

work in China, and it is likely that international students, especially at the graduate level, will be reluctant to study in China.

Meanwhile, there is an increase in the return rate of Chinese students and scholars who have studied abroad, according to the president of the National Natural Science Foundation of China. “Just 10 years ago, the flow of talent was at about seven Chinese students leaving for every one that came back. Now it’s six [students] returning in every seven,” he said, adding, “The brain drain is almost over” (*Times Higher Education*, March 1, 2018). This trend is unlikely to continue as circumstances change. Further, that comment was limited to STEM fields and mainly to undergraduates. According to most statistics, 70 to more than 80 percent of Chinese doctoral degree holders are not returning home—a number that has been holding steady.

CONCLUSION

After decades of attempting to create a more open academic environment, it is clear that China is rapidly changing direction. The new direction is inevitable, given recent political developments. China’s investment of billions of dollars in the upgrading of its top universities to create “world-class” institutions may be, at least in part, put at risk. China’s internationalization efforts of recent years will be significantly damaged. The investments made by Western universities in developing branch campuses and other academic relationships in China may be threatened—and very likely will slow down. China’s efforts to convince Chinese students who have studied abroad to return, particularly those at the masters and doctoral levels, will be less successful, as many will question what is happening to academic life in China.

Following Brexit, the election of Donald Trump in the United States, and the general challenges of nationalism and populism globally, we are entering uncharted academic territory. China, however, is different. There are few dissident voices and no challenges to central authority. In the end, there might be losses on both sides. Chinese universities will be seriously hampered in their move to rise to world-class standards, academic freedom will be further away than ever, and collaboration with Western universities will become more difficult. Chinese authorities seem not to worry much about these risks. They look more to higher education in emerging and developing countries, which as a sector is perhaps more dependent on collaboration with China. In the end, China may end up in a gigantic periphery. ■

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Have Chinese Universities Hit a Plateau?

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The massive investments in higher education made by the People’s Republic of China are well known. Since the ascension to power of Deng Xiaoping in 1978, the country has placed an enormous emphasis on developing its science and technology capabilities, and universities have been central to this effort. For nearly 20 years, the “985” project has been providing billions of yuan to top institutions to make them “world-class.” In the first two phases alone—that is, from 1998 to 2007—expenditures across 39 recipient universities were estimated at RMB 33 billion, or roughly US\$13 billion in today’s dollars at purchasing power parity (PPP). However, measuring the extent of this investment consistently has been difficult, as China does not report higher education expenditures to UNESCO and individual universities have been traditionally rather opaque about their finances.

So it is of some interest that, in 2012, the Chinese government published a “transparency directive” for the higher education sector, which included a demand that institutions publish some type of annual financial report. Compliance has not been 100 percent, and the data does not contain a high level of detail; nevertheless, at most of the major institutions, we have five full years of such information (2012–2016). And this new data tells three rather important stories.

TOP CHINESE UNIVERSITIES ARE RICH

The first is that top Chinese universities—that is, the largest of the C9 universities that are sometimes described as “China’s Ivy League”—are really quite wealthy, with financial muscle comparable to some top US institutions. The largest institution, Tsinghua University, had annual expenditures of RMB 13.7 billion in 2016, which translates to about US\$3.57 billion at PPP, making it larger in raw terms than both MIT (US\$3.34 billion in 2014) and Yale University (US\$3.36 billion). The next largest institution, Peking University, had expenditures of roughly US\$2.45 billion in 2016, which puts it in roughly the same category as Caltech and Washington University St. Louis. Zhejiang University and Shanghai Jiao Tong University, the two next biggest, have expenditures of US\$2.3 billion and US\$2.1 billion, respectively. Fudan University, in fifth place, has expenditures of US\$1.5 billion, which is roughly equivalent to those of Princeton University.

If we examine expenditures on a per-student basis, the numbers for Chinese universities remain large but perhaps not quite as impressive, ranging from US\$78,000 per student at Tsinghua University, to US\$49,000 at Zhejiang University. That is still a long way off the larger public universities in the United States, such as the University of North Carolina (US\$161,000) or the University of Virginia (US\$131,000), or even the larger Japanese national universities such as the University of Tokyo and Kyoto University (both over US\$100,000). Still, it compares favorably with the University of California at Berkeley (US\$73,000), Sweden's Karolinska Institute (US\$75,000), or ETH Zurich (US\$63,000). And top Chinese universities stand well clear of the richest institutions in countries like Canada (University of British Columbia, US\$53,000), Germany (University of Bonn, US\$43,000, or Australia (Australian National University, US\$39,000).

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INCOME SOURCES FOR TOP CHINESE UNIVERSITIES

The second story in the data is that in terms of their sources of income, top Chinese institutions look more like North American ones than European ones. At four of the top institutions—Shanghai Jiao Tong University, Xi'an Jiao Tong University, Tsinghua University, and Zhejiang University—income from public sources accounts for less than 40 percent of the total budget. A small part of the remainder comes from tuition fees, but the main part is outside income, including from business interests like Tsinghua University's massive University Enterprise Group. This is not unlike American institutions, which frequently have massive income streams from sources such as hospitals, real estate, etc. Other Chinese institutions have higher degrees of public financing, but none of the major "C9" group of universities receive more than 60 percent of their funding from public sources.

TOP UNIVERSITIES SLOWING DOWN

The third story is that, since 2012, there has been very little improvement in the finances of Chinese universities. For instance, Tsinghua University's expenditures per student

fell by 3 percent between 2012 and 2016, while Zhejiang University's decreased by 5 percent. Shanghai Jiao Tong University, on the other hand, saw its expenditures rise by 7 percent. Expenditures are not falling; rather, inflation and student numbers are simply rising somewhat faster.

The fact is that top institutions in China are now so big that even relatively large new public expenditures are unlikely to make much difference to overall funding. For instance, it was recently reported in the *Caixin Global* (an online English-language site managed by the major Beijing media group of the same name) that Sun Yat-Sen University would be receiving RMB 480 million (roughly US\$140 million at PPP) in new funding, as part of China's recently announced "Double World-Class" initiative. However, since the university's budget is currently RMB 6 billion (US\$1.76 billion), this amounts to no more than an 8 percent boost. Given inflation and increases in student numbers, this amounts to no more than one or two-year bump in funding.

VALUE FOR MONEY?

A final question to pose is whether all this expenditure at top Chinese universities is providing "value for money." At least in terms of scientific production, the answer here appears to be "yes." Between the four-year periods 2006–2009 and 2012–2015, the number of Clarivate-indexed journals roughly doubled at all top Chinese universities. Institutions such as Tsinghua University and Shanghai Jiao Tong University are now outproducing universities such as the University of Oxford and the University of Cambridge in terms total output. True, the impact of these articles—measured by normalized citations—is somewhat lower than it is at most research universities in Europe and North America. However, citation rates at top Chinese universities have increased substantially over the past decade, and are now significantly higher than they are in top Japanese universities, if not quite at the level of the top Asian institution, the National University of Singapore.

CONCLUSION

In sum, while top Chinese universities have had a very rapid rise to internationally competitive levels of funding over the past two decades, it was never plausible that they would continue to grow at such a rapid rate. From such data as is available, it would appear as though the pace of growth is levelling off at a level that is above typical levels in Australia, Canada, and Europe, but lower than that of major American public—not to mention private—universities. And though overall scientific output is high, there is still room for improvement in terms of quality and impact of research. ■

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