

CHAPTER

17

The Search for Quality at Chinese Universities

Jie Zhang and Kai Yu

INTRODUCTION

Along with China's booming economy, the past three decades have seen tremendous progress in higher education in China. In 1982, only 1% of 18- to 22-year-olds had the opportunity to participate in higher education. The proportion in 2012 is now more than 26% (Yu, Stith, Liu & Chen, 2010), and China is likely to reach a 40% enrolment rate in higher education by 2020 (Ministry of Education, 2010). In the first decade of the new millennium, the income of all Chinese higher education institutions increased by almost 530%. The research universities enjoyed even faster growth. Shanghai Jiao Tong University's (SJTU) research income, for example, increased by 670% during the decade. The Chinese government has managed to further increase its education spending to 4.08% of gross domestic product (GDP) in 2012, which is 2,116.5 billion RMB (about US\$345 billion), from a level of 3.66% in 2011. In this context, it has become a national endeavour to accelerate the process of building a number of world-class universities in China.

This paper argues that the calibre of a great university rests on the standing and competence of its faculty, and, therefore, the crucial factor in building a university of excellence is the creation of an outstanding faculty. The paper discusses the successful experience of Shanghai Jiao Tong University in assembling an internationally renowned faculty team. The paper concludes that Chinese universities have an opportunity to meet their urgent need for high-quality faculty, as the vast majority of Chinese who have studied abroad are interested in the idea of returning to China, either immediately after graduation or after gaining valuable work experience. This paper suggests a num-

ber of steps Chinese research universities and the leaders who oversee them can take if they wish to attract this talent back to China.

THE NEED FOR OUTSTANDING FACULTY

The calibre of a great university rests on the standing and competence of its faculty. The quality and commitment of the faculty determine the excellence of the university's academic programs, the quality of its student body, the reputation of its teaching and research, the resources it can attract from public and private sources, and its capacity to serve the wider society through public service (Rosovsky, 1991). Therefore, the crucial factor in building a university of excellence is the creation of an outstanding faculty. The increased investment in higher education in recent decades has reinvigorated the physical infrastructure of universities and colleges, meaning many Chinese higher-education institutions now enjoy first-rate facilities envied by their foreign counterparts. However, many continue to lack the "people" factor.

Recruiting staff of high quality is necessary for all universities and colleges, but for research universities it is imperative since they are competing, not only in their home market, where they may still benefit from domestic prestige, but also in the global market. There is perhaps no greater or more urgent challenge to the Chinese research university than to build and sustain a faculty of scholars who are creators and innovators of knowledge, teachers of distinction, who serve their institution and wider community in an effective and collegial manner, and who adhere to excellence in all their activities.

In 2006, Shanghai Jiao Tong University had around 3,000 teaching and research staff members, of whom only half held a PhD degree, and only 5.9% of the PhD holders gained their doctorate abroad. SJTU recognized the critical importance of faculty, and, in the strategic plan of 2007, the goal was set of assembling an outstanding and internationally renowned academic faculty that would match other world-class universities by 2020.

The history of most world-renowned universities reveals that they have generally evolved over the centuries of their own volition, and grown to prominence through incremental progress. SJTU could cultivate its own faculty, but, given the lack of local expertise in key research and teaching programs, particularly at graduate level, it would take too long to build up the required academic quality through natural progress. Therefore, the strategic decision was taken to rely extensively on recruiting from outside, in the first stage, and especially from abroad, in the search for an excellent faculty. This first-class faculty will then provide the mentoring that young scientists and researchers need and accelerate the cultivation of quality from within.

One major factor that can play a positive role in Chinese universities' search for excellent faculty is the large group of Chinese scientists and researchers work-

ing overseas. In the U.S., Chinese students represent the single largest source of foreign-born, doctorate-level scientists and engineers, and many have gone on to become innovative researchers and entrepreneurs. When it comes to brain drain, China is a reluctant champion. Many of the country's brightest have streamed out and few have returned; of the estimated 815,000 who left to study abroad between 1978 and 2004, only about a quarter came back (Cao, 2008). Chinese nationals comprise the largest number of foreign industrial hires in the U.S., and have historically had one of the highest stay rates. According to a report from the Oak Ridge Institute for Science and Education, more than nine of every ten students from China who gained a doctorate in the U.S. in 2002 were still in the country in 2007, the highest percentage of any foreign nation, compared with 33% for Japan and 41% for South Korea, for example (Finn, 1998).

However, after the deep recession that gripped Western economies in late 2007, there has been a prevalence of news reports of U.S. corporations restricting the hiring of foreign nationals and there have been deep cuts in funding for public universities. The bleak picture in much of the U.S. and the E.U. has been in stark contrast with China, which achieved an 8.7% growth in GDP in 2009, compared to the U.S.'s decline of 1.3%, providing a clear incentive for PhD graduates, as well as experienced scientists, to think twice about where to establish and develop their careers.

Now, with the country's economy booming and its strategy to reverse the tidal wave of scientific and research talent that has flowed out of China in the past two decades, more and more Chinese expatriates or *hai gui* (sea turtles), are starting to swim home. Motivated by patriotism, family ties, market forces, generous government schemes and the steadily growing and more secure Chinese economy, the long awaited homeward bound tide has finally turned far sooner and far more strongly than had been expected.

ASSEMBLING INTERNATIONALLY RENOWNED FACULTY

In recent years, considerable resources have been expended to upgrade university faculties by recruiting tens of thousands of scientists educated and employed in the West. The One-Thousand-Talent Plan offered scholars compensation equal to their salaries abroad, and as much as US\$1.5 million in research funding (Xin, 2009). By the end of 2012, the Plan had recruited more than 2,000 academics, and SJTU alone has gained 76 full-time chair professors through this plan, one of the highest number of any universities in China. The premium salaries and generous research budgets provided by the university have helped to attract academics from abroad, but, to be successful, universities must also contribute to and complement them by offering professors an attractive remuneration package, a fulfilling career, a sense of purpose and a professional service.

An attractive remuneration package

Matching overseas salaries is the first challenge for Chinese universities. Relocation is a very significant commitment, especially for experienced professors who have family overseas. Although many of the recruited professors say that the salary was not the prime attraction, a salary level compatible with those offered in developed countries, at least in terms of purchasing power, will make the decision to relocate to China easier. The aim is to provide professors and their families with an attractive remuneration package so that the professors can focus on their teaching and research at universities without worries about degrading their quality of life.

There have been successful stories involving newly established universities in East Asia recruiting a large diaspora professor group. However, SJTU, like other traditional universities in China, differs in that it has an existing faculty, and it is not feasible to increase the pay of all existing faculty members to a level comparable to professors in developed countries. The university has therefore adopted a dual-track model, providing internationally competitive salaries to those hired academics who have an international reputation, and at the same time maintaining the pay structure for existing faculty members. To achieve this, SJTU has started fundraising campaigns to provide the additional money needed for international hires and to cater for the existing faculty.

Although salaries are important in recruiting and retaining faculty, the resources provided for research are perhaps even more vital. For those in laboratory-based disciplines, space, equipment and technical support are critical elements of the negotiation. Discretionary funds to support research assistants and graduate students can also prove decisive. Another key consideration for potential recruits is the possibility of future funding. With China's strong commitment to building a knowledge economy, it is expected that more funds will be injected into universities and research in the future.

A fulfilling career

Good salaries are not enough to attract and motivate high-performing academics; faculty members must also feel that they are part of a significant wider endeavour to ensure their full commitment towards the construction or renewal of the institution. A survey of intended returnees showed that about 60% of respondents listed expectations of a prestigious job back home as a "very important" or "somewhat important" reason for returning, while only 35% regarded greater economic rewards as decisive. Therefore, the attraction of more prestigious positions in China may be an equally influential factor. Along with national programs such as the One-Thousand-Talent Plan and Changjiang Scholars, SJTU has established programs endowed Chair Professors and Distinguished Professors to offer leading academics recognition for

their achievements. The reputational or symbolic value associated with this provides added value for the returnee professors.

To attract and promote young scholars, the Special Research Fellow program has been established, which recruits young scholars who are assistant professors or have just completed post-doctoral training at the world's most prestigious universities. They are provided with generous start-up packages, encouraged to solve scientific problems in unconventional ways and helped to climb up the academic ladder. Many overseas Chinese PhD graduates express the desire to have a professional impact in their field, but this can be difficult to achieve in the competitive academic environment in developed countries. In contrast, many returnees who have gained a PhD or post-doctoral experience from prestigious overseas universities can expect a greater degree of autonomy in directing their research compared to their post-doctoral counterparts abroad, and some soon establish and lead their own research teams. Many of the young recruited scholars report that the opportunities to use their skills, the recognition of their research results, and the impact the results can make are more important than relatively good salaries.

A sense of purpose

Many recruits were already highly paid in overseas universities, and relocation to China means affecting family routines and a possible decline in living standards. Given the risks, distinguished scientists working abroad would have been unlikely to relocate to a new but unknown university if ethnic and emotional attachments to China had not been as important a factor to them as competitive salaries and career prospects.

Scholars with a strong emotional attachment to China were elated by the increased openness and economic progress of the country, and by improved conditions of universities. For them, this progress provided an opportunity to participate in a significant event and play a role in China's modernization, and to make an important contribution to their motherland. This sense of greater purpose, of advancing the discipline for the university and the country, and of shaping the development of China in the global context, has been a common sentiment among many overseas recruits.

A professional service

In order for the university to recruit new faculty members on the scale required to fill the large number of currently vacant positions, it will be essential to modernize and streamline the staffing and selection process. At SJTU a Green Passage system has been established to accelerate the staffing process and cater to the needs of professors who have been hired from overseas. This system helps to resolve issues — such as salary negotiations, welfare and living

expenses — more quickly than if using traditional procedures. The professional human resources (HR) team at SJTU efficiently help newcomers with navigating the bureaucratic hurdles of moving to China, with finding accommodation and with integrating into the local community.

ACHIEVEMENTS OF RECRUITING AT SJTU

Efforts at SJTU to recruit international academics have been extremely successful. To date, the university has recruited over 300 professors from internationally renowned institutions abroad, and in 2012 alone it received 269 applications and interviewed 86 candidates. Furthermore, recognizing that building a strong academic team not only involves attracting experienced academics, but also achieving a balance between academics at the peak of their career and young scholars with promising academic futures, experienced professors are encouraged to initiate searches for promising young scholars in their disciplines and to build up the faculty calibre. Since then, the backbone of the professoriate has successfully attracted a large number of talented young scholars.

Through the process of recruiting, and incumbent academics leaving, the overall faculty size has remained largely unchanged, but the calibre and structure have improved greatly. The percentage of the faculty holding a PhD has increased by almost 30%, and the percentage holding a foreign PhD has more than tripled; now one in four PhD holders in SJTU gained their doctorates abroad. These qualifications are not only an indication of the calibre of the faculty, but they also represent a wellspring of academic capital used to form transnational research collaborations among networks of scholars.

Among the returnee professors are Ji Weidong, previously Professor of Law at Kobe University, Japan, an awardee of the Changjiang Scholar program; now Dean of the KoGuan School of Law at SJTU, Professor Ji is preparing the school towards achieving world-class status with a comprehensive plan of legal education reform; Liu Jianglei is a representative of young returned scholars, having completed his PhD in the University of Maryland-College Park and post-doctoral training at Caltech; he is now in charge of the photomultiplier system in the PANDA-X dark matter search experiment, in the newly constructed 2,500m deep underground lab in Sichuan Province in southwest China.

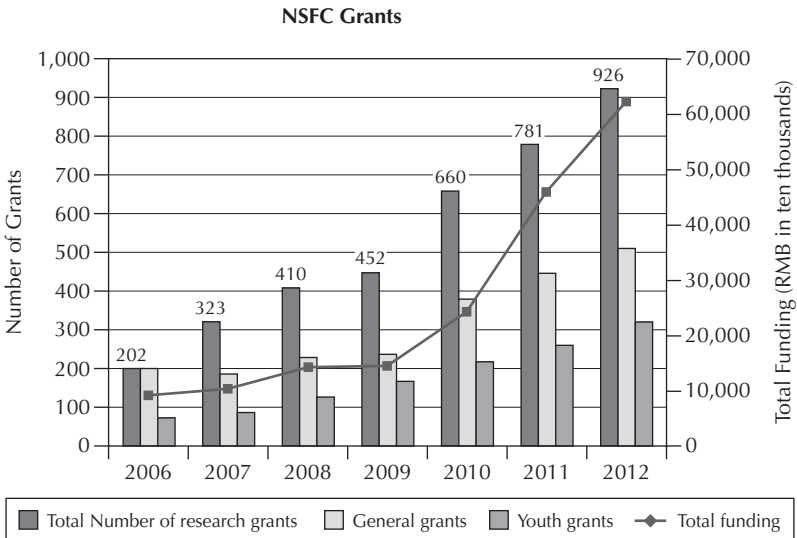
Returnees bring with them an in-depth knowledge of world-class university culture and organizational practices, making them a valuable resource in aiding China's university development. As leading or promising academics in their respective fields, the returnee professors have increased the university's capacity to generate and apply new knowledge. Literature analysis has shown that returnee professors produce a greater number of important papers, which are cited more frequently, and are published more often in high-impact journals than professors who remained in China for their whole research career.

The university’s capacity for, and output of, research is significantly greater with the input of returnee professors. The volume of research grants received from National Natural Science Foundation of China (NSFC) increased 550% in the six years between 2006 and 2012. The university is also emphasizing the quality of its research; based on the Science Citation Index published by the Institute for Scientific Information (ISI), the number of citations increased 358%, representing a rapid improvement in the quality of scientific output. According to the latest figures from the Essential Science Indicators also by ISI, 15 disciplines at SJTU now rank in the world’s top 1% in terms of the number of citations, and the positions of all disciplines are improving rapidly.

Table 1: SJTU Indicators in 2006 and 2011

Indicator	2006	2012	Growth
Faculty Number	2930	2760	- 5.8%
Faculty with PhD from overseas universities	5.9%	21.2%	259.3%
Funding from NSFC (in million RMB)	97.2	632.1	550.3%
Research Papers Published	2,169	3,519	62.2%
Research Paper Citations	2,742	12,555	357.9%
World’s Top 1% Disciplines	5	15	200%

Figure 1: SJTU’s Grants from the Natural Science Foundation of China, 2006-2012

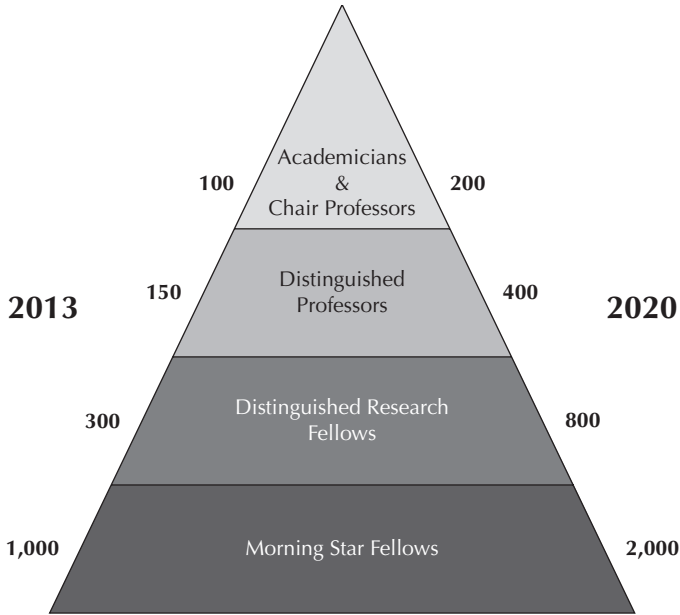


SJTU was ranked top 1 nationwide in term of NSFC grants application in last two consecutive years

CONCLUSION AND DISCUSSION

China already leads the world in the growth of scientific research and is now the second largest producer of scientific knowledge (Adams, 2010). In recent years, considerable resources have been expended to upgrade university quality in China, and it has become a national endeavour to accelerate the process of building a number of world-class universities. This paper argues that the calibre of a great university rests on the standing and competence of its faculty, and, therefore, the crucial factor in building a university of excellence is the creation of an outstanding faculty. This paper points out that Chinese universities have an opportunity to meet their urgent need for high-quality faculty, as the vast majority of Chinese who have studied abroad are interested in the idea of returning to China, either immediately after graduation, or after gaining valuable work experience. The experience of Shanghai Jiao Tong University suggest a number of steps Chinese research universities, and the leaders who oversee them, can take if they wish to attract this talent back to China.

Figure 2: Vision for faculty at SJTU in 2013 (figures in the left) and 2020 (figures in the right)



Despite the achievement of attracting high-quality faculty members, the university also realizes the challenges and difficulties associated with such

recruitment. The “star” status associated with the returnee professors can have unintended negative impacts on the non-returnee faculty, such as decreased morale. Conflicts may arise between overseas returnees and faculty who are domestically trained, and between recent returnees and those who repatriated many years ago. How the university can help overseas returnee scholars efficiently increase their research network within Chinese academia remains another question.

Therefore, although the dual-track model currently adopted is required for attracting quality academics, the ultimate goal is that the two tracks should be merged into a modified tenure-track model. Salaries and compensation packages have been progressively increased for all faculty members, whilst also making them more flexible and performance-based. The Morning Star program was launched to help existing young faculty improve their performance, and so far the program has benefited 1,083 existing young academics in last four years, awarding 73 million RMB (about US\$11.9 million). In addition, standards are being raised for academic faculty recruitment, retention and promotion, meaning the quality standards for domestic and international hires will eventually converge, as well as the pay. Pilot reforms have been started in selected departments to merge the two tracks, and the aim is to do this for all departments by 2020, when the university will have realized its goal of assembling an outstanding and internationally renowned academic faculty.

Globalization has accelerated the building of research universities, and also reduced the time that nations with rapidly growing economies are willing to wait for building such institutions. The case of SJTU illustrates how the quality of the faculty at a traditional university can be improved if the institution is astute in its perception of opportunities within a rapidly changing economic environment, is able to assimilate the required resources, and is pro-active and skillful in its approach to hiring internationally renowned professors, and thus enabling a university from an emerging economy to move rapidly into the league of world-class universities.

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