

## Competing for talent: China's strategies to reverse the brain drain

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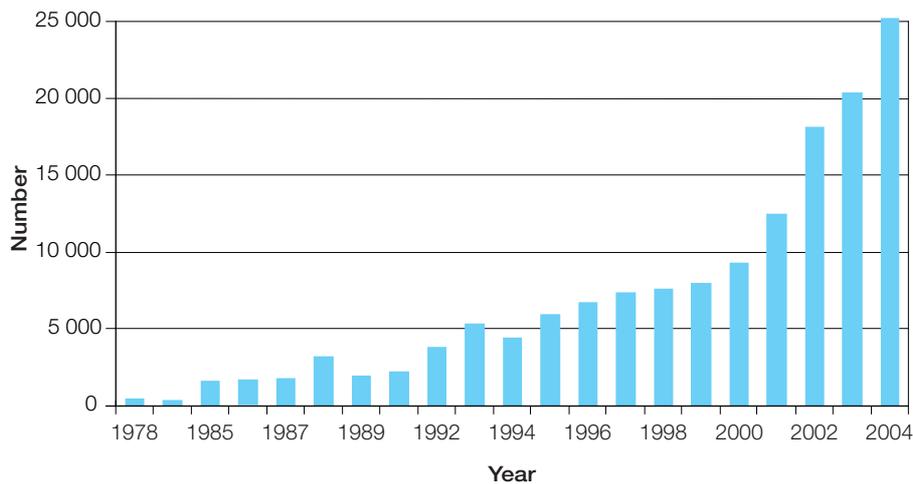
For many years, governments and scholars have been bemused by brain drains that rob developing countries of their valuable human talent, as their best and brightest people who go abroad to study opt to stay in the developed world (Dickson, 2003). Despite its authoritarian regime, the People's Republic of China has been just as vulnerable to this phenomenon. In recent years, however, tens of thousands of people trained abroad have been returning to China.

During the mid- to late-1990s, the average annual increase in the number of returnees was approximately 13 per cent, but since 2000, the rate of increase has risen sharply (see figure 1). According to Saravia and Miranda (2004, p. 608), this is also reflected in "a sustained drop in the number of doctoral students from China ... who planned to remain in the United States beginning in the late 1990s". Admittedly, liberalization of China's policy on travel overseas has also led to a massive increase in the number of people going abroad, so the *proportion* of returnees has not increased. But China still looks set to follow the path of the Republic of Korea and Taiwan (China), where a thriving economy and liberalized polity turned a brain drain into a "brain gain" – although China's return migration has picked up despite its authoritarian regime and low per-capita income.

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Figure 1. Number of returned students, 1978-2004



Source: *China Statistical Yearbook, 2004* (Beijing), p. 781.

Exploring the reasons for this flow of return migration, this article finds that central government policies and inter-city competition for foreign-trained scientists and academics have created a positive atmosphere that encourages returnees, while competition among universities, research laboratories and enterprises has given them excellent incentives. Indeed, many institutions now actively engage in encouraging return migration, while the central Government sets broad policy guidelines, allocates funding, and moulds an attractive socio-economic and political environment. Also, over the past 20 years, the different levels of government and organizations concerned have changed the way they view and recruit returnees. In the early 1990s, the central Government had to learn that, in order to improve science and technology in China, it had to let people go abroad freely, and then compete for them in the international market place by creating a domestic environment that would attract them back. And while universities, research laboratories and state-owned enterprises were uneasy about returnees because their knowledge threatened those who had not gone overseas, the internationalization of these institutions led them to value the contributions that returnees could make. For it also turns out that returnees are generally better than people who have not been abroad, partly because of their overseas training, but also because of a selection bias: in general, those who were able to go abroad in the first place were already more talented than those who stayed behind. However, individual calculations and circumstances remain critical when overseas students, scholars and business

people evaluate the professional opportunities and family situations awaiting them in China. Government policies alone rarely cause people to return, but they certainly do contribute to the decision.

The article is structured into eight sections. The first looks at how the environment in China has changed over the past two decades, while the second examines specific policies pursued by the central Government to encourage returnees. The next two sections survey the action taken by local government and individual institutions, respectively. The fifth section evaluates the “quality” of returnees, and the sixth, the role of government policy in encouraging return migration. The seventh section looks at the controversy over preferential policies for returnees, and a final section offers some concluding remarks.

## Changing the environment for returnees

The policies of China's central Government towards returnees have been complex and have shifted over time. Different government authorities have espoused different views, based largely on their institutional interests. Also, changes in the domestic political and socio-economic environment led to shifts in policies on overseas education. Student demonstrations against the Government in 1986-87 resulted in tighter regulations on overseas study. In 1987, Deng Xiaoping's speech criticizing the large number of students going to the United States became Central Document No. 11 (1987) and prompted the adoption of the State Education Commission's “Document No. 749”. This proposed to cut the flow of students going to the United States from 68 to 20 per cent of the total number of overseas students and pressure students in the United States to return.<sup>1</sup> In 1988, the State Education Commission forced lecturers in universities (many of them holding MAs) to shift from “private” to “public” passports, making them eligible for more restrictive J-1 student visas, rather than highly flexible F-1 visas.

A year later, a debate ensued about the whether China should continue to send students overseas.<sup>2</sup> During a meeting about overseas study, then Chinese Communist Party General Secretary Zhao Ziyang took a long-term perspective, describing China's brain drain as “storing brain power overseas”. Similarly, the State Science and Technology Commission was in favour of sending more people abroad despite the brain drain, arguing that only those who stayed abroad would really learn the positive quality of American scientific research and thus contribute to China's

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<sup>1</sup> State Education Commission Document No. 749 – *Directive issuing several specific regulations on controlling and managing personnel studying abroad*. Beijing.

<sup>2</sup> Lecture by Xu Lin, Fairbank Center, Harvard University, December 1989.

scientific advancement. However, the State Education Commission, more conservative and concerned about “face”, felt that the lack of returnees called for a tightening of the outflow.

The Tiananmen crackdown of 1989 reinforced the tendency to restrict the flow and led the State to view most overseas students as threats to the Communist Party. An inhospitable environment was therefore created for those who contemplated returning. Internal documents at that time became imbued with the language of class struggle, echoing the Cultural Revolution, so it was no surprise that most surveys of overseas scholars found that very few were willing even to consider returning to China (Zhang, 1992).

But when students and scholars selected the “exit option” (Hirschman, 1970) and increasingly refused to come home, the number of government-funded students staying abroad turned into a “serious problem” (Jiao, 1998). Some Chinese leaders took heed. Deng Xiaoping called upon overseas students to return to help the motherland. “We hope that all people who have gone overseas to study will come back. It doesn’t matter what their previous political attitude was, they can all come back, and after they return things will be well arranged. This policy cannot be changed” (ibid.). Deng reportedly tried to improve the climate for returnees in 1991, but strong opposition initially prevented him from instituting a new policy (Englesberg, 1995, p. 117).

In March 1992, the Ministry of Personnel responded to Deng’s initiative and announced a strategy to entice returnees back under the slogan of “improving services for returned students”. The new policy included:

- job introduction centres for returned students in Shenzhen, Shanghai and Fujian (five other cities had already established their own centres);
- “preferential policies”, including: (a) giving returnees more living space and higher professional titles; (b) letting family members move to new cities where returnees found jobs; (c) permitting students who had signed two- or three-year contracts with their research centres to switch jobs once their agreements expired;
- establishing a national association of returned students;
- increasing support for scientific research (*Xinhua General News Service*, 1992; see also *China Daily*, 1993).

In August 1992, Li Tieying, chair of the State Education Commission, publicly raised a new 12-character slogan that defined the changed perspective on returnees. The slogan – “Support overseas study, encourage people to return, and give people the freedom to come and go” (*zhichi liuxue, guli hui guo, lai qu ziyou*) – became official policy at the Fourth Plenum of the Fourteenth Party Congress in November

1993.<sup>3</sup> This policy, together with a series of related innovations, demonstrated a new spirit of flexibility towards returnees. In fact, in a form of self-criticism, a conference on the “Work of sending personnel to study abroad”, convened in April 1993, admitted that policies since 1989 had been “too political” (*Xinwen ziyou daobao*, 1993).

Allowing returnees to work in cities other than those from which they had emigrated created a new talent market. This, in turn, stimulated inter-city competition for returnees, as cities could now use various incentives to attract overseas scholars who had emigrated from other cities. Such a policy could only increase the number of returnees.

In 1996, the Foreign Affairs Bureau of the Ministry of Education (MOE) began to encourage people who remained overseas to return to China for short visits and to “serve the country” from abroad. This enabled overseas scholars to see whether conditions in China warranted returning. President Jiang Zemin reinforced this position in 1997 when, at the Fifteenth Congress of the Chinese Communist Party, he called for people to return even for a short visit and serve the country from overseas.

In 1998, the central Government increased investment in higher education and encouraged universities to use the additional funds to attract overseas talent. In May that year, Jiang Zemin’s speech on the occasion of the 100th anniversary of Beijing University (Beida) called for China to establish world-class universities and called on Beida to lead the way. Under the “985 Plan”, named after the date of his address, the Government invested billions of yuan in nine universities, pouring an enormous amount of funds into Qinghua and Beijing universities in particular.

Other national policies contributed to making the domestic environment more welcoming for returnees to China. In 1999, the National People’s Congress declared the private sector to be an integral part of the national economy, not a mere supplement to the state sector. (At that time, few returnees had any interest in working in state-owned industries, preferring to seek employment in “foreign-invested firms” or to set up their own firms.) Now, those who wanted to return to China and establish a company could feel relatively confident that the State would not expropriate the firm after it became successful (Sheff, 2002).

China’s entry into the World Trade Organization (WTO) further enhanced domestic demand for returnees. Possessing the very qualities that China needed to compete in the global economy (e.g. Western business and legal knowledge), overseas students became valuable assets in the domestic economy. Accession to the WTO also brought many multinational corporations to China, which needed locals with

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<sup>3</sup> See *Decision on several questions relating to the establishment of a socialist market economy*.

Western experience and training. Not surprisingly, many were keen to return to China on expatriate terms.

A significant change in the world view of China's leaders led to the adoption of more flexible policies (Moore, 2000). In particular, Jiang Zemin recognized that there was a global market for talent and that China must compete within that market, even for its own people (*Singapore Straits Times*, 2000). Globalization thus made reforms even more critical. Premier Zhu Rongji concurred when, at the Sixth Session of the Worldwide Chinese Businessmen's Association at the end of 2001, he remarked that China would henceforth stress the infusion of human talent and technical skills, rather than attracting foreign capital. This was an important response to the idea of "building national strength through science and education" (*ke jiao xing guo*), and an important step towards the current policy of "strengthening the country through human talent" (*rencai qiang guo*).

In October 2002, the central Government adopted its most flexible position to date when it officially recognized that since most people stayed abroad, non-returnees must be encouraged to participate in China's development. This turned a failure in overseas education policy – the "brain drain" – into a positive attribute, as those who remained overseas could still serve the goal of "national self-strengthening". In a document co-authored by numerous ministries, people overseas were encouraged to participate in projects in China in a variety of ways.<sup>4</sup> In adopting this perspective, China joined the many developing countries which have turned to the "diaspora model", encouraging their citizens who have settled abroad to help their homeland (see Meyer et al., 1997, p. 285; Zweig and Chung, 2004).

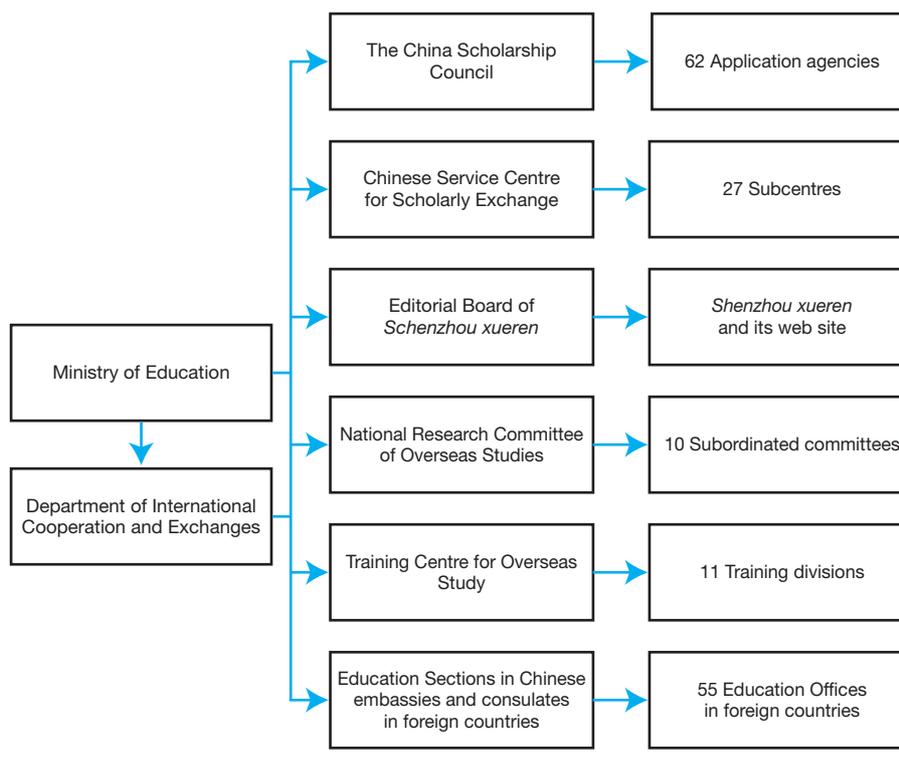
In 2003, President Secretary Hu Jintao and Vice President Zeng Qinghong gave a series of speeches, known as the "three talks", which reaffirmed the central leadership's support for overseas study. These speeches stressed that the role of returnees was "irreplaceable" and of "outstanding historic importance". While returnees needed to see concrete benefits – in terms of salaries and working conditions – if they were to be enticed back, an improved climate, created by a central Government that now valued human talent, has proved critical to their individual decisions to return.

Today, the Ministry of Education has a plethora of organizations engaged in encouraging more returnees or in assisting those who have returned to settle in China more comfortably (see figure 2).

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<sup>4</sup> The ministries included the Ministries of Personnel, Education, Science and Technology, Public Security and Finance. See *Chinese Education and Society* (Armonk, NY), Vol. 36, No. 2 (Mar./Apr. 2003), pp. 6-11.

Figure 2. Ministry of Education organizations that encourage returnees



## Central Government policies to encourage more returnees

The list of specific programmes and policies introduced by the Ministry of Education, the Chinese Academy of Sciences and other related ministries is too long to present here. Instead, this section gives a taxonomy of policy directions and discusses only the most important policies.

### *Mobilizing “official resources” overseas*

To encourage returnees, the State has mobilized officials in embassies and consulates to organize overseas scholars. In the 38 countries with the highest concentrations of overseas students, the Government set up 52 educational bureaus in embassies and consulates, which helped to establish over 2,000 Overseas Students Associations and over 300 professional associations for overseas scholars. Science officers now organize overseas scholars to attend the Science and Technology Convention for Overseas Scholars held annually in Guangzhou in December.

Service Centres for Overseas Study under the Ministry of Education have been set up in most major Chinese cities. These Centres send out “recruitment delegations” to encourage overseas graduates to return. Articles in Chinese community newspapers abroad announce the impending arrival of such delegations, describing the extremely high salaries that companies in the delegation offer to returnees. However, the salaries or housing benefits often fail to materialize when the scholars return to China – particularly if they are moving to a university or research laboratory. Also, while the delegations collect many resumé, they rarely send acknowledgement letters after they return to China, leading many overseas scholars to see such trips as perks for local officials. In some cases, even after overseas scholars visit China for job interviews, no job ever materializes, generating a great deal of cynicism about the so-called overseas delegations.

Established in 2002, the Office for Work on Overseas Study and Returnees centralized both resources expended on returnees and efforts to attract them. This organization immediately began to encourage outstanding overseas scholars to return and serve the country.<sup>5</sup> It also launched a quarterly magazine, publishing current research on overseas study.

### *Financial policies*

Numerous state programmes give overseas students and scholars financial support if they return (for a detailed discussion, see Cao, 2004a). In 1987, the former Education Commission established the “Financial Support for Outstanding Young Professors Programme”, which had awarded 2,218 returning professors a total of 144 million yuan by the end of 2003. Other such programmes include the “Seed Fund for Returned Overseas Scholars” (1990), the “Cross-Century Outstanding Personnel Training Programme” (1991), the “National Science Fund for Distinguished Young Scholars” (1994),<sup>6</sup> and “The One Hundred, One Thousand, and Ten Thousand Programme” (1995). As mentioned above, the State also increased funding for universities and the Chinese Academy of Sciences, with the provision that a certain percentage of the additional funding was to be spent on enhancing the quality of researchers and faculty staff.

### *Improving the flow of information*

To encourage people to return, the Government improved the dissemination of information about conditions in China and communica-

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<sup>5</sup> See *Shenzhen xueren*: “Chuguo liuxue gongzuo da shiji, 1978-2003” (Major events in overseas study work), at [www.chisa.edu.cn/newschisa/web/0/2003-06-20/news\\_2276.asp](http://www.chisa.edu.cn/newschisa/web/0/2003-06-20/news_2276.asp).

<sup>6</sup> Under this programme, funding given to scholars overseas must be spent in China.

tion between organizations in China and scholars overseas. In 1987, the Education Commission established *Shenzhou xueren* magazine and its web site, as a bridge between overseas scholars and domestic organizations. Over the past few years, the MOE has expanded the annual Meeting of Overseas Chinese Scholars in Guangzhou, which introduces government agencies and domestic companies to overseas scientists who have projects with market potential. The eighth such annual meeting was held in December 2005.

The MOE has also established several research organizations to direct policy. In October 1991, it set up the All-China Research Association on Overseas Study, with Beijing and Qinghua universities as its leading bodies. The Association holds annual meetings to analyse trends and suggest guidelines in regard to overseas study; it also publishes a research magazine and yearly reports.

### *Easing the process of returning*

The Government has adopted policies aimed at facilitating the return and resettlement of returnees. In 1989, the Education Commission established 33 "Overseas Study Service Centres" in 27 provinces and cities, to help returnees find jobs. The Investment Affairs Departments of these Centres help expatriates to invest in China or bring back technology. The State also encourages cities to create schools for the children of returnees, whose weak Chinese language skills put them at a disadvantage relative to classmates whose parents have never left China.

The Ministry of Personnel and the MOE have established "post-doctoral stations", for overseas PhDs who could not find jobs in China. By 2002, there were 970 "mobile post-doctoral stations" and 400 "post-doctoral enterprise workstations", employing over 7,000 post-doctoral fellows. In 2002, the Minister of Personnel announced plans to double the number of stations and increase the number of post-doctoral fellowships to between 12,000 and 15,000.<sup>7</sup>

The State has simplified residency and entry visas requirements for overseas scholars who have taken foreign citizenship. The Foreign Ministry first gave these returnees longer-term visas. Shanghai then experimented with permanent residence status for this category of overseas scholars, which has since become national policy. However, these returnees are ineligible for most preferential policies unless they renounce their foreign citizenship.<sup>8</sup>

<sup>7</sup> See *Zhongguo jiaoyu bao* [China Education News], 10 July 2002, p. 1, at [www.jyb.com.cn](http://www.jyb.com.cn).

<sup>8</sup> For example, a foreign passport holder cannot apply for the "Hundred Talents Programme" or join the Communist Party, which can be a serious obstacle.

### Short-term visits to “serve the country”

As noted above, the Government encourages people to return for short periods to engage in cooperative projects or give lectures. The aim of this policy is to give overseas scholars a taste of how China has changed and encourage them to return permanently. But even if they only bring back new information or technology, or transfer information to other overseas scholars or graduate students about conditions in China, the State still benefits.

The Government began to encourage overseas scholars to return for visits in 1992, and by 1995 the MOE had helped over 1200 people to “serve the country” in various ways.<sup>9</sup> In 1997, it established the “spring light programme”, offering funds for short-term visits (Zi, 2003).<sup>10</sup> The first year, 600 scholars came to China under this programme, and in 1998 its funding was increased. In November 2000, a new programme encouraged people to return during their summer vacation and paid them as much as five times their overseas salaries. Between 1996 and May 2003, the MOE brought back over 7,000 expatriates to “serve the country”.<sup>11</sup> In 2002 alone, this programme awarded 14 projects to seven universities for a total of 670,000 yuan.<sup>12</sup> The “spring light programme” was also the forerunner of a policy introduced in 2002 whereby overseas scholars were encouraged to “serve the nation from abroad” instead of being pressed to “return to the country” permanently. This shift clearly reflects the learning process that China has been through.

### Local governments compete for global talent

As a result of pressures to boost local economic development and the close administrative links between local government and state-owned enterprises, local government authorities have become aggressive recruiters of overseas talent – inter alia to strengthen their own economic administration. New private enterprises, established by returnees, increase local employment and the government tax base. Even in the wake of the Tiananmen crackdown, while central government leaders indulged in a leftist binge, seeking “class enemies” both at home and abroad, city officials were on the look-out for ways of perking

<sup>9</sup> Editorial Board: “Kuokuan bao guo zhi lu,” in *Shenzhou xueren dianziban* (China Scholars Abroad Web Site), at <http://www.chisa.edu.cn/service/chunhui13.htm>.

<sup>10</sup> The programme apparently pays only for one-way tickets on the understanding that scholars with overseas positions can use their own research grants to pay for the return airfare.

<sup>11</sup> See “Chugu liuxue gongzuo jianjie” (A brief discussion of the work of sending people overseas), in *Shenzhou xueren*, at [http://www.chisa.edu.cn/newchisa/web/3/2003-05-23/news\\_46.asp](http://www.chisa.edu.cn/newchisa/web/3/2003-05-23/news_46.asp). By 2001, the reported number was 3000, suggesting that 4,000 had come in two-and-a-half years. See also [http://www.whyy.com.cn/abroad\\_3/weiguofuwu/10\\_1/2.htm](http://www.whyy.com.cn/abroad_3/weiguofuwu/10_1/2.htm).

<sup>12</sup> See the website of Zhejiang University at [www.zju.edu.cn/english/index.htm](http://www.zju.edu.cn/english/index.htm).

up their stalled local economies. Inter-city competition for returnees thus emerged in the early 1990s and has continued unabated ever since. The preferential policies instituted by local governments to enhance their technical development in this way include tax breaks for new firms, subsidized housing, tax-free imports of automobiles and computers, schooling for children of returnees, jobs for spouses, and long-term residence permits. City-government departments of personnel and education actively pursue overseas scholars, as do science and technology organizations, by sending delegations overseas. In some cases, so many different organizations join the fray that returnees have difficulty deciding which way to turn.

Shenzhen instituted its own local policies only weeks after the Tiananmen crackdown. Under the city's August 1989 regulations, returnees could come directly to the Special Economic Zone (SEZ), legally change their residence and that of their family, keep any foreign currency they earned in Shenzhen (even if they left the SEZ), buy a new house at near cost, establish a private business, and "enjoy precedence over ordinary people with similar conditions and qualifications in the use of scientific and technological development funds".<sup>13</sup>

The city of Weihai, on the coast of Shandong Province, also used preferential policies to promote its interests. In 1992, acting on central government policy, it offered returnees a bonus of 500 yuan per month, in addition to the bonuses that individual organizations were encouraged to grant. Returnees were also eligible for a 20 per cent housing discount, import taxes exemptions (including on cars), special schooling arrangements for their children, and a job for their spouse. In addition, they could transfer overseas any currency they earned while working in Weihai. And if the technology they brought back to China generated major economic or social benefits, the organization employing them was encouraged to give them a large bonus (Ministry of Education, 2003, p. 40).

Shanghai has been the most successful city in recruiting returnees. In order to strengthen links with overseas scholars, the city's Office of Overseas Chinese Affairs established relations with overseas associations of alumni from Shanghai universities by offering to support them. Through the networks of existing overseas scholar organizations these associations collected information about new organizations. In response to efforts to shrink the role of government, the Shanghai Education Bureau commercialized responsibility for helping returnees find jobs by establishing a "human talent market". Shanghai was also among the first cities to issue long-term residence visas for returnees with foreign passports.

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<sup>13</sup> See "Shenzhen announces detailed regulations on students returning to work in the country", in *Zhongguo xinwen she* (Beijing), 15 August 1989 (reported in FBIS-CHI-89-157, 16 August 1989, pp. 47-48).

Within their economic development zones, cities have established “enterprise incubators” for returnees, called “parks for overseas scholars to establish businesses” (Liang and Zhu, 2004; Li and Kang, 2004). These incubators are comfortable entry points for overseas scholars/entrepreneurs with few links in China, as officials there steer people through the maze of paperwork that might otherwise have deterred them from returning. Shanghai’s municipal government set up a “Centre for Returned Scholars” in each of the city’s four development zones. By 1994, it had attracted over 100 returned PhDs to the Zhangjiang High-Tech Zone alone (*China Exchange News*, 1994). By 1998, there were 14 such zones for overseas scholars, spread out around the entire city. Today, Beijing too has 14 development zones and is competing with Shanghai in this respect.

The downside of these schemes is that local governments (or the State-owned companies that are the legal owners of the incubators) are often major investors in start-up companies, which can be a problem for returnees seeking separation from the State (Hu, 2003). Indeed, newly arrived returnees, more than local entrepreneurs, dislike having to work with the Government. Yet returnees are forced to turn to local governments for assistance as they start up their company (Vanhanocker, Zweig and Chung, forthcoming).

### Institutional efforts to attract overseas talent

Universities and government-funded research organizations, particularly the Chinese Academy of Sciences (CAS), actively recruit returnees. In 1978, all of the successful applicants for overseas study were selected by the MOE and CAS. Indeed, it was only in 1985, with the decentralization of control over educational exchanges, that individual universities became key players in sending students abroad (Zweig, 2002, p. 170). Moreover, until then, scholars who had graduated overseas were typically forced to return to the organizations whence they had left. In other words, until the central Government allowed returnees to switch jobs, the MOE and the CAS monopolized returnees as well.

Various central government programmes encourage key academic and scientific institutions to recruit staff trained abroad. For universities, the most important programme is the Cheung Kong Scholars Programme, funded by Hong Kong tycoon Li Ka-hsing. Between 1998 and 2004, it placed 537 scholars from overseas in leading positions in key research fields. And as already pointed out above, when the central Government dramatically increased its financial contributions to the country’s nine top universities, it insisted that 20 per cent of those funds be allocated to improve the quality of faculty staff, primarily through imported talent from overseas.

As a result, many universities now have programmes to recruit overseas scholars. Shanghai Jiaotong University, one of the top nine in receipt of MOE funding, has introduced a new hiring system, which stresses the importance of overseas education; it has also established a promotion system which makes overseas experience a key criterion in promotion.<sup>14</sup> Similarly, Shanghai University has made time spent overseas a criterion for hiring and promotion.<sup>15</sup>

In December 1998, the MOE and 63 Chinese universities advertised in overseas editions of *Renmin ribao* (People's Daily) and *Guangming ribao* (Guangming Daily) for 148 academics, known as "100,000-yuan professors". The universities were to give these returnee scholars first-rate research benefits and show them how welcoming China could be. According to press reports, these 148 professors would "receive the highest salaries ever paid since new China was founded" (see Gu, 1999).

The emphasis on global experience was at the heart of the Beida debate on educational reform, led in part by Beida's returnee Party secretary, Min Weifeng, a Stanford PhD. In response to Jiang Zemin's call to turn Beida into a world-class university, he sought to staff it with more and more returnees. By emphasizing the contacts that returnees can build overseas and the importance of working overseas, publishing in overseas journals and teaching in a foreign language, Beida tried to incite locally educated scholars to go abroad for some time.<sup>16</sup> But the subsequent idea of firing faculty who did not gain foreign experience generated such a strong backlash that the whole reform plan at Beida has been squashed (see Zhang, 2005).

The Chinese Academy of Sciences aggressively pursues returnees through its "Hundred Talents Programme", and competition between CAS institutes is quite keen. In order to secure fellowships under the Hundred Talents Programme, each institute writes a report to the Program Office and the CAS committee responsible for their speciality, outlining their overall development goals and how the fellowships will strengthen that plan. The CAS then allocates a fixed number of fellowships to each institute. The institutes then advertise these positions in foreign journals, such as *Science* and *Nature*. If they are overseas, candidates for the fellowships return to China and present their research accomplishments or plans to a hiring committee at the institute, which decides whether to recommend the scholar to the CAS for approval. Apparently,

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<sup>14</sup> See *Zhongguo jiaoyu bao* (China Education News), 4 April 2004, at <http://www.jyb.com.cn/gb/2004/04/04/zy/jryw/5.htm>.

<sup>15</sup> Interview with a vice-president of Shanghai University, November 2004.

<sup>16</sup> See Topic Group for the 'Study Concerning Beijing University Returnees Assuming Leadership Posts: "Beijing daxue liuxue guiguo ren yuan dan ren ling dao zhiwu wenti yanjiu" (Study on Beijing University Returnees Assuming Leadership Posts), in *Chuguo liuxue gongzuo yanjiu* (Beijing), No. 3 (2002), pp. 7-22.

CAS rarely goes against such recommendations, thereby giving each institute a great deal of leeway and authority.

Winners of the grants receive 2 million yuan, with which they usually start a laboratory. This includes buying equipment and hiring technical personnel, though 20 per cent of the funds can be used to supplement their salary. Fellowship holders become PhD advisers, giving them MA and PhD students to work in their laboratory. They also receive housing subsidies; a CAS institute in Changchun built 20 enormous apartments – the size of those allocated to central government ministers – for the recipients of this award as a further inducement to return to China. Furthermore, recipients are in a highly competitive position when applying for further fellowships, as the awarding of the Hundred Talents Fellowship identifies them as high-quality researchers.

State-owned enterprises have recently begun aggressively recruiting returnees too, particularly those enterprises looking overseas for markets and resources. In December 2004, the State Assets Supervision and Administration Commission, in cooperation with the Communist Youth League, held a job fair where 48 high-level state-owned enterprises – some of them are now Fortune-500 companies – recruited returnees for 228 jobs on 57 projects (Hu, 2004). The fair was attended by over 500 returnees: people with foreign language skills and overseas work experience are indeed in high demand within the state sector, which is offering them increasingly competitive salaries.

## Evaluating the quality of returnees

While the Government's efforts to bring brainpower back to China seem to be meeting with some success, the real question is: how good are the people who are returning? Are they really any better than those who stayed behind? Did they acquire "transnational capital" – i.e. skills, technology, information, networks and/or capital derived from time spent overseas – and thereby increase their value relative to locals? Or are they simply free riders on a misguided policy that expends a great deal of resources to attract mediocre talent? Another question is whether returnees are of "high quality" relative to people who have remained overseas. Or is China attracting mostly second-rate talent, while the best stay abroad? If so, the Government's efforts to reverse the brain drain may well be successful, but not so useful for China's long-term development.

Returnees *are* of a higher academic calibre than people who have not gone abroad. All our surveys of universities, research laboratories and science parks show that returnees possess skills, information and research methodologies that are generally unavailable to people who have not gone abroad. They have stronger global networks. They receive more grants and fellowships. They publish more articles in international

journals.<sup>17</sup> However, many of these returnees got to go overseas because they were more talented than people who stayed behind in the first place. In other words, these findings are subject to a selection bias.

Returnees, particularly those in the private sector, engage in technology transfer, importing high-level technology unavailable in China. A 2002 survey of 154 returnees and locally educated professionals in high-tech zones across six Chinese cities found that 48 per cent of the returnees had imported foreign technology, while only 21 per cent of the locals had done so (Zweig, Chen and Rosen, 2004). In the summer of 2004, a survey comparing 100 returnee entrepreneurs with 100 locally educated entrepreneurs from Shanghai, Beijing and Guangzhou found that returnees were four times as likely as locals to possess the "latest international technology" (34 per cent vs. 9 per cent) and almost 50 per cent more likely (46 per cent vs. 30 per cent) to have technology that, "while not the newest internationally, is new for China" (Vanhanocker, Zweig and Chung).

As to the quality of returnees relative to those who remain abroad, the dominant view both inside and outside China is that the truly talented people stay abroad, even though some very eminent academics have returned.<sup>18</sup> Besides, getting people to return is one thing; getting them to stay is another. By 2003, the High Energy Physics Laboratory of the CAS had failed to attract anyone with a PhD from overseas. Prospective candidates had either stayed abroad or gone into business in China after returning. Dr. Rao Yi, a professor at Washington University in St. Louis and an adviser to the CAS, argues that in terms of international reputation and prestige, few academic returnees are comparable to those who stay abroad. He estimates that some 800-1,000 life scientists of Chinese origin run independent laboratories in the United States, and these people are not returning, though many of them probably engage in collaborative research in China (see Cao, 2004b, p. 11).

Also, there are signs that the quality of people accepted by CAS under the Hundred Talents Program may be declining. From the background of CAS returnees interviewed in 2002 and 2004, it appears that most of them had not yet established themselves professionally when they decided to return to China (see box 1). In fact, these academic returnees had not been looking for opportunities overseas; 91 per cent of them reported that they had always intended to come home on completing their programme.<sup>19</sup>

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<sup>17</sup> See, for example, Zweig (2002, p. 190); Zweig, Chen and Rosen (2004, pp. 750-751); and Rosen and Zweig (2005).

<sup>18</sup> In the course of an interview conducted in November 2003, the director of one of the research institutes of the Chinese Academy of Sciences ranked most returnees in this institute in the 50th-80th percentiles of overseas scholars, arguing that the top 20 per cent remained overseas.

<sup>19</sup> By contrast, among 272 people interviewed by the authors in the United States in 1993, only 28 per cent reported that when they left China they had "definitely planned to return after their studies" (see Zweig and Chen, 1995, p. 130).

### Box 1. Evaluating the quality of returnees

- Only two out of 82 returnee scientists interviewed in Changsha, Guangzhou, Wuhan and Kunming, had earned over US\$50,000/year on the eve of returning; another three earned US\$35,000-\$49,999.
- Very few held patents, although 17 of them had earned PhDs overseas.
- Of 109 returnee academics interviewed in 2002, only eight had left behind salaries of over US\$25,000/year, while 77 per cent of them earned under US\$12,500/year. (i.e. they were post-doctoral fellows).

Source: Author's interviews with CAS scientists, 2002 and 2004 (N=86).

Still, locally educated academics admit that returnees demonstrate more positive work results than themselves. When asked to compare their own accomplishments with those of returnees, 2 per cent of locals believed that returnees achieved much more, while 51 per cent believed that they achieved “somewhat more”. Given that the local academics interviewed in these schools strongly believed that returnees got much more research funding and much better housing than the locals, it can only be assumed that the returnees really were producing more.

## The role of government policy in turning the tide of emigration

Have state policies succeeded in reversing the brain drain? Or has the increasing number of returnees been largely the result of China's growing market, shrinking opportunities in the West, and increased opportunities for talented people in China? This question can be answered only by looking at what brings people back to China, and whether the State has resolved problems that previously deterred people from returning.

The concerns that stopped people from returning in 1993 are listed in table 1. Political instability was an important factor, reflecting decades of political campaigns and the army's assault on Tiananmen Square on 4 June 1989. Based on data from a 1993 survey, Zweig and Chen (1995) tested a “political variable”<sup>20</sup> which turned out to provide a statistically significant explanation for people's attitude about returning. People also complained about the lack of quality equipment and difficult conditions at work, and the inability to develop their own career (table 1). However, we argued at the time that if China could remain politically stable and

<sup>20</sup> This variable combined the effects of the Tiananmen crackdown on respondents' decision to return, whether their parents had suffered mistreatment by the regime, and their trust in the Government's 1993 assertion that it would let people “come and go freely”.

Table 1. Why a person might not return to China, 1993

Choices	Rank (1st choice)	Frequency	%	Rank (2nd choice)	Rank (3rd choice)	Combined rank *
1. Lack of political stability	1	76	27.8	5	7	1
2. Lack of political freedom	2	31	11.4	2	6	2
3. Fear of being arrested	11	3	1.1	15	11	15
4. No chance to change jobs	6	15	5.5	6	4	6
5. No opportunity for career advancement in China	3	29	10.6	3	2	3
6. Poor work environment	4	21	7.7	1	3	4
7. Lack of modern equipment	7	14	5.1	9	3	7
8. Low living standard	5	19	7.0	4	8	5
9. Family does not want to return	12	2	0.7	12	12	14
10. Difficulty getting out the first time	9	8	2.9	10	5	10
11. Returnees seen as failures	10	6	2.2	13	10	13
12. Fear not being able to get out a second time	9	8	2.9	7	10	9
13. Better future for children overseas	8	9	3.3	8	9	8
14. Difficulty competing with children in China	13	1	0.4	14	10	16
15. Few suitable jobs given education and training	11	3	1.1	12	6	12
16. Few exchanges with international scholars	10	6	2.2	11	2	11
Total	n/a	251**	91.9**	n/a	n/a	n/a

\* Score based on the sum of 1st, 2nd, and 3rd choices (1st choice = 5, 2nd choice = 3, 3rd choice = 1).

\*\* 22 (8.1 per cent) no response.

Source: Zweig and Chen (1995).

economically vibrant, 20 per cent of its overseas scholars might return (Zweig and Chen, 1995, p. 86).

Clearly, many of the above problems have since been addressed, if not quite resolved. China's elite political scene has remained relatively stable, as reflected in the passing of the political torch from Deng Xiaoping to Jiang Zemin, and then to Hu Jintao. Concerns about working conditions have lessened, and many returnees now see China as an excellent place to develop their talent – though problems persist in this

### Box 2. Why scientists return: Indicators of government success

- Of 82 respondents, 18 (22 per cent) chose “changes in the domestic environment” as their second reason for returning
- “The freedom to come and go”: first choice of 3 per cent, second choice of 10 per cent, and third choice of 10 per cent
- Political stability: second choice of 7 per cent; third choice of 3.4 per cent
- “Changes in how the Government uses people” (*yong ren zhengce*): third choice of 9 per cent.

Source: Author's interviews with CAS scientists, 2002 and 2004 (N=86).

respect. The growth of the private sector coupled with the expansion of China's market have attracted large numbers of entrepreneurs who return to set up their own enterprises. Although interpersonal relations at work remain a major concern, this problem is as much cultural as it is institutional and therefore remains somewhat beyond the Government's reach. But as more private-sector firms are set up, this negative aspect of working in China can be expected to abate. Low salaries and difficulties in maintaining overseas contact are still common concerns among returnees. But those with substantial fellowships, such as Cheung Kong Scholars or Hundred Talents Scholars, do not face these problems. Thus, while such fellowships may not increase the quantity of returnees, they may have increased their quality, as migration theory predicts (see Borjas and Bratsberg, 1996).

Interviews with scientists in 2002 and 2004 show that the Government has achieved some success in creating a favourable atmosphere through various reforms (see box 2). When asked directly why they had returned, only two scientists cited “changes in the domestic environment” as their first reason for returning, though 22 per cent of them made this their second choice. However, posing the question differently increased the perceived influence of government policy. When asked to select from a list of reasons as to “why the number of returnees has

### Box 3. Why has the number of returnees increased?

- |   |     |
|---|-----|
| ● China's rapid economic development                  | 58% |
| ● Good government policy                              | 47% |
| ● Good opportunity to develop new technology in China | 42% |
| ● Hard to find good opportunities overseas            | 32% |
| ● Glass ceiling overseas for Chinese                  | 31% |
| ● Political stability in China                        | 19% |

Note: People could choose more than one response.

Source: Author's interviews with CAS scientists, 2002 and 2004 (N=86).

Table 2. What should the Government do to encourage more returnees?\*

Policy options	1st choice (%)	2nd choice (%)	3rd choice (%)
1. Develop the economy	31.2	6.5	7.8
2. Expand democracy	15.6	25.9	7.8
3. Improve policy towards intellectuals	23.9	16.7	34.0
4. Invest more in science and education	10.1	23.1	15.5
5. Liberalize policy on overseas studies	4.6	14.0	9.7
6. Fully utilize people who have returned	14.7	11.1	21.4
7. Other	0.0	2.7	3.8

\* People were asked to select from the above list in response to the question: "What is key to attracting more people to return to China?"

Source: Interviews with CAS scientists, 2002 and 2004 (N=86).

increased", 58 per cent of respondents chose China's rapid economic development, 47 per cent selected "good government policy", 42 per cent believed they had a good opportunity to develop new technologies in China, and 19 per cent selected political stability in China (see box 3). Clearly, many of these people believed that good government policy was important, and that the Government's role in increasing political stability deserved recognition.

Yet respondents thought the Government could do more (table 2). When asked what the Government should do to increase the return rate, scientists chose: develop the economy, improve policies towards intellectuals, expand democracy, fully utilize people who had already returned, and invest more in science and education (in that order).

Similarly, when asked what the State should do to allow returnees "to utilize their talents fully", 59 per cent felt the Government needed to improve its policies towards people with talent. In this case, improving government policy was much more important than "increasing research funding" (22 per cent) or "raising salaries" (17 per cent).

Still, many expatriate entrepreneurs would not set up a company in China, let alone move back, primarily because of government policies and lack of reform. A 2001 survey of Chinese entrepreneurs in Silicon Valley showed that government bureaucracy and regulations were the most important reason why they would not start a business in China (see table 3). China's inadequate legal system ranked second (50 per cent); and political instability, third (38 per cent).<sup>21</sup> And among 31 entrepreneurs who had established firms in China, bureaucracy and

<sup>21</sup> One reason why Chinese expatriates help their country from overseas lies in the positive conditions for establishing enterprises created by China's rapid economic development and political stability (Chen and Liu, 2003, pp. 183-184). In 1993, over 30 per cent of the respondents interviewed by Zweig and Chen (1995) cited political instability as their first reason for not returning to China. Recent interviews in the United States show that instability still affects decisions about returning (interviews by Stanley Rosen in Los Angeles).

Table 3. Why people would not set up a business in China (top three reasons) (%)

Government bureaucracy/regulation	57.5
Inadequate legal system	50.0
Political or economic uncertainty	38.3
Unfair competition	37.0
Immature market conditions	32.9
Unreliable infrastructure	19.9
Lack of access to capital	18.4
Poor business services	16.6
Inferior quality of life	13.0
Poor quality of labour	5.2
Rising cost of labour	1.8

Source: Author's analysis of data collected in May-June 2001 by AnnaLee Saxenian, with funding by the Public Policy Institute of California (N=368).

over-regulation was the most common problem (16/31), matched by the immature nature of the Chinese market (16/31). These are all issues that the Chinese Government can address.<sup>22</sup> Still, six of the 31 people who had established businesses in China cited financial incentives provided by the Government as one of three factors influencing their decision to set up a business in China.<sup>23</sup>

However, government investment in scientific institutions has a very important indirect influence as well. Interviews conducted in the fall of 2004 show that increased funding for the Chinese Academy of Sciences has rejuvenated at least two institutes which had declined due to the ageing of their leading researchers. The Cultural Revolution stopped China from training a new generation of scientists, creating what some call a "talent fault",<sup>24</sup> and many of those trained after it, including the best or second best, have gone abroad. Only money and opportunity will bring them back.

## Controversy over preferential policies

Government efforts to promote return migration have created problems. Preferential policies for returnees have created bad blood between the latter – known as the "returning sea turtles faction" (*hai gui pai*) – and people who have not gone overseas or the "land turtle faction"

<sup>22</sup> In fact, since China joined the WTO, the power of approval of many government agencies has been withdrawn, significantly decreasing the level of government interference in business relations.

<sup>23</sup> Author's own analysis of Saxenian's data set (see source of table 3).

<sup>24</sup> See Jin, Li and Rousseau (2004). See also Cao (2004c, pp. 47-49), according to whom China lost at least one million undergraduates and 100,000 graduate students to the Cultural Revolution.

(*tu bie pai*). Articles in the press and on websites in China refer to this confrontation, criticizing the decision of organizations to favour “outsiders” who have studied abroad over long-term staff members who have not been overseas.<sup>25</sup>

Table 4 shows that returnees and their locally educated counterparts take very different views of government policy. According to interviews conducted in 2002 and 2004, more local academics than returnees thought that the Government “overemphasized” returnees. Similarly, more locals than returnees felt that the latter got “much more” research funding, “much better” housing, and “much faster” promotions. Among scientists, almost three times as many locals as returnees were “not very satisfied” with their housing (41 and 15 per cent, respectively), while 50 per cent more locals than returnees felt that returnees got much more research money (29 vs. 18 per cent). More than twice as many locals as returnees thought returnees were promoted much faster (28 vs. 12 per cent); and 21 per cent of locals (as against 16 per cent of returnees) felt that the State’s emphasis on returnees was too strong.

The resentment of locally educated scientists and academics became particularly obvious during interviews in a university in south-western China. Here, the locals uniformly felt that overseas returnees to the university were not especially talented, while some locals were very good. Yet only returnees received university money to buy housing, settle on campus, and start their research. This situation may be common in parts of China where the only overseas scholars willing to return are those who were originally from the locality or who had some other personal tie to the locality. But locals in these cities may have gone to very good schools in China and can therefore match the academic credentials of many returnees (in the case in point several locals had PhDs from Qinghua University and the Chinese Academy of Sciences). Yet, across the board, returnees got preferential treatment.

In the two CAS institutes in Beijing, there was less hostility about the favouritism that returnees enjoyed. This was partly because returnees had reinvigorated the institutes. However, one local PhD complained about housing – he lived in a small, two-bedroom apartment, while returnees had been subsidized to buy new three- and four-bedroom apartments. He also complained that the State had failed to promote its home-grown talent because of its excessive concern with returnees. And while he felt that bringing in overseas talent was sound policy, it was demoralizing for locally trained scholars.

Even returnees question some of the preferential policies they enjoy. One research-team director believed that promoting all returnees to full professorships immediately upon their return was short-sighted,

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<sup>25</sup> See, for example: *Zhao lai nu xu, qi zou erzi* (To bring in a son-in-law while pushing away a son), at <http://www.wenxuecity.com>.

Table 4. Views on government policy towards returnees: Comparing locals and returnees (%)

Among academics	Locals	Returnees
The government “overemphasized” returnees	10	3
Returnees got “much more” research funding	19	3
Returnees got “much better” housing	14	2
Returnees got “much faster” promotions	19	2
Among scientists	Locals	Returnees
Not very satisfied with their housing	41	15
The housing for returnees was much better	18	4
Returnees got much more research money	29	18
Returnees had been promoted much faster	28	12
The State’s emphasis on returnees was too high	21	16

Source: Interviews with CAS scientists, 2002 and 2004 (N=86).

even though all returnees insisted on it. Those who had just completed a post-doctoral fellowship under their thesis director’s supervision had yet to prove themselves capable of independent research, let alone leading others in research. “We can offer little in terms of research environment, so we give them an empty title of ‘professor’. This is our bargain with them, but it is not healthy, as they haven’t proven themselves yet.”<sup>26</sup> Once promoted to a full professorship, however, they are very difficult to remove, so if they do not perform well, the unit may be stuck with incompetence for a lifetime.

## Concluding remarks

All levels of the Chinese Government have invested a great deal of time, energy and capital in encouraging overseas academics and entrepreneurs to return. New government organizations – particularly those related to the Ministry of Education, the Chinese Academy of Sciences, or the Ministry of Science – have established numerous programmes to that end. These extensive efforts can be explained in part by China’s sensitivity about “face” – i.e. when people do not return, it harms China’s reputation. But more importantly, China needs talented people, and government leaders know it. They recognize that they cannot prevent talented citizens from going abroad, either to study or to work, so the State must find ways to compete for that talent and bring its own people back. To achieve this objective, the central Government has endeavoured to transform the overall domestic political, adminis-

<sup>26</sup> Interview in CAS, November 2004.

trative and economic environment, while individual cities compete aggressively against each other by providing myriad incentives of their own. And though problems remain, China is experiencing significant return migration brought on by political stability, improved housing, better business opportunities in a more vibrant and legally secure private sector, more modern equipment and management procedures, higher salaries and other special incentives.

Market forces, supported by national government reforms, are the single most important factor bringing people back in the private sector, as tremendous opportunities and rewards await those who have learned a valuable skill or used advanced technology overseas. Also, China has created an environment conducive to foreign direct investment which has attracted many multinational companies, creating excellent jobs for expatriates who wish to return. Even some institutes of the Chinese Academy of Sciences are succeeding in attracting returnees, although some question the quality of their talent.

The findings presented in this article suggest that returnees have more to offer than people who have not been abroad, although it was often the most talented who went overseas in the first place. Thus, government funds expended to bring people back are not wasted. However, interviews show that few of them had to give up very successful careers to return. Nevertheless, extensive government efforts and new funding programmes have meshed well with the growing interest of many people to return to China. The result – a “reverse brain drain” – is likely to transform China’s scientific, academic and business communities in the coming decade.

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