted that the higher the academic credentials of those studying abroad, the lower the rate of return. Statistics by the Organization for Economic Cooperation and Development (OECD) indicate that from 1990 to 1999, about 47% of the PhD graduates who were born outside the United States would choose to stay in that country. In the fields of science and engineering, which is needed by various countries for national development, the retention rate of Chinese PhD students stood at 87%, - higher than Taiwan (57%), South Korea (39%) as well as India (82%)[13] - which, as an emerging market, has also suffered from brain drain. Although the total return rate is now at around 30 percent, the U.S.

Energy Department's Oak Ridge Institute for Science and Education for the National Science Foundation reports that the percentage of highly qualified Chinese talent – such as US-educated PhD graduates five years after graduation in the sciences and engineering – that remained in the United States stands at 92%, the highest in the world. (In comparison, the stay rate for highly qualified talent in India is 81%, South Korea's - 41%, Japan - 33%, and Thailand - 7%).[14]

The largest number of overseas students received by the United States comes from India and China respectively. Statistics from the American National Council of Science show that in 2006, 2.2 million PhD students, who were born outside the United States, had been granted science or engineering degrees. Among them, 16% or about 350,000 were from India and only 11% or about 242,000 were from China. Due to the low return rate of Chinese PhDs majoring in science or engineering, China has exceeded India to become the largest source of overseas PhDs for the United States. In the United States, about 35% of PhDs majoring in science and engineering are born outside that country and 22% of them are from mainland China, 4% from Taiwan and 14% from India. China also sends a large number of students to study in the UK, Germany, Japan and Canada and many of these students choose to stay in these countries.

The number of immigrants also compounds the brain drain problem. According to the American statistics of tourist arrivals, only about 40% of Chinese immigrants with high-tech skills acquired Bachelor degrees in the United States.[15] In 2008, a total of 80,000 Chinese acquired green cards and 40,000 Chinese obtained American citizenship. China has become a major exporter of immigrants to the United States, next only to Mexico, ranking second in the world. The 2008 World Chinese Entrepreneurs Development Report issued by the China News Service shows that about

A Comparison between cumulative number of outbound students and returned students from 1996-2010

	Cumulative number of outbound students	Cumulative number of returned students	Returned rate (%)
1996	27.0	8.9	32.9
1997	29.6	9.6	32.4
1998	30.2	9.9	32.7
1999	32.0	11.2	35.0
2000	34.0	13.0	38.2
2001	46.0	13.5	29.3
2002	58.5	15.3	36.2
2003	70.0	17.8	25.4
2004	81.4	19.8	24.3
2005	93.3	23.3	24.9
2006	106.7	27.5	25.8
2007	121.2	32.0	26.4
2008	139.0	39.0	28.0
2009	162.0	49.7	30.7
2010	191.5	63.2	33.2

Source: China Statistics Yearbook 1996-2010; the figures of 2008 are based on the data issued by the Ministry of Education

six million Chinese have moved abroad and become new overseas Chinese since reform and opening up. Such brain drain amounts to a great loss to China.

Regarding leading talent, by 2009 there were nine intellectuals of Japanese descent who had won the Nobel Prize. Most of them had studied or worked in the United States and only one was not an American citizen. Thus far, eight foreign citizens of Chinese origin have acquired the Nobel Prize in the field of natural science. Five were born in China and all of them have or had American citizenship, except for Yuan Tseh Lee from Taiwan, who renounced his American citizenship. The Indian media has described this trend as "milk cow phenomena," i.e. a country invests in the input while a foreign country benefits from the output. In other words, the cow's mouth is in India, eating Indian grass, but the milker is a foreign country. Mr. K.C. Pant, former Indian minister of the Ministry of Steel and Mines, came to the conclusion that the essence of this brain drain is that a country spends a lot of money in the cultivation of human capital, only to have the fruits of this education is realized by other countries.

3. The introduction of talents should be based on a systemized and more open policy

In 2009, the number of foreign experts who came to work in China reached 480,000 person/times. The word "person/times" instead of "number of people" is used because most of these specialists came to work in China on a temporary basis. By the end of 2009, there were 223,000 foreigners working in China with employment permits. Besides, China had conferred "Friendship Awards" on 1,099 foreign experts, and "International Scientific and Technological Cooperation Awards" on 43 foreign experts by 2009.[16]

Before China adopted the so-called green card system in 2004, the government paid more attention to attracting highly educated students studying abroad and bringing in overseas talents, but students studying abroad with foreign citizenship faced too many restrictions preventing them from returning to China. In addition, the government was concerned more with the short-term recruitment and employment of foreigners. Even after the adoption of the green card system, the focus on long-term recruitment and integration of overseas skilled-labour and human capital inflow remained limited in contrast to the United States and Western Europe.

Arguably, the Chinese government should not merely bring foreign talent into China only for a short-period - it should seek to utilize their skills over a longer period. The government should consider how to extend the stay of foreigners needed for China's long-term development by developing a policy of naturalization and issuing them permanent residency. Currently, the issuing of visas is based on a short-term policy for promoting the transnational flow and the recruitment of skilled labour. The issuing of green cards and Chinese citizenship and the provision of basic national treatment are crucial components to such a policy.

From August, 2004 to August, 2007 the public security organs across China approved the permanent residency of 686 foreigners and in 2006 the number of foreigners with professional employment who had registered to live in Beijing over one year reached 70,000.

With regard to the acceptance of foreign students, the number of foreign students studying in China reached 190,000 in 2007 and exceeded 200,000 in 2008. From 1978 to 2009, the number of foreign students from 190 countries and regions studying in China reached 1.69 million/times.[17] China has accepted foreign students not for the purpose of earning money, but to bring in talented people. However, it is difficult for China to attract foreign students to work in China, to develop their understanding of Chinese affairs and to create more China-friendly views. In contrast, the United

States, United Kingdom, Canada and Australia have made proper arrangements to enable these foreign students to work in their country so as to make up for the shortage of skilled labour in relevant fields and in the process has gained substantial financial profits. Meanwhile, these overseas students have been able to gain a better understanding of Western cultures and have developed an affinity to Western views. In this regard, China should learn more from its western counterparts to attract and retain talented foreign students.

II. China's strategy on global talent competition and its future performance

China's strategy for recruiting high skilled labour is mainly focused on bringing in foreign experts and sending Chinese students to study abroad. The government is attaching greater importance on the cultivation of homegrown talent in light of international competitiveness. In particular, emphasis has been placed on the subject of English in China's compulsory education. Since primary school, Chinese students have started learning English through to college graduation. In the past few years, China has started giving priority to strategic issues such as the loss of human capital from immigration and overseas study, how to attract skilled labour from abroad; and how to face the challenge of global brain drain. By the end of 2008, China announced its new talent strategy that included major talent attracting programs or projects covering all aspects of talent overseas. One program that has received a lot of attention is the *Thousand Talents Program*, that calls for China to attract 2,000 high-level overseas talents (人才) to move to the PRC in the next five to ten years.

Chinese Premier Wen has recently stated that the country will also carry out more open policies to attract overseas talent. "We will increase spending on talent projects and launch a series of initiatives to offer talent-favorable policies in households, medical care and the education of children," he said. Specifically, the national plan also seeks to attract overseas Chinese, foreign academics and professionals working at the world's best institutions or as entrepreneurs. By August 2011, over 1,500 people had been recruited under the program, giving priority to leading scientists and entrepreneurs to make breakthroughs in key technologies, develop high tech industries and lead new research areas. Over 70 percent are foreign nationals, mostly of from China.

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On June 23, 1978 while listening to a report given by members of Tsinghua University, Deng Xiaoping made a well-known speech on expanding the number of students studying abroad. In 1983, he made another speech on the utilization of foreign skilled-labour and opening China's door wider to the outside world. His words led to the implementation of China's policy on attracting talent from abroad. As a result, China's strategy on global competition for talent, which is based on a combination of sending students to study abroad and bringing in foreign skilled-labour was formally established. At the beginning of 1992, Deng Xiaoping made a speech which led to the government establishing a guiding principle to support students in studying abroad and encouraging overseas students to return to China. The "to come and go" policy called on overseas students to come back and render their services

towards China's economic development. During this period, the government also made some adjustments and improvements to the policy on self-funded and government sponsored students studying abroad.

At the turn of the 21st century, the government advanced strategies to invigorate China through science, education and human resource development, giving high priority to China's involvement in the global competition for talent. Hu Jintao, General Secretary of the CPC Central Committee, noted that China should be capitalizing on human resources both from abroad and at home, with emphasis placed on both independent cultivation of human capital and on the attraction of skilled labour from abroad. In July 2000, the Ministry of Personnel issued *Suggestions on Encouraging Overseas Students with High Qualifications to Return to China for Work*, which showed that the government attached greater importance on encouraging overseas students to return. In December 2008, the Central Coordination Group for Human Capital sponsored a high-level meeting concerning the attraction of skilled labour from abroad and issued a circular entitled *Suggestions Put Forward by the Central Coordination Group for Human Capital on the Implementation of Attracting Highly Skilled Labour from Abroad*, requiring relevant departments in various regions to do a better job in bringing in highly qualified personnel from abroad. This is the "Ten Thousand Personnel Plan" indicating that China had raised its standard to meet the global competition for talent.

In June 2010, China issued long- and medium-term plans for the development of human capital, which was the first of its kind since the founding of the country in 1949. This plan is entitled the *National Program for Long- and Medium-term Development of Human Capital* (2010-2020), which laid down the guiding principle for carrying out the strategy to strengthen the nation through human capital development. It is significant not only for China's present development, but also for its development over the next 30 years and beyond. The promulgation of the aforementioned policy occurred at a time when China was undergoing changes as it faced rising economic challenges, and looked to revise its model of economic development. In the face of future development trends, how China will cultivate and attract talent is crucial for its economic growth.

1. The transformation from demographic dividend toward talent dividend

Over the past 30 years, China has, by relying on demographic dividend, greatly pushed economic growth. Demographic dividend constitutes the key competitiveness of low-end manufacturing and urbanization. This large population has also driven the development of the real estate sector as well as the expansion of infrastructure and construction projects, including railway, highway and other communication facilities. Demographic dividend has also provided the largest consumer market in the world in terms of mobile phones, internet and electronic communications and it has propelled the development of universal knowledge and hi-tech industries.

However, China's population is aging rapidly, given both an increase in average life span and the implementation of the one-child policy. In 2010, China's aging population reached a record high. The number of people above the age of 60 rose from 7.3 million in 2008 to 167.1 million, amounting to 12.5% of the entire population. In the next 10-30 years, China will become an aging society and the demographic dividend will no longer exist. In addition, China will face a significant challenge in promoting its current economic development model which relies on a cheap labor force. Since January this year, there have been a number of strikes resulting from workers' dissatisfaction with their low wages. With the challenge of China's aging society, the burden on young people will grow. In addition, domestic growth is based on the expansion of people's purchasing power, which is in turn augmented by increasing people's income. As a result, China would no longer hold an advantage in cheap labor in the global industrial chain.

If the driving force of China's development from demographic dividend to talent dividend does not shift, a knowledge-based economy cannot be developed. The "manufacturing factory" would move from China's southeast coastal regions to the central and western regions and then further to Vietnam, Mexico, India and even to Africa and South America, where they have a comparative advantage in cheap labor, land and convenient transportation facilities. Only a talent dividend can keep a balance between economic growth and a rise in people's incomes in absolute terms at home and in relative terms in the world.

2. The transformation from "made in China" toward "created in China"

China boasts the world's largest world factory and the world's largest exporter, but it only has a limited number of brands with global recognition. China lacks major capacity in the innovation and integration of the high tech industry and the national development of science and technology. China had achieved certain progress in the high tech field, such as the computer industry and military industrial technology, which includes the atom and hydrogen bombs and man-made satellites. However, these important achievements were pursuant-oriented rather than leading-oriented. The original inventor of these technological advancements was none other than the United States. With its innovative capacity, the United States holds a dominant position in the scientific and technological fields, with contributions by the work of Albert Einstein and other foreign scientists who immigrated to the country. It can be said that skilled labour from abroad has contributed to the successes in scientific and technological advancement in the United States.

China also faces a serious shortage of employment opportunities for graduates from post-secondary institutions. The number of post-secondary graduates each year figures at more than 6 million and most of them have difficulty in seeking jobs.

This is due, in part, to the increasing number of college graduates. In 2009, the number of graduates reached 5.7 million, five times the figure in 2001.[18] However, it is also because China's knowledge-based economy and knowledge-based service industry remains under-developed. The shortage in skilled labour has affected industrial upgrading and has had a negative impact on the cultivation of human capital in China. Currently, the government departments can only provide a limited number of employment opportunities and most of these opportunities are provided by enterprises. China is in urgent need of skilled labour with innovative ideas to help create more knowledge-based employment opportunities.

Photo Credit: Kostmo

Therefore, the transformation from a "Made in China" to a "Created by China" economy is not only an issue facing the government but also facing the whole society. China should show more concern toward cultivating human capital and build an innovative nation so as to promote national science and technology, enhance China's status in the global industrial value chain and develop world-recognizable brands associated with quality, innovation and service. In order to realize this goal, the government should first formulate and carry out a long- and medium-term program for the cultivation and attraction of talents.

3. The shift from attracting financial capital toward attracting human capital

Photo Credit: Broken Segue

China has for many years attracted a substantial amount of foreign capital. In 2009, China's foreign exchange reserve stood at US$ 2 trillion. By the end of 2011, China's foreign exchange reserve further increased to over 3 trillion US dollars, ranking first in the world in terms of foreign exchange reserve. But China, being the largest exporter in the world, has not been able to realize the qualitative gains of economic development, increase profits for enterprises, raise income for laborers or expand its enterprises globally. Due to the lack of human capital, China, without core technologies and innovative and companies at its command, has mainly played the part of a processing factory of the world. The introduction of technologies may enable China to easily copy high tech products in science and technology, but the lack of human capital weakens the capacity for innovation and creation. Without core technologies, China can in no way undergo industrial upgrading.

China has kept a favorable balance of trade for many years, but it has suffered huge deficits in terms of attracting human capital. Since 1978 China has sent a total of 1.62 million students and scholars abroad, but so far only 497,000 of them have returned back to China. The return rate of overseas students and scholars is about 30%, but the return rate from the United States of high-caliber PhD graduates majoring in science and engineering is only 8%. This statistic shows that China cannot rely solely on strong finance, but also needs skilled labour to make use of these funds. The relevant policy measures to attract human capital back to China, both for those who have gone abroad as well as attracting skilled labour from around the globe, is of great significance to the economic, political and social transformation of China.

4. The transformation from hardware construction to software construction

The Chinese economy has for a long time relied on government regulation, which has often waged a national campaign for economic construction. This has placed greater priority on investment and the construction of hardware facilities while neglecting consumption and construction of software facilities. Government investment has focused on the construction of infrastructure facilities such as railways and highways, while non-government investment has focused on hardware construction which includes the real estate industry. However, if economic growth is propelled mainly by investment in infrastructure and less by consumption, this may result in a crisis of surplus capacity.

Over the past 30 years, China has undertaken a number of landmark infrastructure facilities including the Three Gorges Dam, high-speed railways, the Olympic Sports Center Stadium and the grounds and pavilions at the World Expo. But China's investment in intangible software construction such as education and culture is inadequate. In the future, the government should increase its investment in these fields. Its input should, in particular, focus on education, R&D, public health, energy efficiency and environmental protection, institutional construction, social welfare and relevant software sectors that could balance China's development. China needs to transform its thinking and shift the priority from hardware construction to software construction. Strategic measures need to be formulated on human capital, skilled labor, as well as expert and knowledge hubs.

Expo 2010 China Pavilion *Photo Credit: Stevenliuyi*

5. The transformation from an investment-driven economy toward a talent-driven economy

At present, the growth of China's economy is, to a large extent, dependent on domestic and foreign investment. In fact, the total amount of foreign capital accounts for 45% of China's GDP, which, for a period of time, was the highest among major economies in the world.

In order to maintain long and medium-term economic growth and balanced social development, China should strive for harmonious economic development by encouraging domestic demand and reducing household savings. In order to balance economic development, China should weaken its dependence on fixed investment and export and encourage more domestic consumption. This requires the development of high value-added industries such as knowledge-based service industry and less dependence on trade industries, particularly the manufacturing industry.

In order to quicken the process of such a transformation, China should promote a talent-driven economy and provide employment opportunities with well-paid salaries in knowledge-based industry for professionals, entrepreneurs, teachers, engineers, doctors, lawyers, accountants, artists, IT experts, technicians and social workers. Moreover, China should raise the consumption level of the entire society, which in turn would require not only a large number of migrant workers, but an increase in the number of well-trained personnel with professional skills. China should shift from a labor intensive structure to a knowledge intensive one.

6. The transformation from a resource intensive growth model to a knowledge intensive one

China should shift the focus of its economic growth from high speed and large scale to high quality and efficiency. The China model of growth with low technology has nearly exhausted the capacity of the environment, as China's energy consumption per unit of GDP is quite significant. China's total GDP is less than a third of the United States, but China has already become a nation with the largest amount of greenhouse gas (GHG) emissions in the world. Given that the world's resources are insufficient to support China's current economic growth model, its rise as a major economy in the world could be hindered. In the future, China should change its development model, develop a low-carbon economy and infuse its traditional industries with more knowledge, science and technology conserve energy and reduce emissions and raise efficiency. The key to achieving these goals lies with human capital. According to the *Outline of the National Medium and Long-term Talent Development Program* (2010-2020), by 2020, the total number of talent resources will increase by 58% from the current 114 million to 180 million and the proportion of talent resource in human resources will increase to 16%.[19]

7. The transformation of China's development model from purely focusing on economic, scientific and technological innovations to focusing on economic, scientific and technological and social innovations.

The distribution pattern under the planned economy was to give more to the state and the collective while

giving less to individuals and residents. The capital-oriented distribution preference is to give more capital to enterprises while giving less to individuals. Over the course of China's development historically, the government had often placed more emphasis on efficiency rather than justice. State sectors have forged ahead while the private sector has stayed in retreat, leading to a strong state and a weak society in terms of rights, and a rich state and a poor society in terms of income. The concept of building a harmonious society is based on these cumulative social issues. In the face of the diversified social demands for equal opportunity, social justice and the realization of individual self-worth, the government should focus more on social innovation and policy development, as well as invest more in education, healthcare and old-age pension. These are key issues related to China's sustainable development.

Strengthening social development relies heavily on social policies, the development and innovation of institutions, a community culture and the development of think tanks, NGOs and appropriate public organizations. This development relies on the innovation and creation of a skilled labour force.

III. China's strategy on global talent competition and relevant countermeasures

In view of how emerging economies have developed, any industrialized country that benefited from the transfer of low-end industry in the world and underwent an industrial adjustment from focusing on labor-intensive industry to knowledge-intensive industry has successfully reversed their position in the global competition for human capital. The consequence of brain drain is that most of them return from developed countries with advanced technologies, experience, ideas and capital. In other words, if a country can make the best use of its skilled labour and keep them from flowing abroad, it can ensure the innovative construction of the country, the upgrading of its economic structure and allow it to join the ranks of developed nations. The reason why the United States is considered a major super power is that it has attracted top talent from around the world.

However, it is not that easy to ensure the return of overseas talent en masse. It is insufficient for the government to rely on swift economic growth, think highly of foreign skilled labour or provide an open environment for the flow of human resources. It requires the integration of various factors including the importance the government attaches to a just and efficient legal system, the support of relevant policies on immigration, an increase in personal income, providing unprecedented opportunities for economic development and financial protection, a well-established industry to fully utilize their talent and the development of a suitable living environment. Even if China meets these goals, it might not achieve the desired result because it must compete with the most developed countries as it enters the global competition for talent.

In order to resolve the dilemma that China "is sewing the trousseau for others", it should take the following measures. First, China should improve mechanisms and policies concerning skilled labor. Second, China should establish a strategy to enter the global competition for human capital to attract top talent from around world. Third, China needs to prevent the outflow of skilled labor and remove obstacles impeding the return and inflow of talent. Fourth, the Chinese government should attach high importance to, employ, evaluate and encourage local talent, overseas talent, and foreign talent of Chinese origin so as to transform China into an innovative nation with a harmonious society and an upgraded industrial structure. By doing so, China can join the ranks of developed nations and realize the full revival of the Chinese nation in the 21st century.

A major reason why the United States is considered a super power is that it has established a global strategy with a long and medium-term plan. First, it has the best universities in the world, accounting for

over half of the top 40 schools. The United States not only trains top leaders, but also attracts the best student. Over a third of the PhD degrees in science and engineering have been given to foreign students. Second, in order to keep them in the United States, given the global competition for talent, the US Bureau for Citizenship and Immigration has made efforts to issue them green cards or permanent residency. Each year the United States accepts 140,000 employment-based immigrants. And third, relevant US departments and private companies offers opportunities for them to capitalize on their skills and 40% of the world's scientific research funding is provided by the United States. The US talent strategy is helping the country create leading fields in education, immigration, science and technology.

The strategy to 'be tolerant to diversity' opens borders. Bill Gates, founder of Microsoft, pointed out that "We have to welcome great minds of this world and not shut them out of our country. We should encourage them to become permanent residents of the United States so they drive innovation and growth alongside America's native-born talent." At present, Singapore, Australia and Canada are also developing models that are similar to the US. Goh Chok Tong, former Prime Minister and Senior Minister of Singapore, noted that the success of Singapore relied on the attraction of foreign talent. If a country can attract a significant number of foreign talents, it will see economic results.

As a result of globalization, China is building an innovative country, undergoing economic restructuring and industrial upgrading. Given its large foreign exchange reserve and its aggregate economy, China does not lack the capital or hardware, but rather human capital. Therefore, China should now make an effort to curb the brain drain and make positive efforts to attract foreign skilled workers in the global competition for talent. However, the responsibility for cultivating human capital or attracting skilled labour should not be shouldered by the Ministry of Education or the Ministry of Personnel alone. Cultivation of human capital involves various departments and entails the long-term development of the country. Sun Zi (ancient Chinese military strategist of the Spring and Autumn Period) once said that without long-term strategy, short-term achievement was impossible; without the full picture, small steps would be fruitless. China should formulate a larger strategy that adapts to the general trend of globalization and in light of its domestic conditions, launch a long and medium-term program to cultivate human capital that stresses the implementation of the strategy for strengthening the nation through human capital development, and improves the mechanisms to cultivate, attract, select, and utilize skilled workers. By doing so, China could make a significant breakthrough in cultivating and recruiting skilled workers and transform China into a strong nation, equipped with advanced science, technology and knowledge.

In the face of the global competition for talent, the following measures can help attract top talent from abroad.

1. The development of a human capital strategy in light of international standards

China's human capital strategy should shift the focus from short-term employment of skilled workers overseas to a long-term approach. It is necessary to be cautious regarding the employment of skilled workers in key government departments concerning state security and accessing personal records. However in other sectors, the government should take a more open and systematic approach towards the selection, evaluation and employment of skilled

workers while loosening party and government regulations on personal records.

Competing globally also needs a group of international talent to be vanguards, especially overseas Chinese talent who are familiar with the culture of both the eastern and western societies. In view of the personnel system of state-owned enterprises (SOEs), the government should partially or gradually remove the status of Board Members and CEOs as civil servants and follow a fixed tenure and employment system. The government could recruit all kinds of talented people through an open competition, which would remove administrative restrictions and weaken the emphasis that is usually placed on administrative background and nationality. Whether an enterprise succeeds or fails depends on the selection of Board Members and CEOs. The key to success, however, lies with the laws of the market and the internationalization of the recruitment and employment of skilled workers. For many years in the past, the CEOs of SOEs had administrative rankings and they could either be transferred from government departments to enterprises or vice versa, including some Board Chairmen of large-scale SOEs who were appointed provincial governors or ministers after they left enterprises. In fact, all the high-ranking personnel from transnational companies, foreign governments or non-profit institutions could follow this pattern and work in government departments.

With the establishment of international standards to attract skilled workers, the government should remove institutional and non-institutional restrictions and use foreign work experience as a criterion to promote cadres to higher positions. In SOEs and government institutions, nationality should not affect the hiring selection. In 2005, Sony Company appointed Howard Stringer as Board Chairman; who held dual UK and US citizenship. After the acquisition of IBM by Lenovo Group Limited, the first three global presidents of Lenovo were all foreigners and over half of the Board Chairmen were foreign nationals. In fact, the attraction of foreign talent should not focus on their nationality or whether they have experience with the organization, but on the actual need of the company and their knowledge and ability.

2. China should establish more head-hunting organizations and improve the network of overseas Chinese talents.

Many countries, aiming to attract top talent, have established head-hunting organizations, research institutes and associations. However, China does not have appropriate head-hunting organizations or databases on overseas Chinese talents. A well-developed market for international talent also does not exist in China. Therefore, if any government department or enterprise is in need of relevant talents, they could only rely on advertisements. Such advertisements tend to lead to temporary contacts and general exchanges that have not proven to be effective.

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3. China should establish a database on top international talents.

China should establish an integrated database on foreign talent and overseas Chinese talents that can act as a depository of information,

facilitate network communication and disseminate information. By doing so, the government could better access their scientific research findings, find out how their research and expertise could be utilized by China`s domestic sectors and address some of the challenges skilled workers face in trying to return to China. Management responsible for personnel should get a better understanding of the employment situation of overseas Chinese who work in foreign companies and enterprises, and the research projects they have conducted and the key technology they have acquired. In case of an emergency, the government can readily identify and solicit expertise for assistance. Furthermore, if it is inconvenient for head hunting organizations to carry out their work abroad, they could enlist the help of non-governmental organizations. The goal is to connect overseas Chinese students with various organizations and make joint efforts to improve China`s engagement in the global competition for talent.

4. The government should re-examine its policy on the strict entry procedures for foreigners as well as its policy that prevents foreigners from obtaining permanent residency cards and Chinese citizenship.

The government should look to the immigration system of North America and Europe and establish a more complete and systematic policy that makes it easier for foreigners to enter and exit, seek employment and residence, and access immigration services. Through a pilot program, the government can establish a system that classifies skilled and investment immigration and improve the green card system for talent in order to meet the social and economic demands. The government could also combine the employer nomination and sponsorship system with a market-oriented system that combines independent and sponsored applications. Firstly, regarding the present green card system, the government can create a category for skilled immigrants, investment immigrants and contribution immigrants to expand the inflow of foreign talent. Among current green card holders, there are two kinds of talents, overseas talents and self-employed talents in the field of arts and literature. The government can establish a category for independent applicants and their families (non-independent). Despite not having prior working experience in China or a work-sponsored visa, independent applicants could directly apply for a green card. The government should also reform the green card system for foreign talent, who have made outstanding contributions to China, and issue detailed rules and regulations to the relevant departments to ensure proper administration.

In addition, a points-based system, which is employed by many countries, should also be used to evaluate applicants. Another suggestion is that green card holders under the investment category should be classified in detail and the present evaluation criterion, which focuses solely on the amount of investment should be reformed.

5. Foreigners who plan to work in China should go through the proper procedures and obtain three kinds of certificates: 1) An employment certificate in foreign countries or foreign expert certificate, 2) An employment permit for foreigners and 3) Residence permit.

The handling of the three kinds of different certificates has to go through a complicated process and some of the departments involved are not familiar with the changing demands of the country in terms of the need for skilled workers. The employment permit is examined and approved by the Ministry of Personnel; the foreign expert certificate is examined and verified by the Foreign Expert Bureau; the employment permit for foreigners of the employing unit is approved by the trade department in charge; and the residence permit is examined and approved by the Ministry of Public Security. In addition to these departments the process might also involve the Foreign Ministry, the Ministry of Education and appropriate ministries and commissions.

In developed countries in the world, the examination and approval of the working or residence application for foreigners is generally handled by one governmental body. For instance, these procedures are handled by the United States Citizenship and Immigration Services (USCIS) in the United States, the Department of Immigration and Citizenship in Australia, the Ministry of Health, Labor and Welfare in Japan, the Ministry of Employment and Labor in South Korea, the Labor Department of the Government of the Hong Kong Special Administrative Region and the Council of Labor Affairs of Executive Yuan in Taiwan. The Chinese government should establish a special body to streamline the granting process for visas and residence permits, as well as the immigration of foreigners. Unifying the procedures to apply for green cards and Chinese citizenship is needed to give clear interpretation of the rights and obligations that permanent residents hold in the participation and discussion of government and political affairs. Moreover, it is important to issue regulations on how green card holders could Chinese citizenship.

6. It is suggested that overseas compatriots with Chinese origin who gave up their Chinese citizenship involuntarily should be granted visa-free long stay permits.

Because dual citizenship is not currently permitted, the government could simplify the procedures for the examination and approval of visa issuance and directly grant permanent residence cards to overseas Chinese who have the accreditation or qualifications as skilled workers. With regard to overseas Chinese students and overseas Chinese who renounced their Chinese citizenship involuntarily, the government could issue them visa-free long stay permits like the ones issued to overseas compatriots. These would be similar to the exit-entry permit for travelling to and from Hong Kong & Macau and the entry permit of Taiwan residents to the Mainland. By doing so the government could save labour costs and help increase the inflow of talent from abroad. It could also increase foreign capital and promote the circulation of skilled workers.

7. The government could conduct joint education programs with foreign countries and initiate international programs that provide on-the-job training of government civil servants.

In contrast to developed countries, China's education system is lacking when it come to cultivating human capital. Universities should help students develop cross-cultural qualifications and international competitiveness in line with the global demand for skilled workers. In addition, the government should conduct joint education programs with well-known universities abroad and launch student exchange programs by mutually recognizing credits and designing courses that include a year abroad. This will train students to be more capable of handling international affairs and have better knowledge of international discourse and regulations.

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The government should develop an international program for on-the-job training of government civil servants. It should launch an international training program for civil servants working in departments engaged in foreign affairs such as the Foreign Ministry, the Ministry of Foreign Trade and news media departments as well as high-level officials. The government should also take into consideration the post shift of minister-level and director-general

level civil servants or send them abroad on rotation to renown universities such Harvard University to receive on-the-job training with a period running from three months to one year. This could rapidly promote the level of understanding on world affairs among China's talents and among members of the Party and government departments.

8. The government should enlarge the number of enrolled foreign students.

At present there are one million Chinese students studying abroad and there are only 200,000 foreign students studying in China with a difference of over five times between the number of inbound foreign students and outbound Chinese students. While attracting excellent talent, the government could accept ordinary foreign students as a means to increase foreign exchange earnings. Highly skilled foreign students studying in China are greatly needed for China's social and economic development and the government should try to retain them to make up for the shortage in human capital. The government could send teachers abroad and open Confucius Institutes in foreign countries. Through partnerships with foreign universities, Chinese language and professional courses related to Chinese culture could be established in these institutes to help develop a better understanding of China in the west and foster people-to-people links. This is beneficial for the improvement of China's image in the world and to enhance China's attraction among highly-skilled foreign workers.

9. The government could give tacit consent to dual citizenship.

In April 2008 when the government of South Korea approved dual nationality, it noted that this move was intended to keep skilled workers in the country and bring in top talent from abroad. In the latter half of the 1990s, some emerging countries with a large overseas population, including South Korea, India, Brazil, Mexico and the Philippines, altered their policy on dual citizenship. The United States, the UK, France, Spain, Italy, Canada, Australia, Russia and Israel has admitted or tacitly approved dual citizenship. Japan has tacitly approved dual nationality and Germany and Holland has approved dual nationality with certain conditions. In brief, among major countries in the world, China is the only country that clearly objects to dual nationality. The United States, Russia and Vietnam have given tacit consent to dual citizenship and China could consider following the practice of Russia. In other words, China would only recognize Chinese citizenship, but if a citizen obtains a foreign citizenship it does not mean that his Chinese citizenship would be automatically removed. China could also follow the practice of Vietnam, in which if there are individuals who used to hold Chinese citizenship and have not explicitly renounced their Chinese citizenship, they could resume their Chinese nationality.

10. The government should follow the practice of global pricing of international talents and reduce the rate of individual income tax.

If global pricing of international talent is aimed at the government's employment of foreign top talents, the reduction of individual income tax could help make domestic enterprises more competitive in the global market, and help attract and cultivate human capital. The individual income tax only accounts for a small part in the total revenue of the government and this tax could well and truly be reduced. At present, the rate of individual income tax ranges between 5% to 45%, with a 9-level surtax rate. The tax rate in China is higher than that of neighboring countries and regions and developed countries. For instance, the tax rate for individual income ranges from 2% to 15% in Hong Kong, 2% to 28% in Singapore and 17% to 29% in Canada. If the difference between the starting salary of a Chinese enterprise and that of other countries is taken into consideration, the above-mentioned tax rate difference would lead to a higher cost for Chinese transnational companies in the employment of international talents.

If the American dream has been the driving vision for talent movements in the last century, we need to envision a 'Chinese dream' for the next century. This dream is for both Chinese and foreigners. With regard to Chinese, the dream should make them believe that those with knowledge could utilize their talent at home and realize their dreams of success. It can create an environment where people respect talents with trust and everybody has a deep commitment to knowledge and science. With regard to foreigners, it should encourage more skilled workers to come and settle down in China and put their talent to good use. They would believe that there are opportunities in China and build their confidence to spend and invest in the Chinese market. Such a Chinese dream could not only provide people the opportunity for obtaining wealth, but also turn China into a country that attracts wealth and talent. It is hoped that by doing so China could truly rise in the 21st century.

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