

into education, confronting Chinese education with the same (equal) rules of the game, optimize moral discipline and economic behaviors in education, and be a catalyst to bring education in China up to international standards of achievement.

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The Message from Economists

Calls from economists for the marketization of education in China have become louder now that China stands at the threshold of the trade club. Currently, education stands first among the eight fastest-growing demands in Chinese society. Chinese economists believe there is a gap between supply and demand in education. While government investment in education has appeared to be increasingly inadequate, the efficiency of Chinese education is considered too low, with a teacher-student ratio that is far below the international average.

Chinese economists strongly insist that solutions to the above problem lie in the marketization of education. Given the inadequacy of government investment, new resources need to be found. Economists are confident that China now meets every precondition for the marketization of its education system. First, there exists a huge demand for education. China has a total of 2.6 million secondary school graduates each year, of which only 1.3 million can enter tertiary institutions. Second, waste in education, par-

ticularly in the higher education sector, is surprisingly high. Both personnel and material resources are often left unused.

Many Chinese economists openly express the view that education is a commodity. They are highly critical of the fact that education is still burdened with central planning. According to them, there is a tremendous shortage of supply in higher education. An official from the State Planning Commission recently described contemporary Chinese higher education as one of the rare markets in China that represents a good investment and potential economic growth zone. In view of this, private companies are increasingly investing in postcompulsory education.

Conclusion

China's entry into the WTO will further expose China's higher education system to external forces. Chinese higher education institutions will be required to become competitive internationally. As globalization is influencing universities worldwide through market competition, Chinese universities have tended merely to float with the international tides. With accession to the WTO, Chinese higher education will be more integrated into the international community. The influence of global forces on China's higher education system is only going to increase.

Globalization might create more challenges than opportunities for China. A serious concern is the absence of a well-thought-out plan to cope with the negative aspects of the current, seemingly unstoppable, move toward globalization, of which China's entry into the WTO forms a part. There is danger in failing to make a conscious decision to resist, negotiate, and transform globalization practices.

China's Expansion, Consolidation, and Globalization

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Like other countries that experience a rapid expansion of higher education, China's main challenge is to boost quality at low cost. This is especially true in its nonelite institutions, provincial universities, western region colleges, and the growing number of popularly (privately) run (*minban*) colleges and universities. Rapid expansion and China's eventual membership in the World Trade Organization makes

improving higher education a top priority, and will probably lead to greater cooperation with foreign universities, potentially resulting in further improvement of teaching and scholarship.

Expansion

China educates 25 percent of the world's students on 1 percent of the world's education budget. The total budgeted government expenditure on education is less than in most developing countries, with only about 13 percent allocated to colleges and universities.

From 1978 to 1996, China's university and college

student enrollment increased from 0.86 to 2.8 million. In 1997, China had 1,020 regular colleges and universities, with 3.17 million students, which constituted about 4 percent of the relevant age group. At the time, there were also 1,017 adult institutions of higher education with 2.73 million students. In its regular institutions of higher education, only 52 percent of students were in undergraduate degree programs, 44 percent in short-cycle nondegree programs, and 4 percent in graduate studies. In adult institutions of higher education, only 33 percent of the students were in programs of undergraduate studies.

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In 1999, China's higher education system admitted 2.8 million new students, of which 1.6 million were admitted into regular institutions of higher education (47.4 percent of all students in higher education) and the rest into adult institutions of higher education. The proportion of students who took the national entrance examination and were admitted to higher education was 49 percent, up 13 percent from the previous year. In 1999, enrollment of the relevant age group in colleges and universities was 10.5 percent.

In 2000, there were 2 million more new students admitted to regular institutions of higher education. The decision to expand further was in response to pressure from below resulting from the increase in students graduating from secondary school. By 2001, 11 percent of the relevant age group was in higher education, and this number is expected to reach 15 percent by 2005.

The government's decision to expand was also aimed at getting families to spend more of their savings so as to stimulate the economy in the aftermath of the Asian economic crisis (and to keep more students in school during a period of rising unemployment). Education is the fastest-growing focus of consumer spending by urban residents. This spending is increasing at an average rate of about 20 percent annually. An average of 10 percent of savings goes to education, which is higher than the 7 percent put aside for housing.

The globalization of the Chinese economy is compelling universities to adapt and compete like never before. With the phasing out of a planned economy, Chinese higher education has moved toward reforms similar to those in other parts of the world, including a proliferation of non-government-supported institutions of higher education. Popularly run (*minban*) colleges and universities are entering the scene for the first time since 1949, and their numbers are increasing rapidly. By 1998, the number of *minban*

colleges and universities was put at 1,800. The government identifies over 1,000, enrolling close to one million (950,000) students. However, quality is a problem, and only 37 of these colleges and universities have approval to issue standard credentials. Of these 37, only 4 issue a standard undergraduate degree.

University administrators are looking beyond the state for assistance, and banks are beginning to see colleges and universities as attractive investment targets. Some believe that education is a sector still unexplored by banks, and investing in higher education will help banks open up a new line of business. Higher education is viewed as a new commodity in a buyer's market—as a scarce commodity with enormous demand that will become the target of competition among banks. Many enterprises have invested in higher education in order to make a profit.

Enrollment in higher education is approaching 10 percent, but as mass higher education makes its appearance, as projected, in 2015, parent consumer demand for quality may increase. In the meantime, quality assurance will be up to a professoriate that is severely underpaid, a college and university administration that is focused on financing the expansion, and a government education apparatus that has transferred much autonomy and responsibility to individual institutions. Yet, the function of accreditation is still under government control.

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Consolidation

Economic globalization, market forces, urban unemployment, administrative decentralization, and the information age are making China's colleges and universities reexamine their mission. While the Ministry of Education is maintaining its direct control over the approximately 70 state universities that compose the "Ivy League" of Chinese higher education, most of the other ministries of the central government have surrendered their universities to local provincial or municipal control. Over 400 institutions of higher education formerly under the authority of various central government ministries have been transferred to provincial or local education bureaus. In line with the 1993 decision to establish 100 world-class universities, the so-called 211 project, universities are aiming for higher standards and economies of scale.

The average number of students in regular institutions of higher education was 3,112 in 1997—up from 1,919 in 1990, when about 80 percent of China's universi-

ties had less than 4,000 students, and about 60 percent had less than 3,000 students. By the year 2000, 612 colleges and universities were consolidated into 250. Economies of scale will not automatically ensure quality, especially if the institutions that are being combined are themselves over-staffed with redundant personnel. The national framework of reform and opening up has also challenged the universities to ensure equal access and equity. China's domestic market reforms have accentuated regional disparities. After decades of struggling to develop its own model of socialist higher education with Chinese characteristics, their system has taken on some of the basic characteristics of higher education in Western societies. For example, expansion of higher education may benefit urban residents more than their poorer rural counterparts, since without sufficient dormitory rooms, universities must admit more commuters. Students from urban Beijing, for example, can become admitted to universities in China with lower scores than can rural students, despite the fact that rural students attend schools far less well equipped in terms of learning resources and qualified teachers. Yet, poor rural families have not been forgotten. Student loan schemes have been increased. Nevertheless, under current conditions, rural students from other provinces need to score higher on the national university entrance examinations than Beijing students in order to get admitted to the top universities in Beijing. In short, urban students increasingly hold the edge in access to their rural counterparts.

The Global Dimension

There are many forms of globally linked academic activity, and some universities excel more than others. Among some of the indications are the number of foreign students and scholars who flow back and forth between university systems, the global character of the curriculum, and cross-national scholarly publishing in other languages.

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China's universities are increasingly affected by global economic integration, domestic market reforms, and expanding cross-national academic exchanges. There is growing interest in joint-degree programs. The joint law degree offered by Temple University and the China Politics and Law University is one example. More global academic exchange may occur if a proposal to establish a

special educational zone is supported. The motivation for

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creating such a zone, which is based on the success of China's four special economic and two special administrative zones, would be to stem the outflow of talent by permitting foreign universities to set up operations in China. This is especially important in the lead-up to China's participation in the WTO. Joint projects with reputable foreign universities could also create competition that would increase the quality of teaching and scholarship.

Can Science Save Africa?

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In the late 1960s and early 1970s, science departments in many African universities, including the University of Lagos in Nigeria, Dar-es-Salaam in Tanzania, Accra in Ghana, and Khartoum in Sudan, were among the finest in the developing world. Once heralded as beacons of progress on the continent, these departments now suffer from a host of problems that have made it all but impossible for them to meet even minimal responsibilities. The difficulties encountered by Africa's science departments have impacts that extend well beyond the departments themselves. Many of the continent's most serious problems—including malnutrition, disease, and environmental degradation—cannot be met without the presence of a critical mass of African scientists working on issues of direct concern to the continent itself. Science alone cannot save Africa, but Africa without science cannot be saved. So what can be done to revive African science, and who should lead such an effort?

Major responsibility for the future of African science rests in the hands of Africa's governments. During the late 1960s and early 1970s, funding for science and technology in Africa was driven by government commitments to quality education and research. But years of political instability and chronic socioeconomic problems have turned increasingly neglected universities into destitute institutions. Whatever responsibility Africa's political institutions