Issues in the Expansion of Higher Education in the People’s Republic of China

Henry M. Levin and Zeyu Xu

Abstract

The current expansion of higher education in the People’s Republic of China is unprecedented in magnitude. This paper explores some of the issues that have arisen in a situation of rapid growth and numerical expansion in enrolments that is incomparably greater than historical experience elsewhere. After a review of higher education development plans and recent achievements, this paper focuses its discussion on faculty and staff demand, faculty quality, labour market implications, expansion strategies, equity and other expansion issues. The discussion suggests areas that might be explored in a way to encourage maximization of effectiveness of available resources, a challenge that is especially acute when ambitious plans for expansion are proposed.
Introduction

The current expansion of higher education in the People’s Republic of China is unprecedented in magnitude. In this paper we wish to speculate on some of the issues that have arisen in a situation of rapid growth and numerical expansion in enrolments that is incomparably greater than historical experience elsewhere. The purpose of this paper is to suggest issues and areas that might be explored in a way to encourage maximization of effectiveness of available resources,\(^1\) a challenge that is especially acute when ambitious plans for expansion are proposed. The work will be organized in the following way: In the next section we will present the background to the present organization and growth of higher education in China as well as future plans. We will also review the actual accomplishments that have taken place in recent years. The following section will suggest the magnitudes of faculty and staff needed to accommodate expansion. Finally, we will review some specific issues with major emphasis on the establishment of a qualified teaching and research staff that can keep pace with enrolment increases.

A note of caution is in order. Changes in higher education in China are taking place rapidly in terms of both the organization of the higher education industry and expansion of student enrolments, faculty and staff, and facilities. The fact that these changes are dynamic means that precise information at any point in time is difficult to obtain. In addition, raw data from nationwide higher education establishment surveys are not publicly available at the time of this report. Thus, we see this paper as exploratory, with an attempt to capture the larger trends and to suggest their implications. At some later point we may be able to achieve greater precision.

Higher Education in China: Organization and Plans

The structure of higher education in China has evolved through three stages of development. Modern higher education first emerged in China at the turning point of the twentieth century, mainly following the European model.\(^2\) By 1949, when the People’s Republic of China was founded, in terms of the number of institutions 60.4% of the colleges were public, 29.8% were private and 9.7% were missionary.\(^3\) The second stage started at the end of 1952, when all institutions were integrated into the public sector.\(^4\) During this stage, Chinese higher education followed the Soviet model and was an integrated part of highly centralized national planning.
Comprehensive universities were discouraged from developing, and the structural focus was on over-specialized institutes that were dominated by the demands of specific industrial sectors, enterprises and even the needs for certain products.\textsuperscript{5} Chinese higher education in this period was dominated by small-scale science and engineering institutions. In 1962, only 6.8\% of college students were majoring in arts and humanities.\textsuperscript{6}

Beginning in the 1980s, Chinese higher education started a new structural reshuffle, representing a shift from a centrally-planned scheme to a more market-oriented scheme.\textsuperscript{7} Two major changes reshaped the landscape. First, more schooling types became available to cater to the differential demands of a large population. Along the dimension of ownership, private tertiary education re-emerged alongside the existing public sector in the 1990s. By the end of 2003, there were 175 regular private higher education institutions that were recognized by the Ministry of Education, with 1,104 other types of private higher education groups or organizations.\textsuperscript{8} The private sector, however, is still modest in size, almost all of the institutions being two-year colleges. The higher education system consists of regular institutions and adult institutions. In 2001, there were 1,225 regular colleges and universities and 686 adult colleges.\textsuperscript{9} Regular institutions are further divided into four-year universities and two-year colleges. Adult tertiary education takes more diversified forms, ranging from radio/TV universities, workers’ colleges and independent correspondence colleges, to evening schools run by regular universities. In the past several years, the adult tertiary education sector has been shrinking quickly in terms of both the number of schools and the number of full-time teachers. Within three years, from 1999 to 2001, the number of adult colleges dropped 28.7\% and the number of full-time teachers dropped by 8.7\%.

The second major change occurred with the administrative structure of higher education. The previous development stage resulted in small school sizes, redundant establishment of majors and low education and research efficiency. Before the “Tenth Five-Year Plan” (1995–2000), there were two types of institutions in terms of administrative affiliations: national universities and regional universities. National universities included those directly administered by the Ministry of Education, and those reporting to their corresponding specialized national ministries, state-owned enterprises and national associations. For example, Beijing University was under the administration of the Ministry of Education, Petroleum University belonged to China Petroleum and Natural Gas Corporation, and
China Central Academy of Music reported to the Ministry of Culture. Similarly, some regional universities were administered by the local education bureaus, and others by local ministries and state-owned enterprises. This structure of sponsorship applied to both regular and adult colleges and universities.

Since the “Tenth Five-Year Plan,” this administrative structure has become regionalized and simplified. Although not yet fully completed, the reform assigned universities under two types of administrative authorities: those under the Ministry of Education or the education departments at the provincial level, and those administered by local governments. Specialized ministries and state-owned enterprises no longer assume administrative responsibilities for higher education, a major shift. Private institutions are usually established under the local municipalities.

Ten-Year Plans

The central government defined two new strategic development goals for higher education at the beginning of the “Tenth Five-year Plan” (2001–2005): expand substantially the scale of higher education, and establish world-class universities. These goals were motivated by two considerations: the increasing demand for high-level human resources and technological innovations due to rapid economic growth and globalization, and the need for a developed tertiary education sector to strengthen the international profile of China as a prospering nation.

Before 1995, the higher education gross enrolment ratio (using full-time student equivalent numbers) had been consistently below 7%. Even in 2001, less than 4% of the labour force in China had tertiary degrees. In order to undertake the heavy burden of providing a large population with human resource advantages, the Ministry of Education stipulated that by 2005, the end of the “Tenth Five-year Plan,” higher education enrolment should reach 16 million, among which 0.6 million are graduate students. The gross enrolment ratio of the age group (18–22 years old) will reach 15%. By 2010, higher education enrolment should reach 23 million, with nearly 1 million graduate students, and the gross enrolment ratio should reach around 20%. To give some idea of the magnitudes of these numbers, consider that the US had about 13 million undergraduates and about 2 million graduate and professional students in the year 2000, with projections of undergraduates to about 15 million in 2010, the growth largely reflecting the increase in youth demography.
Higher education in China is expected to shift from “elitist education” to “mass education.” To ensure the realization of such goals, provisions have been made to promote: a) the resources devoted to higher education, including both increasing the national effort for higher education and diversifying the sources of funding; b) the establishment and refining of higher education laws and regulations, and the evaluation, monitoring and accountability systems; and c) the quality of higher education from both the teaching and the learning sides so that the expansion in quantity is accompanied by the improvement of the quality of high-level human resources.\textsuperscript{12}

The expansion goals focusing on the teaching and learning in colleges and universities and the establishment of world-class universities mainly target research carried out by higher education institutions. The earliest mention of the goal was in 1995 and 1998. A “world-class” university must have four characteristics: It is the cradle of high-quality researchers with outstanding creativity. It is the frontier of scientific research. It is an important force to transform research and innovation into higher productivity. And finally, it is a bridge for international academic and cultural exchange.\textsuperscript{13} Two major governmental projects, the “211 project” and the “985 project,” give substantial financial support for a small group of selected universities that aspire to become world-class universities. Since the standards of “world-class universities” are dynamic, no specific goals have been set for 2005 or 2010. However, the current leading universities will improve on the following aspects: the number of academic achievements, advanced laboratories, and world-renowned scientists, the amount of research funds, the number of graduate students and post-doctoral positions, modern administration, student quality, and active international exchange. With the increasing availability of government research funds and competitive funds, it is expected that in 10 years, teaching and research budgets of leading universities in China will approach those of world-class universities. Academic staff members at Beijing University and Tsinghua University are expected to publish around 10 articles each year in top journals such as Nature and Science. It is also expected that in 2025, Beijing University and Tsinghua University will be able to join the world’s top 100 universities.\textsuperscript{14}

**Actual Accomplishments**

The actual accomplishments in the past several years are as impressive as
the plans, whether measured by the increases in resources or the preliminary results of such increased efforts.

The per-student recurrent expenditure each year in regular institutions of higher education increased by 65.5% between 1992 and 2000, from RMB6,178 to RMB10,230. The major part of the expansion came from personnel recurrent expenditures for the teaching and research core, which increased by 78.6% in that period (Figure 1). Non-core expenditures for administration, external relationships and maintenance expenses that are not directly linked to teaching and research were kept under careful control. The relatively flat growth of these non-core recurrent expenditures is the result of two adjustments: the reduction of support staff, and the reshuffling of administrative structures. The decreasing ratio of non-personnel expenditure is a sign of improving efficiency to the degree that it reflects a reduction in redundant employees and multiple administrative structures. Per student expenditure in regular higher education institutions,

Figure 1. Regular Institutions of Higher Education Per Student Within-budget Expenditure (unit: RMB, US$1 = RMB8.3)

however, decreased in more recent years. The explosive expansion of higher education around the beginning of the twenty-first century, and the relatively stagnant, if not shrinking, national effort (as measured by educational expenditure as a percentage of GDP), might have contributed to such a change. These two points will be discussed later.

Total government spending on higher education increased from RMB54.5 billion (US$6.7 billion) in 1998 to RMB111.4 billion (US$13.6 billion) in 2001, doubling in three years. The budgets and resources for research have increased substantially. For example, in 1999, the science and technology expenditure of regular higher education institutions was RMB9.9 billion. Within one year, this figure jumped by 43.68% to reach 14.27 billion in 2000. Both government funds and contract research funds increased substantially (Figure 2). Although government investments provide much stronger support to Beijing University and Tsinghua University than any other higher education institutions, some of the other universities managed to raise comparable amounts of science and technology funds from diversified resources. For example, Zhejiang University raised a total amount of RMB610 million for science and

Figure 2. Science and Technology Budgets in Regular HEIs (units: RMB1 billion)

technology research in 2000, ranking second in total budgets after Tsinghua. A total of 74.2% of the funds came from research contracts with enterprises and administrative organizations. As a comparison, 67.9% of Tsinghua’s funds came from government direct investment.\textsuperscript{18}

Increased governmental investment, diversified resources and improved efficiency have produced rapid expansion in terms of both teaching and research in the past several years. For a long time, the college entrance examination has been the most ferocious battlefield for Chinese students, and the gross enrolment ratio has been consistently below 7%. It has been especially difficult to get into national key universities, where the ratio of admissions to acceptances is even more selective. Within 6 years from 1996 to 2002, this ratio has more than doubled. The latest number in a January 2003 report shows that the ratio reached more than 15% of the corresponding age group (18–22) last year (Figure 3). In terms of absolute numbers of undergraduate students, from 1998–2001 the number of entrants more than doubled to reach 4.64 million; enrolments rose 88.6% to

\begin{figure}
\centering
\includegraphics[width=\textwidth]{fig3.png}
\caption{Gross Enrolment Ratio (Age Group 18–22)}
\end{figure}

reach about 12 million, and graduates increased to nearly 2 million in 2001 (Figure 4).\(^{19}\)

Graduate education has also expanded rapidly. From 1999 to 2001, the numbers of entrants, enrolments and graduates rose 79.2%, 68.4% and 23.9% respectively (Figure 5). After several years of very rapid increases

**Figure 4. Undergraduate Enrolments**

![Figure 4: Undergraduate Enrolments](chart)

**Figure 5. Graduate School Enrolments**

![Figure 5: Graduate School Enrolments](chart)

in undergraduate enrolments, the 2003 higher education plan was designed to slow the pace of expansion to a 10% annual increase, while boosting the number of graduate students at a faster rate of 30%. In 2005, the number of graduate school entrants is projected to reach 370,000, which is nearly 4 times as many as the number of graduate entrants in 1999.

Thus far, the expansion of higher education has met the ambitious levels set out in the plans. In contrast, there is little information on the quality of teaching in this expansionary phase. There are indications that the efficiency of higher education has improved. First, university size has increased to take advantage of scale. The old Soviet model resulted in very small university sizes. As late as 1992, regular higher education institutions only enrolled 2,074 students on average. By 2001, this number rose to 5,870 (Figure 6). At the same time, the student-teacher ratio has also increased. In 1990, the ratio was 5.2, mainly due to the large number of redundant and usually low-quality teaching staff. Today, this ratio has reached 13.5 (Figure 7).

Efforts have also been made to meet the goal of building world-class universities. Since this goal mainly targets research, the effects will take a longer time to achieve. However, based on the available data, some preliminary improvements are already obvious in terms of the number of publications, patents, and technological transfer contracts. The number of monographs published rose from 4,986 in 1999 to 5,347 in 2000. Published papers increased from 269,689 to 284,135, and the number of patents rose from 1,273 to 1,952. The revenue generated by selling patents rose from RMB70 million in 1999 to 125.4 million in 2000. Similar patterns can be found with the number of technological transfer contracts and the revenue from those contracts. In 1999, regular higher education institutions received 3,973 contracts, with RMB695 million in revenue. In 2000, the number of contracts reached 4,946, generating RMB1.2 billion in revenue, a 73% increase from the previous year.  

In sum, since the start of the “Tenth Five-year Plan,” higher education in China has expanded at a rate and magnitude that is unprecedented in the history of the country. The absolute expansion is unparalleled anywhere.

Challenges

In terms of expansion of enrolments, both the plan and actual accomplishments have been impressive. The changes in rules and regulations governing higher education have also been substantial,
Issues in the Expansion of Higher Education in the PRC

43


although their impacts on overall educational results cannot be ascertained at this time. But, beyond these ambitious plans there has been a persistent concern for quality such that the major institutions would be comparable to world-class universities in both the quality of teaching and learning and in research. Substantial and continuing expansion of enrolments entails both massive capital construction and expenditure for classrooms, residential
facilities, and research space and equipment as well as both professional and support personnel. All of these resource demands represent challenges. In this section, we raise a number of issues that must be addressed to fulfil the qualitative aspirations of the Chinese plan for higher education.

Because the qualitative aspirations for a group of selected Chinese higher education institutions are to meet world-class standards in teaching and research, we refer below to a specific public institution in the United States for purposes of comparing practices. That institution is the University of California at Los Angeles (UCLA), one of nine major campuses of the University of California.21 UCLA, along with its sister institutions, the University of California at Berkeley, and the University of California at San Diego, are considered to be world-class universities in both teaching and research. Although a state institution, only a minority of its funding comes from the state, with the remainder derived from student fees, research grants and contracts, gifts, and other types of income. We will refer briefly to some features of UCLA in what follows.

Teaching Personnel

Obtaining adequate numbers of appropriately trained faculty can be a serious bottleneck to rapid expansion in enrolments. From the US experience, poor faculty quality is found to adversely affect graduation rates at four-year colleges22 and reduce the likelihood of continuous enrolment in classes.23 On the other hand, the presence of well-paid senior faculty produces students with significantly higher earnings later in life.24 Therefore, we raise this issue as the first and foremost challenge in sustaining the current higher education expansion while ensuring its quality.

As part of the higher educational reforms, the hiring and contractual relations regarding teaching personnel have been modified dramatically. In the period following the revolution, university faculty had employment commitments from the State that were not very different from other workers in the PRC. Once hired, they could expect to be employed continuously until retirement, a policy that was commonly termed “the iron ricebowl.” Faculty hired during the Cultural Revolution often had no intellectual qualifications at all, and many highly qualified faculties lost their jobs during this period. Poor quality teaching and lack of research productivity were not uncommon in the past because there were few sanctions.
That policy has been largely reversed. Under the new arrangements for new hires, all contracts are granted for a specific term, usually one year. This means that, based upon performance and needs, they can be renewed or terminated, imparting great flexibility to adjusting the teaching force. In a time of rapid expansion, the practical impact of the new policies may be minimal because of the great need for additional faculty. It is very difficult to evaluate and release faculty with mediocre performance at a time when there is a shortage of qualified applicants. But, in the longer run the use of contracts of relatively short duration may have some negative consequences.

First, the lack of security for faculty is likely to mean higher voluntary turnover for those who can find more permanent positions outside teaching. The attractions of non-teaching positions may be greatest for those who are considered most productive, especially in the areas of science and technology, where both domestic and multinational firms are able to pay much higher salaries than can be found in teaching. Since China’s accession to the WTO, domestic higher education institutions face direct competition from international education groups and multinational corporations for talent. Faculty turnover not only limits the potential of higher education expansion but is also very costly. According to Ehrenberg et al., the cost of replacing departing senior scientists and engineers by highly talented, new assistant professors is often in the $300,000 to $500,000 range. Such costs have not yet included less quantifiable costs such as faculty morale or academic reputation.

Second, at present hiring is largely in the hands of the key faculty in each field of specialization at each institution. This gives an enormous amount of power to relatively few persons in determining who will be hired and terminated, and will inhibit freedom of expression as teaching personnel are careful not to displease their decision-making benefactors. Intellectually there are many disputes and differences within most fields of specialization, and all or most should be represented in a first-class university. But, by concentrating decision-power in the hands of relatively few senior faculty, it is likely that the views represented will echo those of the decision-makers. Indeed, this feature will invite considerable inbreeding as intellectuals with a narrow range of perspectives are produced by each university and hired to teach the next generation. Casual reports suggest that a very high proportion of teaching faculty is employed in the institutions at which they were trained. The undesirability of faculty inbreeding received a considerable amount of interest from
researchers from the 1930s to the 1970s, and that research consistently found adverse impacts, such as lower research productivity of inbred faculty as compared to other faculty.\textsuperscript{27}

In contrast with these policies, universities like UCLA follow very different procedures in selecting their faculties. UCLA delegates a committee of faculty from the pertinent department to carry out a search for a new faculty member. A national or international search is convened to attract a pool of the best candidates in terms of previous accomplishments, including teaching and research and representation of diverse specialties and perspectives. Top candidates from the search are reviewed by departmental faculty. If they are recommended by the department, they are evaluated by the deans of the School in which the department is located, and, ultimately, the university administration. An attempt is made to ensure that similar criteria are used for appointments and promotions throughout the University. New faculty is evaluated with two comprehensive reviews in their first seven years in consideration for a permanent appointment. Evaluations must include student assessments of teaching as well as internal and external letters from noted scholars that provide a critical appraisal of research accomplishments. For every available position, several hundred applications might be received. Even with this rigorous selection process for new appointees, typically about half or less are granted tenure or a permanent appointment. Thus, the process of faculty hiring and continuing employment is a very extensive one that must meet university standards and requires considerable internal and external evaluation.

**Staff Qualifications**

The plan for higher education in the PRC states that both the quantity and the quality of faculty members are to be improved to meet the goals of university expansion and research advancement. However, in terms of the number of full-time teachers, the growth of teaching staff could hardly keep up with that of the student population. Between 1998 and 2001, the number of full-time teachers in all public tertiary institutions increased by 18.7\%, to 0.62 million.\textsuperscript{28} The same period saw undergraduate entrants more than double, and total enrolments jumped by nearly 90\%. In order to improve quality, redundant and under-qualified faculty was released. At the same time it was necessary to increase class size to accommodate expansion. For instance, the targeting student/full-time faculty ratio of the
“Tenth Five-year Plan” was set at 14:1.29 With a goal of 16 million students by 2005, the higher education system will need about 1.14 million full-time teachers by then. With 0.62 million teachers in 2001, the goal implies an 84% increase within the next four years, a speed four and a half times that of the previous four-year phase. Even this does not take account of the hiring needed just to replace retirements, resignations, terminations, and deaths.

To evaluate the need of a world-class public university for full-time teachers, we can examine the situation of UCLA. Since it is a university in the public education system, we assume it is somewhat comparable to universities in China. In the autumn of 2001, UCLA’s FTE student/FTE faculty ratio was 17.0:1.30 Assuming Chinese universities will increase class size by 2005 to the level of UCLA, faculty size still has to increase by 51.8% during the four years from 2001–2004, a speed nearly 2.8 times that of the current pace. If the class size becomes comparable with UCLA’s level in 2010, by that time 1.4 million full-time faculty members would be necessary to serve 23 million college students. And, if existing turnover is in the US range of 5–10% a year, that means that the total number of new persons hired could be as much as double this number to ensure a faculty of this size. Consider that this number is far greater than the numbers of graduate students completing advanced degrees, including those students who are studying abroad and returning to take faculty positions. Even these do not take account of research staff who do not occupy teaching positions, so our concern is understated; and clearly only a portion of the post-graduate population will be of the highest quality for the most selective institutions.

Second, it is not only the number of teachers that is a serious concern, but their quality as well. First, in 2000, of the 0.46 million full-time faculty members in regular higher education institutions, 6.5% carried no teaching load.31 Further, more than one-fifth of these people were employed for reasons unrelated to research or training. Second, of the full-time faculty members in regular institutions, 18.7% are assistants, a position that is very close to the teaching assistants in US universities.32 This ratio rose to 19.5% in 2000 (Figure 8). Finally, in 2000, only 6% of the faculty members in regular higher education institutions had doctoral degrees, 23.4% had master’s degrees, and 70.6% had no graduate degrees at all. More strikingly, 16.3% of the faculty, and 30.3% of the full professors had not even completed a bachelor’s degree (Figure 8)! The quality of faculty, however, varies significantly among universities.33 As a comparison, 98%
of the full-time instructional faculty in UCLA have a doctorate, first professional, or other terminal degrees.\textsuperscript{34}

Improving the quality of teaching and research staff while expanding their numbers dramatically is a major challenge to all Chinese higher education institutions; one recent study shows that maintaining teaching quality poses more challenges to institutions located in economically less developed provinces in central, western, and remote regions.\textsuperscript{35} The pressure to fill new positions must necessarily lead to the hiring of many who are not qualified to teach or do research. Even among those who have some qualifications, relatively few will be at the level of those at the leading universities in other countries with which China aspires to compete (e.g. UCLA). Pressures to fill openings also leads to inbreeding through hiring one’s own graduates, a practice that makes institutions parochial by limiting cross-fertilization of ideas found at other institutions.

Suggested directions for consideration include:

- Reducing the rate of growth of enrolments until the employment of qualified faculty can keep pace.
- Making concerted efforts to attract Chinese nationals with valuable qualifications who did not return after completing graduate studies in other countries.
- Recruiting highly qualified “visiting” professors from abroad.
• Exploring, developing, and employing educational technologies such as multi-media courses, video-taped lectures, and distance education, to disseminate the teaching of the most qualified faculty members and the most effective instructional approaches.
• Continuing to raise student-faculty ratios to the levels of UCLA to ease pressure on hiring.
• Establishing effective evaluation systems for instruction to identify best practices and effective teaching and teachers, and using this information for personnel selection and improvement of teaching.
• Providing intensive professional development as needed on instructional strategies and subject-matter knowledge.
• For lower-level courses, considering the use of advanced undergraduate and graduate students who have demonstrated mastery of subject matter and can demonstrate good teaching skills with a standard curriculum. These personnel would work under the strict guidance of expert senior faculty.

Labour Markets
Rapid enrolment growth may also create distortions in labour markets. Even with high rates of economic growth, the economy is unlikely to expand according to the precise patterns of growth in graduates of different academic specialties. Counter-intuitively, with less than 4% of its labour force having tertiary education experience as of 2000, China increasingly finds itself facing the problem of college graduate unemployment in recent years. Higher education and labour market researchers are aware of this dilemma and trying to address it, based on cross-country and longitudinal experience from developed countries. No clear patterns from the literature have been established about the relationship between higher education expansion, graduate employment and wage rates, and the developmental stage of a country. The unprecedented rate of higher educational expansion in the PRC makes it highly unrepresentative of historical patterns elsewhere.

The issue of college graduate unemployment can be explored from three aspects: the supply and demand of college graduates, and the characteristics of the labour market, such as market segmentation and incomplete information. It should be noted that there are tremendous structural adjustments taking place in the Chinese economy. In general, these represent shifts from agriculture, state enterprises and traditional
industries to private and joint ventures and movements into goods and services that are based upon computers and new technologies. Structural economic adjustment in China between 1997 and 2001 has generated 22 million laid-off workers from the state-owned enterprises, and a huge agricultural population shifting to industry, many not fully-employed. Registered urban unemployment in 2001 reached 3.6%. The figure in 1992 was 2.3%.

Adding to this general labour market context, the number of college graduates has increased from 1.15 million in 2001, to 1.45 million in 2002, and finally to 2.12 million in 2003. It is projected that in 2004 there will be 2.5 million graduates. As of 15 June 2002, the rate of employment upon graduation was 83% for MOE institutions and 45% for local institutions. A third of those unemployed were preparing for graduate school applications. Three trends are emerging from the labour market for college graduates: (a) two-year college graduates are facing more challenges than four-year college students. The rate of employment upon graduation was only 44.3% for two-year college students in 2000. (b) Graduates from different majors face very different labour market demands. In 2000, philosophy graduates had the highest employment percentage, followed by law, history, science, engineering and medicine. Graduates in economics, education, literature and agriculture were among those for whom finding employment was most difficult. On average, 76.06% of students from four-year colleges found jobs upon graduation. (c) The percentage of employment upon graduation also varies with type of institutions. In 2000, 82.75% of the national key university graduates found jobs upon graduation, as compared with 68.2% of graduates from non-key universities. The situation of non-key universities further deteriorated in 2002, and we believe that the recent acceleration in production of graduates will further reduce these employment rates, at least in the short and medium term.

It is argued by some advocates of higher education expansion that the supply of college graduates is still far below the total demand. Their view is that current tension in the job market is due to high concentrations in economically developed areas and high expectations of college students. There have been an increasing number of mismatches between demand and supply in the college graduate labour market. A report from the Xinhua News Agency on job market conditions shows that supply by far exceeded demand in major cities in the fourth quarter of 2002 (Figure 9).

College unemployment is becoming one of the major challenges for higher education expansion in China as well as for Chinese society.
Families may find themselves facing the dilemma of letting their teenagers become jobless right after high school, or delaying such unemployment by paying extra tuition to colleges. Without sufficient private returns to college education, weak demand for higher education may not justify the rapid pace of expansion. The World Bank report identified two main “rigidities” that might cause an awkward situation where less-developed regions which need college graduates the most cannot attract sufficient numbers, while graduates in major cities remain unemployed. The first cause of this is the rigidity of the curriculum and over-specialization. Under current arrangements, students are classified into narrowly defined fields long before they can adjust their own interests to market demand. Within a fast-growing economy, the lack of flexibility has resulted in numerous mismatches between supply and demand. The second cause is the rigidity in the labour market, which manifests itself in the relative lack of sufficient wage differentials to encourage individuals to acquire more skills, the residential restrictions of the hukou system, and the current occupation classification system that also defines the qualifications needed for each of the large number of narrowly defined occupations. Therefore, post-college unemployment is not only a higher education problem, but also a social problem. To some extent, allowing more young

![Figure 9. Labour Market Demand and Supply Across Professions in Major Cities (4th Quarter, 2002)](image-url)
people to go to college is a strategy to postpone instant pressure on the labour market.  

Policy suggestions from the Ministry of Education and researchers as to the handling of the job market problem include: 1) improving the quality of teaching and learning. Some leading national universities have established an evaluation and monitoring system to ensure regular examinations of teaching quality and student performance breaking down the borders and rigidity of over-specialized majors and allowing students to choose their specializations freely in the early years of college, as is happening in present experiments at Beijing University and Fudan University. This would move Chinese universities in the direction of UCLA, with its liberal arts and service courses in the first two years, prior to specialization. The purpose of this kind of experiment is to allow students to acquire more general knowledge as well as the capacity for lifelong learning, so that they will be more versatile and flexible in the future labour market. Indeed, theory and evidence find general human capital carries more transferable values than specific human capital. Beyond the improved labour market prospects for individuals, less specialized undergraduate training also improves social efficiency by reducing labour market mismatch between jobs and training. It is suggested that the state still has a role to play in improving labour market efficiency by, for example, providing policy guidance and information services to correct for market imperfections and information lag.

Expansion Strategies

A repeated theme in the higher education development literature from the 1990s is expansion through improvement of internal efficiency and economies of scale. It is argued that, by expanding the size of existing institutions, per student cost could be reduced by the pooling of resources and sharing governance and teaching capacity. For example, Tsang and Min found enrolment size was inversely related to per student recurrent expenditure. The effect size was large and statistically significant.

The potential of such an expansion strategy might have been largely exhausted. The above evidence of economies of scale is valid only when interpreted within the context in which the study was carried out. At that time, in 1989, the average size of Chinese higher education institutions was less than 2,000. As shown in Figure 6, the current average college size has reached 6,000. To give a better idea of this size, New Zealand has an
average college size of about 7,000, and the United Kingdom has about 4,500. These are the two examples given by the World Bank in 1997 as policy targets for Chinese higher education. It appears that China has already attained such a level. Comparing UCLA and leading universities in China, we find they are also very close in size. Currently UCLA has a student population of 37,494. The corresponding figure for Beijing University is 36,982. Tsinghua has 24,063 students, Fudan 36,100, and Zhejiang University has 40,000 full-time students, plus 43,000 part-time students. Even a local key university like Suzhou University has 28,400 full-time students and 16,600 part-time students. When school sizes reach this level, the effect of economies of scale diminishes significantly when controlled for quality. Further expansion at the current pace will inevitably adopt a second strategy, of external expansion by establishing new institutions, which can be more costly.

**Equity Issues**

Although higher education expansion increases college access for high school graduates, another important question is whose access has been increased. In order to finance higher education expansion, college resources have been decentralized, both from the central government to the local government, and from purely governmental subsidies to funding contributions from students and their families. At present, more than 20% of the total operational budgets of Chinese higher education institutions are covered by tuition and fees. In the period when college education was virtually free, it was always harder for rural students to be admitted; but through adequate effort and achievement, they could become college students. The public higher education system in China thus represented a significant catalyst for social mobility. Charging significant tuition at a time when no credit mechanism for borrowing has been established denies poor students access to college that was previously attainable through conscientious study and achievement. In addition, the burden on families of tertiary education tuition for some of their children may reduce demand for secondary education for other offspring in poor rural regions, harming the average rural education attainment and perpetuating poverty. Students from families of high socio-economic status are over-represented in the college student population. And since most inequalities in China derive from rural-urban disparities, regional inequality in terms of the number of college students per 10,000 population and expenditure per student is
pronounced. According to the World Bank’s calculation, if tuition is designed to recover 24% (which is very close to the reality) of the average cost of college education per student, it will require 109% of the annual income of a rural family where there is one wage-earner. By comparison, such an amount is only 56% of a similar (one wage-earner) family in the city. Such a differential economic burden on rural and urban households can, and should, be adjusted by government effort. Based on previous research, Tsang pointed out that the Chinese government has the financial potential and capacity to increase education investment. Indeed, China’s national effort (government education expenditure as a percentage of GDP) has been consistently below even some of the lowest national effort levels in the world. In fact, China’s national effort decreased from 2.86% in 1991 to 2.49% in 1997. Although China increased its national effort after 2000 to above 3%, educational expenditure as a percentage of GDP decreased from 3.32% in 2002 to 3.28% in 2003.

Other Issues

A further area for scrutiny is whether all universities, including the national universities, need to have schools and departments of specialization in every field. For example, does every national university require a medical school, school of architecture, law school, engineering school, and research institutions that cover all of the academic fields? Some academic planners and administrators in China believe that a world-class university is incomplete without including all of the academic and professional specialities. This conception is also widely accepted in academic research that compares leading universities in the US and China. Certainly, this is not the philosophy in the US where relatively few of the top universities have schools of dentistry and architecture. Princeton, for example, a school with high prestige, lacks medical, business, and law schools, yet no one would argue that Princeton is not of world class because of these omissions. Yale has a very small engineering programme that covers only a limited number of specialities, yet it too is a university that has great prestige. What we are suggesting is that beyond a broad comprehensiveness, universities can make choices about which fields they will cover. Not every university needs to cover all fields in teaching and research centres. Personnel and facilities are costly, and having too many centres dilutes the available talent pool so that most centres may not be able to maintain the depth and quality that is sought for the university. It may be better to
choose “fields of excellence” and to establish cooperative agreements or consortia with other universities to cover other fields.

Finally, there is a widespread belief in China that the “top” students must enrol in one of the 82 national universities or major research institutions. Professor Bruce Johnstone of the State University of New York at Buffalo has suggested, correctly in our view, that this will place great pressure on the enrollments of those institutions, making it even more difficult to marshal resources to accommodate growth in the future. In the US a large proportion of the top students attend institutions that are known for the high quality of instruction rather than research, the liberal arts colleges. These four-year colleges specialize in small classes and strong teaching, advisement, and general academic support, and they have greater success in placing their graduates in the most highly ranked graduate schools than the major universities. The question that arises is whether, in long-term planning, a role might be considered for a new tier of institutions that might fill a specialized niche for talented students. These institutions could specialize in teaching of the highest quality and could act as teaching laboratories for improving instruction at the universities while taking some enrollment pressures off the latter. They could also be affiliated to specific universities to link students to research training during their period of specialization.

Notes


2. Weifang Min, *Historical Perspectives and Contemporary Challenges: The Case of Chinese Universities*, mimeo (Beijing University, 2005).


4. Higher education development during this period was interrupted by two mass social movements: the “Great Leap Forward” (1958–1960) and the 10-year “Cultural Revolution” (1966–1976). During the “Great Leap Forward” the Chinese higher education system saw a period of hectic expansion, with the number of higher education institutions increasing from 229 to 1,289 in three years. By 1965, the system was back on track after difficult system reorganization. But in the following years the “Cultural Revolution” struck. This disrupted higher education again, negated almost everything existing in
the higher education system, and reduced total enrolments by about 14 times. See Min (Note 2).

5. See Min (Note 2).

6. See Yang (Note 3).


15. It is not clear whether these numbers taken from the statistical yearbooks have been adjusted for inflation. However, from the early 1990s up to today, China has been experiencing slight deflation. Ministry of Education, Statistical Report on Educational Expenditures of Regular Higher Education Institutions (2001). Available: http://www.moe.edu.cn/Stat/index.htm [2003, 1/17].

16. Min (Note 2).


28. Ministry of Education (Notes 19, xx)


30. Reporting the autumn 2001 ratio of full-time equivalent students (full-time plus 1/3 part time) to full-time equivalent instructional faculty (full time plus 1/3 part time). Excluded from the ratio calculations, are both faculty and students in stand-alone graduate or professional programmes such as medicine, law, veterinary science, dentistry, social work, business, or public health, in which faculty teach virtually only graduate level students. Undergraduate or graduate student teaching assistants do not count as faculty (*UCLA Common Data Set 2001–02*). Available: http://www.apb.ucla.edu/apbtoc.htm.


33. Min (Note 2).

34. UCLA “Common Data Set 01-02,” http://www.apb.ucla.edu/apbtoc.htm.


38. Ibid.
39. Min (Note 7).
41. An interesting comparative perspective is provided by what Philip Altbach calls the University of Buenos Aires model, where the university successfully “absorbs demand” [for higher education] at the same time that it dampens potential social unrest by offering young people the widest possible access to higher education, although very few eventually earn a degree (see a discussion at http://www.bc.edu/bc_org/avp/soe/cihe/index.html).
42. Ma (Note 35).
44. Min (Note ).
46. Tsang and Min (Note 45).
47. Liu (Note 32).
48. Min (Note 2).
49. Min (Note 7).
51. Min (Note 7).
52. The World Bank, 1997 (Note 45).
54. Ibid.