The prospects for the BRICs: The new academic superpowers?

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The Prospects for the BRICs

The New Academic Superpowers?

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Brazil, Russia, India and China – the BRIC countries – show impressive growth in their higher education systems and promise to expand and improve them in the coming decades. Yet, it is by no means assured that they will achieve the academic prominence that is more likely in the economic or political spheres. Each faces significant challenges. This essay analyses some of the systemic factors that affect higher education in the BRICs and also the central prerequisite for academic development and excellence – the academic profession.

The BRIC countries – Brazil, Russia, India and China – are expanding rapidly, and many observers see these countries as dominant economies in the coming decades. When economist Jim O'Neill coined the term BRIC in 2001, those countries accounted for 8% of global gross domestic product (GDP). He predicted that they would increase to 14% by 2011. In 2012, the BRICs accounted for almost 20% of GDP (Liu and Li 2012). Fareed Zakaria (2008), among others, has commented on a major shift in global influence away from North America and western Europe, and the BRICs are seen at the forefront of this shift. Logic might dictate that academic power will rise along with economic and political expansion (Levin 2010). These four countries do indeed show impressive growth in their higher education systems and promise to expand and improve in the coming decades. Yet, it is by no means assured that the BRICs will achieve the academic prominence that is more likely in the economic or political spheres. Each, as will be discussed here, faces significant challenges. Some of the systemic factors that affect higher education in the BRICs have been analysed and then the most central prerequisite for academic development and excellence – the academic profession – is scrutinised.

If the economic destiny of the BRICs is on an upward trajectory, the same cannot be said with certainty for higher education. Just as there are significant variations in the details of economic and political development among the four BRICs, quite different academic traditions, current realities, future plans and scenarios make it likely that the four countries will proceed along quite different academic paths. Further, the route to global academic dominance is highly complex and depends on much more than patterns of economic growth or the sophistication of a nation's economy or society.

All four BRICs are, in different ways, transitional academic systems. Three – Brazil, China and India – face the challenge of rapid expansion of access and enrolments, and at the same time are attempting to build world-class research universities at the top of the system to contribute research and top-level training to an increasingly sophisticated economy. Russia, which possesses a mature higher education system and offers a high level of access, faces the challenge of rebuilding its research universities, while improving the quality of the system as a whole.

Centres and Peripheries

The BRIC countries find themselves in an unusual paradox. On the one hand, none of them are yet an academic superpower. All lag behind the main academic centres. On the other, all

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except Russia are rapidly expanding academic systems and have goals of improving their global standing and building top-ranking universities. Further, all four BRICs are significant regional centres, influencing neighbouring countries and providing academic leadership in their respective areas. Brazil, India and Russia are by far the most productive academic systems in their regions. In east Asia, Japan remains the dominant academic power and South Korea is expanding academically, but China has the fastest growth rate and is investing the most resources in higher education.

Russia remains the central academic influence in the former Soviet Union, with Russian still the main language of instruction and research. Although countries in eastern Europe are increasingly looking towards the west and English is replacing Russian as a key language of academic communication, Russia retains some influence. India is by far the largest and most influential academic system in south Asia, with some modest impact in west Asia as well. Brazil is the scientific superpower in Latin America – in terms of research productivity, the production of doctorates, and others. That it uses Portuguese and the other countries are Spanish-speaking, however, limits its influence.

Each of the BRICs, because they are large and self-sustaining academic systems, see themselves as independent academic entities. At the same time, they look to the major academic powers for ideas about higher education development, research paradigms and others. China and Russia are to some extent adapting western academic organisational and governance ideas. Brazil seems mainly immune from external ideas and India's academic system, built on the British pattern and influenced by the country's own bureaucratic culture, does not look abroad for ideas about change.

English, as the dominant scientific language, has an impact in all the BRIC countries and is a challenge for all but India, which from the beginning of its academic history has used English as the primary language of teaching and research. Following independence in 1947, Indian languages began to be used for teaching in some undergraduate colleges and a few universities. However, a majority of undergraduate courses and almost all graduate-level degrees are taught in English.

English is more problematical in the other BRIC countries. China and Russia have established a small number of courses and degree programmes taught in English, in part to attract international students. China particularly has expanded the number of English-medium degrees and some courses are offered in English for domestic students at the top universities. Brazil seems to lag somewhat behind in embracing English as a major theme in academic development.

The BRICs, with the partial exception of Brazil, are emphasising the importance of their academics publishing in English in recognised international scientific journals, and in general participating in the global scientific community. Promotion and prestige are increasingly related to such publication, and many Chinese universities offer special payments to their academics who publish in top international journals.

The balance between striving to achieve global recognition, on the one hand, and sustaining a national and regional academic culture, on the other, remains a dilemma for the BRICs. Even as they seek to join the academic superpowers, their own national academic systems require support; and their regional influence deserves attention (Altbach and Salmi 2011).

The BRICs remain peripheral in the global knowledge system. China and India send the largest numbers of students overseas in the world for international study. Indeed, those two countries account for close to half of all global student mobility – and their numbers are likely to increase. All the BRICs have a significant net outflow of students. Students studying in the BRIC countries by and large come from surrounding countries, emphasising their roles as regional centres. Only China attracts significant numbers of international students, mostly from neighbouring east Asian countries.

China, India and Russia also contribute significantly to the global flow of academic talent, with many PhD graduates from these countries working elsewhere. This brain drain has been quite significant over several decades or more. Despite modestly improving rates of return and the new trend for some top academics and scientists to hold appointments in several countries, quite significant numbers of academics chose to leave these three countries. The causes are complex and include better working conditions, infrastructure, salaries, academic atmosphere, academic freedom, and other factors.

Interesting variations among the four BRIC countries can be observed. Brazil has not suffered much of a brain drain and the return rate for Brazilians who study abroad is quite high. A relatively attractive academic environment in the top universities and competitive salaries no doubt contribute to the country's higher education. Russia, which has a long and distinguished academic tradition, suffered dramatic financial cutbacks in higher education in the 1990s following the collapse of the Soviet Union. Numerous academics, including many distinguished scientists, left the country and others quit universities to start different careers. Only recently has the government recognised the need to rebuild the academic system. Funds have been invested in the research universities and in several programmes to improve the academic system, although salaries remain largely unattractive. China has implemented several programmes to lure top academics, who return to China with improved salaries and working conditions. These programmes have been modestly successful. India has not recognised its academic brain drain and has no programmes in place to lure Indian academics back, although many Indians in various technology fields have returned to the booming hi-tech sector – but not to the universities.

The BRIC countries thus occupy an anomalous academic terrain. They are at the same time large, growing and increasingly powerful academic systems and still striving to occupy a more important global position. In many respects, they remain gigantic peripheries (Altbach 1993).

Massification as the Underlying Reality

The expansion of enrolments has been the key reality of global higher education in the last half of the 20th and the beginning of the current century (Altbach, Reisberg and Rumbley 2010).

The "logic" of massification has affected all countries – increased access, the importance of academic credentials for employment and social mobility, and in general the centrality of higher education in increasingly knowledge-based economies.

China and India have experienced massive growth in the past two decades and will account for more than half the world's enrolment expansion to 2050. Brazil, which had no universities until 1920, began to rapidly expand its enrolments later than the others. Table 1 shows current enrolments for the four BRIC countries and includes the US for comparison.

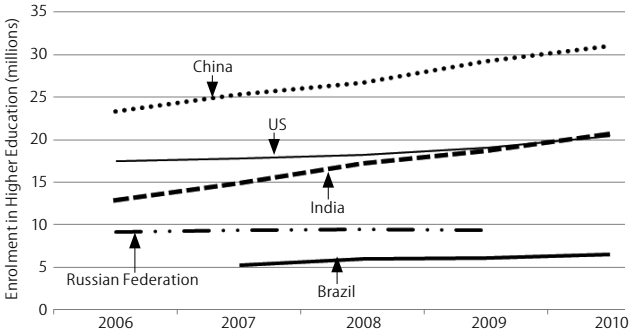
Table 1: Total and Gross Enrolment (2009)

Country	Total Enrolment	Gross Enrolment Ratio
Brazil	61,15,138	36*
China	2,92,95,841	24
India	1,86,48,923	16
Russian Federation	93,30,115	76
US	1,91,02,814	89

*Gross enrolment ratio for Brazil was not available from UNESCO statistics. The number was retrieved from Trading Economics.com, which used data from the World Bank.
Source: UNESCO Institute for Statistics; Brazil: School Enrolment Ratio,Trading Economics.com

In 2012, the BRIC countries and the US had the five largest enrolments in higher education. By 2008, the five countries, combined, accounted for 48% of the world's enrolment in higher education (Figure 1). In terms of enrolment, China and India are now among the world's three largest academic systems, and India will soon move into second place. Brazil is in the fifth position and will no doubt move up the charts in coming years. Russia will probably experience little enrolment expansion. The reason for the inevitability of expansion in China, India and Brazil is, of course, the fact that they currently enrol, by international standards, only a modest percentage of the relevant age cohort – in the case of India only 16%, while China serves 24% and Brazil 36%. Russia, in contrast, enrols 75% – similar to most economically developed countries.

Figure 1: Enrolment in Higher Education, BRICs and US (2006-10)



Source: UNESCO Institute for Statistics; Brazil: School Enrolment Ratio,Trading Economics.com

Rapid massification produces some inevitable results – including an overall deterioration in the quality of higher education. This does not mean that the top part of academe becomes worse, but the average quality measured by virtually any criteria does go down. For example, 38% of those teaching in post-secondary education in China have only a bachelor's degree, although the proportions of academics with at least a master's degree are much higher in the other BRIC nations. The average quality of students entering post-secondary education declines, at the same time that competition for places in the top universities increases. The phenomenon occurs because a larger number of more modestly qualified students are entering the bottom tier of universities, while competition for the limited number of places at the top-ranking universities is greater as applicants are aware of the quality and prestige variations among universities. Per student funding also declines as numbers increase and governments do not allocate sufficient funding to maintain quality for larger numbers. Thus, academic systems become more differentiated, either by plan or by the forces of the market – with the emergence of a small top tier of universities, alongside a much larger group of institutions catering to students from a wide range of backgrounds and abilities.

None of the BRIC countries provide a reasonable standard of quality to students in the mass sector of post-secondary education. Each underinvests in this sector. As a partial result, the private sector has moved in to provide mass access and its quality is often low. In China and Brazil, particularly, the academic qualifications of those teaching in the mass sector are inadequate and part-time instructors are widely used. Dropout rates are high and many graduates are deemed to be unemployable.

Few countries have been able to develop and sustain a well-defined higher education system that adequately supports mass enrolments and at the same time world-class research universities at the top. The BRIC countries, each in its own way, have been grappling with this key challenge in the era of massification.

The Challenge of Funding

Post-secondary education everywhere faces significant financial challenges. The cost of catering to a larger and more diverse clientele is at the heart of the problem. Very few governments have the financial resources to fully support a comprehensive mass higher education system. The BRIC countries, due largely to their economic success in recent years, have the ability to provide more funds to higher education. Yet, despite clear needs, public investment remains relatively low when compared to developed countries. The average expenditure in education as a percentage of GDP for countries in the Organisation for Economic Cooperation and Development (OECD), in general the wealthier nations, is 5.9% (public and private combined); and the US spends 7.2% of GDP (public and private combined). Table 2 shows the BRICs range from 2.1% (China) to 4.3% (Brazil).

Table 2: Expenditure in Education and Research and Development (R&D)

	Expenditure in Education			Expenditure in R&D	
	% GDP (2009)	Tertiary Education as % of GDP (2008)		Domestic Gross Expenditure (PPP $ billions, 2009)	As % of GDP (2009)
		Public	Private		
Brazil	4.3	0.8	nd	18.0	0.9
China	2.1	nd	nd	123.7	1.4
India	4.1	nd	nd	28.1	0.8
Russia	3.1	0.9	0.5	21.8	1.0
US	5.7	1.0	1.7	383.6	2.7

nd = no data.
Source: Percentage of expenditure in education as % of GDP: The Economist's Pocket World in Figures; expenditure in tertiary education as % of GDP: OECD Factbook, 2011; expenditure in R&D: Batelle, R&D Magazine; data from International Monetary Fund and Batelle.

Inadequate funding has significant implications throughout the academic system and makes it difficult, if not impossible, for post-secondary education to fulfil its goals and to serve the needs of individuals and society. The implications include low salaries for the academic profession and others working in higher education, a theme that will be discussed later in this essay. Quality suffers in many ways, with poor and often overcrowded facilities, a lack of support staff, outdated or non-existent laboratories, substandard libraries and information technology, as well as limited access to internet-based knowledge, and others.

All the BRIC countries have implemented special funding initiatives for higher education from public resources and have in the past several decades increased financial support for higher education. Yet, in all cases, the amounts allocated have been inadequate. In all four cases, base funding for higher education to pay for the expansion has been especially inadequate – resulting in poor quality, denial of access to some who seek to enter post-secondary education and increasing dropout rates.

R&D and the Research Universities

Despite the rapidly growing economies of the BRIC countries and the stated goals of each to emphasise research and development (R&D) as a keystone of economic development, all four countries spend less than the 2008 OECD average of 2.3% of GDP and well under the 2.7% spent by the US (Table 1).

R&D expenditures do not, of course, all go to universities, but there is a correlation between broader R&D expenditures and research support for higher education – and it is clear that the BRICs lag behind the most-developed countries. China spends the largest amount and also the greatest proportion of GDP, but India and Brazil trail behind. This is also the case for patent applications, another proxy indication of scientific productivity. Most observers note that China's R&D growth – as measured by patents, research expenditures and facilities – has been impressive and if current trends continue, it will become a major research power in a decade. The other BRIC nations show less impressive growth, although segments of the higher education systems in each country are impressive.

Two of the BRIC countries, China and Russia, have complex research systems that in many ways weaken the research strength of the universities. In both countries, the apex research organisations are institutes that are part of the academy of sciences system. These institutes focus exclusively on research and, by local standards, are better funded by the government than the universities. Perhaps most significant, national policy has long given the universities responsibility mainly for teaching, with research receiving less support. The academy tradition was a central part of Russian and then Soviet scientific policy and was adapted in China after the establishment of the People's Republic in 1949. In recent years, both countries have recognised the problems of the academy system, have moved to better integrate the institutes with some of the universities and also provide more resources to the universities for research. In some cases, academicians have university appointments and doctoral students work in the institutes. India also has a small number of research institutes, but they are less central to the scientific system.

Research universities are at the pinnacle of any higher education system and they are central in the efforts of the BRICs to rise to prominence both in higher education and in economic and scientific development (Altbach 2007). Progress has been impressive in three of the BRICs – Brazil, China and Russia. India lags behind. China, which as a result of two major initiatives aimed at building research universities, now has approximately 100 universities with impressive infrastructures, some of which are developing into globally competitive institutions (Levin 2010). China's government and the top universities aim at establishing the country as a major academic power. China's growing research universities are struggling to build an academic culture to accompany their facilities (Altbach 2009).

Brazil's research universities are, with a few exceptions, concentrated in the state of São Paulo, which allocates a significant part of its tax revenues by law for major public research universities and has been able over time to build some of Latin America's top research universities. A few other federal universities have also built a research profile. None of India's universities appear anywhere near the top of any of the international rankings, a surprising fact for a country with the world's third-largest academic system. Only the highly respected Indian Institutes of Technology (IITs) are internationally recognised and these are small and specialised schools. Russia's traditional research universities, which had significant strength and global respect, declined in the 1990s following the end of the Soviet Union. Rebuilding is now under way and the government has identified 29 national research universities. Additional funding is provided and these institutions have a mission of building world-class research universities in Russia. The traditional key universities maintained significant strength and several new institutions have been established. It is too early to determine if this initiative will result in several Russian universities joining the ranks of the leading global universities. While the BRIC economies are expanding rapidly and higher education is recognised as a top priority for each country, none has universities that are yet at the top ranks of global research universities.

A Mania for Mergers

Two BRIC countries, China and Russia, have frequently used institutional mergers as a means of improving efficiency and enhancing the ranking of universities. Indeed, Russian President Vladimir Putin recently announced that another wave of mergers will take place. Perhaps not surprising, since many universities in these two countries were divided into small specialised institutions during the Soviet period in Russia and in the 1950s in China, when the Soviet model was widely followed. But academic mergers are often very difficult to successfully implement. For the most part, they stem from government decisions, rather than the institutions themselves. Often, the goals of mergers are bureaucratic efficiency or a

desire to bring together institutions so that there will be economies of scale – and quick improvement in global rankings.

Variations in academic culture may also contribute to the problems of successful implementation of mergers – overlapping and conflicting bureaucratic structures, the geographical separation of campuses, entrenched interests of administrators or faculty, the challenges of combining management and other systems, and the simple matter of size. While mergers may not in cases be problematical, careful attention both to goals and the practical challenges of implementation are required.

Private Sector and Privatisation of Public Higher Education

Massification and inadequate public support for higher education have been responsible for the rise of a growing private sector worldwide. Indeed, private higher education is the fastest-growing segment worldwide (Levy and Zumeta 2011). Each of the BRIC countries has a growing private sector. Much of the enrolment expansion in the BRICs is in the private sector or in revenue-producing segments of the public sector. Brazil's is the largest in terms of the proportion of students attending private universities – about 75%. India has the most complex private sector, since most undergraduate colleges are privately managed, although most receive most of their funding from the government. The growing number of "unaided" (fully privately funded) undergraduate colleges is supervised by a public university and their degrees are awarded by the university. India has a growing segment of private universities – 53 out of a total of 496 universities. These private universities are allowed by the government to grant degrees but receive no public funding. Private post-secondary institutions in China and Russia educate a small but growing segment of the student population – 0.9% and 17%, respectively. The private sector in the BRIC countries is, with only a few exceptions, for-profit. Brazil and Russia do possess a few high-quality private institutions. In the Brazilian case, these are mainly several of the traditional Catholic universities, while in Russia several well-funded private economics and business institutions have emerged in recent years. Neither China nor India has any top-level private universities, although several of them aspire to the top of their systems. In general, as is common in developing and emerging economies, the private sector caters to students who cannot be admitted to the public universities or to some who have vocational interests served by some of the private institutions. Quality assurance has been a challenge in the BRIC countries, generally, but has been particularly problematical with the private sector.

In each of the BRICs, the public sector has higher prestige and students, if they have a choice, will typically choose a public university. This preference is in part changing, as the public sector deteriorates, and a small number of prestigious private institutions have been established. Prestigious private specialised institutions are particularly evident in fields such as management and information technology. As the quality of public higher education deteriorates, the emerging middle classes in the BRICs may be willing to pay for elite private institutions. More wealthy parents are sending their children overseas for undergraduate education as well – particularly in China and India.

There has also been a notable privatisation of public universities in some of the BRIC countries, a phenomenon that is changing the nature of public higher education and affects these four countries in different ways. Public university tuition fees are low in three of the countries (China, India and Russia) and free in Brazil. In China and Russia, central and provincial authorities allocate budgets for specific numbers of students in each public university, although the amounts are too low to support the full budget of the institution. The universities are permitted to enrol "extra-budgetary" students, who are charged high fees and generally receive the same degree as the regular students. Funds earned from these students provide extra payments to professors and in general support the budget. In this way, public universities function as dual public and private institutions. Indian undergraduate and professional education is increasingly offered by private colleges, which are affiliated to the public universities but receive no funding from public sources. The growing importance of "unaided" colleges is a notable new phenomenon in India.

In all the BRICs, as in much of the world, universities are asked to earn income from consulting, the sale of intellectual property, and other sources. Some top Chinese universities have been particularly successful in starting companies, such as Peking University's Founder Group, specialising in information technology products, which contribute to institutional budgets. Many Chinese universities have invested in "technology parks" – some of which have spawned innovative industries and other commercial ventures. The Brazilian public universities seem least affected by the pressure to privatise, as Brazil has, at least so far, retained its commitment to fairly generous public support for its public universities. However, it should be kept in mind that 80% of Brazilian students attend private higher education institutions.

These factors have, without question, produced significant change in the nature of public universities worldwide and have brought market forces to academe as never before.

Corruption and the Creation of an Academic Culture

Universities in all the four BRIC countries face challenges of solidifying academic cultures that are at the same time meritocratic, collaborative and competitive. The need is particularly acute at the top of the system in the research universities if they are to aspire to world-class status, but is relevant throughout the system. The culture within an academic institution is central to fulfilling the mission of the university and significant to the academic staff as well.

This discussion mainly concerns public universities in the BRIC countries. Most of the growing private sector has little semblance of academic culture. As noted, most institutions are for-profits, offering vocationally popular qualifications and with no aspirations to conduct research. Most of the teachers are part-time and few if any have long-term or permanent employment arrangements. There is no shared governance; top managers

control all aspects of the institutions. Among such institutions, of course, there are a few exceptions to these general patterns. The older Catholic universities in Brazil, several new and well-funded business schools in Russia, and Manipal, Symbiosis and several others in India are among these exceptions.

An effective institutional culture includes a system of shared governance in which the academic staff has effective control over the key elements of curriculum, hiring and promotion of staff, awarding of degrees and related aspects of the core of any university. At the same time, academic leaders must hold the power to lead the institution and not be subject either to strict governmental control or to the "anarchy" of professorial (or sometimes student) participation in each decision. An appropriate mix of faculty autonomy and administrative leadership is necessary for effective governance.

The BRIC countries vary in their arrangements. China's highly bureaucratic academic structures form a combination of academic governance and the parallel administrative authority of communist party groups in each department and at the top university level, creates a very bureaucratic and sometimes politicised academic culture. Both India and Russia have substantial degrees of bureaucratic controls. Brazilian universities are typically governed by elected administrators at all levels, with academic and other staff and often students voting. This arrangement encourages a politicisation of academic decision-making and often makes needed but difficult decisions impossible to implement. It is fair to say that aspects of university internal organisation and university-government relationships create problems in the BRIC countries.

Academic Freedom

Academic freedom is also a central value for higher education worldwide. All the BRIC countries have faced some challenges to academic freedom, which in some cases continue. China's situation is the most problematic. Many observers have commented on problems of access to information in some disciplines, restrictions (sometimes self-imposed) on certain kinds of research or on the interpretation of findings. Publishing certain results or interpretations may create problems. Sanctions for violating norms can be either subtle or severe and are on the minds of many academics, especially in the social sciences. That political authorities are an integral part of the university administration, through the communist party secretary, underlines the concern for ideological conformity.

Academic freedom issues are more subtle in the three other BRIC countries, and in general all three offer a high degree of academic freedom. Brazil, although academic freedom was severely compromised during the military dictatorship between 1964 and 1985, now has a very strong record of academic freedom, with no restrictions on information access, publication, and faculty political expression or involvement. Russia continues to be affected by the legacy of the Soviet Union in many aspects of its society and economy, including higher education. This tradition includes a certain amount of self-censorship of perceived controversial ideas, while academic freedom, at least in terms of the freedom to speak out and publish in areas of relevant expertise, seems to be reasonably well protected. The situation in India, as in many areas, is complex. Academic freedom is in general well-entrenched and protected. Yet, in some parts of the country, there are informal constraints on publishing controversial findings in areas such as religious conflicts, inter-caste and ethnic relations, and some others, and interpretations of aspects of Indian history. From the legal perspective, however, academic freedom is protected.

Academic corruption is not a topic that lends itself to careful research or open discussion (Heyneman 2009). Yet, that issue exists to some extent in many academic systems. Three of the BRIC countries have, and, to some extent, continue to be affected by serious malfeasance. Only Brazil seems not to have entrenched corrupt practices although as is the case everywhere, there is no doubt there are conflicts that involve individuals or institutions. In the other three countries, elements of corruption have affected many universities and in some cases remain a problem. It is not possible to accurately measure the phenomenon and this discussion will simply mention aspects of it that have been noted by observers. It has not been disputed that any of these countries face systemic and endemic malfeasance in the academic system, but particularly China and India face sufficient issues to create problems for the success of an effective national higher education system.

In the aftermath of the collapse of the Soviet Union, Russian higher education experienced a multiplicity of crises, many stemming from drastic cutbacks in funding from the government. Among these problems was a dramatic increase in corrupt practices. Professors, unable to support themselves with their deteriorating salaries, charged students for "tutoring", which resulted in good grades, sold course materials and charged money for admission to some faculties and institutions. In recent years, improvements in salaries – although salaries are still quite low by international standards – better working conditions and enforcement of rules by both government and academic authorities have decreased corrupt practices dramatically. The implementation of a national entrance examination for universities, for example, eliminated payments for admission to departments or institutions.

Corruption in India varies by institution and region. Practices that are frequently highlighted in the Indian media include "selling" academic posts – by asking for bribes for appointments, awarding posts to people from specific regional or caste groups or for political reasons, widespread cheating in examinations by students, and many others. It is possible that the media exaggerates the extent of the problem and there is no accurate data. It is the case that the top institutions, such as the IITs and others, operate with complete probity; and national examinations for these institutes' entry and other purposes seem to be free of problems.

Numerous reports of plagiarism of academic work by students and professors have been noted in the Chinese media and are widely discussed. Many observers have commented on widespread falsification of data in research, manipulation of the journal publication process and other shady practices. The pressure to publish research articles is immense and many

have commented that a widely understood set of academic ethics has not been widely accepted in China. The all-important national entrance examination, the *gaokao,* is widely regarded as entirely fair and efficiently managed. While the extent of actual corruption cannot be measured, it is mainly agreed that the development of an academic culture with probity as a key element is slow to be implemented in China.

Corruption is, thus, an issue of some importance in three of the BRICs, and is, in some ways, a detriment to the development of a world-class academic system. Basically, all the BRICs need to foster an academic culture that supports the essential missions of higher education. While such a culture takes time to mature, it requires an adequately funded higher education system, clear rules that are enforced by governmental and academic authorities and working conditions that foster high quality.

National Challenges

The foregoing discussion has highlighted some of the key factors affecting the BRIC nations as they participate in the rapidly changing global higher education environment of the 21st century. It is also useful to examine some of the specific challenges affecting each of the countries. National academic development is affected by global trends and national circumstances and policies. This discussion only highlights some of the most significant national elements shaping the country.

Brazil

Brazil has significant advantages in its higher education environment, particularly when compared to other Latin American countries. The country's public universities, although they account for only 20% of enrolments, are Latin America's research powerhouses. They produce more than half of Latin America's doctorates and a high percentage of the continent's research. They also mainly employ full-time faculty and pay relatively attractive salaries. Yet, there are only a few internationally competitive universities – mainly three in the state of São Paulo – and a few other federal institutions. The majority of the public universities and all but a few of the growing private sector are of mediocre to poor quality. The system as a whole is poorly coordinated, with the largely anarchic for-profit dominated private sector dominating Brazilian higher education. The public universities are sponsored by several different governmental entities, with little coordination among them.

The governance of private institutions tends to be in the hands of the owners and their appointed administrators, with little chance for an independent academic culture to emerge. The public institutions all operate with the traditional Latin American concept of autonomy from government control and with internal "democracy". This unwieldy arrangement makes academic leadership difficult or unachievable and contributes to academic paralysis. That public universities cannot charge tuition and are restricted from generating much income from intellectual property and other entrepreneurial activities also make it difficult for them to engage in innovative programmes.

While Brazil's federal government and some state governments provide relatively generous support for public universities, only the three main public universities in the state of São Paulo and a few other federal universities have achieved prominence as research universities of an international standard. There is no national strategy for higher education, other than a commitment to expand access. The powerful state governments have no specific plans for their universities, although the generous funding arrangements in São Paulo, where the three main public universities receive a set percentage of state tax revenues, have permitted these institutions to impressively develop into key research universities. One of the few federal efforts is a large scholarship scheme to send Brazilian students abroad in the hope to build up skill levels.

Brazil, in common with many countries, has a serious problem of access and degree completion for racial and ethnic groups and for lower-income groups in society and it is currently experimenting with an innovative programme for funding and support for students.

On average, Brazil's universities are among the best in Latin America. Brazil does not suffer from the Latin American problem of an academic profession as largely part time and the country produces many more advanced degrees than its neighbours. Yet, its higher education system is inadequate to serve Brazil's rapidly growing and increasingly sophisticated economy.

Russia

Russia's challenges are, in general, of a different nature than in the other BRICs. Russia is a mature economy with a population that is contracting. Its access rate is high – 76% of the age cohort attends post-secondary institutions, and the academic system will not expand. Quality throughout the system is recognised to be a major challenge and it is recognised that Russia needs to rebuild its once impressive research universities. While many problems faced higher education during the Soviet period, the top universities were recognised for their high quality in the sciences. Following the end of the Soviet Union, funds were dramatically cut, morale collapsed, many of the top academics left for other countries and many of those who stayed left the academic profession. Low salaries required moonlighting and, as noted earlier, contributed to rising corruption. Facilities deteriorated and laboratories quickly became outdated.

Like China, Russia has the "academy system" in which much of the research is conducted by the relatively well-funded and prestigious Academy of Sciences. The system faces the challenge of integrating the universities and the academies to maximise the effectiveness of research and to most efficiently use available human and financial resources.

Internationalisation lags far behind in Russia. While the country is host to over 90,000 international students, almost all of them are from the former Soviet Union. Only a few courses are offered in English, such as at the Higher School of Economics, the People's Friendship University and a few others. Few international students are prepared to undertake studies in Russian. Relatively few Russian students study abroad and many of those do not return home.

Like many countries, non-elite post-secondary institutions face severe resource constraints, low morale, overcrowded

facilities and an influx of students who may not be well-qualified for higher education. As a result, dropout rates are high and many graduates cannot easily find employment. Improving these institutions by better integrating them into a more coherent academic system and ensuring that the quality of instruction is adequate is a significant challenge.

At the top of the system, rebuilding the research universities has already begun. The government has identified 29 research universities and has provided them with significant, but still inadequate, additional resources. National policy aims at enabling these universities to join the top ranks of world universities and to score well in global rankings.

Russia still faces the challenge of building an academic culture that stresses productivity, academic freedom, teaching excellence and a commitment by the academic staff to their universities and to the highest standards of scholarship. To achieve these goals, salaries will need to be significantly improved, as well as the internal governance and ethos of many universities.

India

India faces the greatest challenges of all the BRIC countries (Altbach 2009). Its access rate is significantly lower, at 13%, than the others, and its population is growing more rapidly than any of the others. Thus, the key reality in the coming decades will be providing access for millions of new students (Agarwal 2009).

India has no world-class universities. The IITs, a few of which appear on global rankings, are small and not universities, since they offer a limited number of disciplines. A few of the traditional universities, such as the Jawaharlal Nehru University in New Delhi, are recognised as having several distinguished departments and some top professors but are nonetheless largely unranked. India may be the only large country with no top universities.

Indian higher education is inadequately funded and a surprising amount of the financial resources spent are paid to the academic profession, whose salaries, when compared to other developing and middle-income countries, are high. Very little public funding is available for research. The state governments, which are mainly responsible for funding the universities and many of the colleges, seldom provide adequate resources and have no consciousness of the importance of the research function of the universities. Although a number of schemes aimed at improving the capacity of the top of the academic system have been proposed by the central government, the funds allocated are largely inadequate. In any case, most government resources in the coming period will necessarily be spent on coping with the expansion of student numbers and access.

Structurally, the Indian system is also the most problematical. The current arrangements of undergraduate colleges affiliated to universities that have responsibility for examinations, awarding of degrees, and certain aspects of quality assurance, are no longer effective. India's 32,000 colleges are overwhelming the 496 universities, many of which are responsible for hundreds of colleges, often located far from the main campus. The system has proved over decades to be immune to efforts to reform it and has grown even more unwieldy. When India has successfully implemented change in higher education, it has had to ignore the established universities and start entirely new institutions, such as the IITs. Further, although there is a quality-assurance agency, it is inadequate and has been unable to evaluate more than a small minority of institutions.

In recent years, the private sector has expanded dramatically. There are now more than 100 private universities – called "deemed universities". There are thousands of "unaided", mainly private, colleges in all fields that are subject to the authority of the affiliating universities but are somewhat loosely controlled. Many of these colleges are for-profit, sponsored by local politicians, or by non-profit religious or ethnic societies. Most of the private universities focus on high-demand subjects – such as management studies, information technology, and the like. Many are for-profit. A few are non-profit.

India's system of providing special advantages for students from disadvantaged caste, ethnic and income groups, commonly referred to as reservations, now account for close to half the places allocated in many colleges and universities. Reservations also govern who may be appointed to teaching and research positions. While there are significant historical, political and sociological reasons for the reservation policies, they have come under much criticism in recent years and certainly have an impact on the academic system as a whole.

It is difficult to envisage a practical strategy for India to overcome these structural, political and financial challenges and build a globally competitive academic system or, for that matter, to produce the talent needed for India's rapidly growing and increasingly hi-tech economy.

China

China's academic progress in the past several decades has been remarkable, especially since the nation emerged from the Cultural Revolution of 1966-76 with its academic system largely destroyed (Organisation for Economic Cooperation and Development 2007). The 211 and 985 Projects, aimed at supporting about 100 research universities, succeeded in adding infrastructure and creating an impressive group of research universities – a dozen of which are achieving international stature. Even more impressive has been the growth of enrolments. China has increased its access rate from a few per cent to 24%.

Yet, serious challenges persist. While China has invested heavily in the top of its academic system and has achieved impressive results, academic institutions (public and private) at the bottom of the hierarchy are often of low quality and produce graduates unable to find appropriate employment. The gulf between the top and the bottom of the system, as is the case in many countries, has grown. China seems to have no strategy in place for improving the mass sector of its higher education system.

The practice in many Chinese universities of enrolling additional students on campus or in affiliated colleges – to earn additional income, increase access and provide opportunities for academic staff to supplement their salaries – has many

negative aspects, including distracting academics from their basic tasks, quality control, and others.

The private (*minban*) institutions are typically focused on vocational subjects and are often of poor quality. They are typically uncoordinated and have few links to the rest of the higher education system. Quality assurance is problematical. Many of the private institutions use academic staff employed in the public universities, thus taking them away from their core responsibilities. The challenge of ensuring that the "private sector serves the public interest" is a significant one.

The Chinese academic profession is under significant strain. Academics are underpaid and must earn extra income. Only 13% hold doctoral degrees and 35% have earned only a bachelor's degree. They are subject to tight bureaucratic and, in some cases, political controls. Many have only a rudimentary grasp of academic culture.

The Chinese academic system exhibits some significant contradictions. On the one hand, it has accomplished much in the past several decades and the best universities are close to achieving a world-class status. Substantial resources have been invested and there have been significant improvements in research output and impact, patents and other measures of productivity. On the other, much of the system remains on quite shaky ground and is in need of major improvement. The problem of continued enrolment growth, as China moves from the current access rate of 24% to double that figure, will create additional strains on the system.

The national challenges described here are quite significant for each of the BRIC countries. While there are some common threads among them, each country faces its own reality. And each has different ways of coping with problems. Some are likely to be more successful than others. One of the central requirements of a successful academic system is the academic profession. Thus, a consideration of the challenges facing the professoriate in the BRIC nations is of special importance.

The Academic Profession

The academic profession is at the heart of the university. No institution of higher education can be successful without a well-qualified, highly motivated and effective professoriate. Yet, too often the academics are forgotten in discussions of the problems of universities – or sometimes demonised as creators of the university's difficulties. The academic profession in the BRIC countries, as in the rest of the world, faces significant challenges in the 21st century. Indeed, in many countries salaries are inadequate and in some cases deteriorating, and conditions for teaching and research are inadequate. In general, the "best and brightest" are not attracted to the universities.

As a general rule, the overall academic qualifications and working conditions of the professoriate decline in a mass higher education system. Not surprisingly, the proportion of academic staff with doctoral degrees declines, as do overall salaries, working conditions, and most likely the quality of teaching. The proportion of part-time staff increases, as does the number of full-time professors who moonlight in other teaching or research positions or in non-academic work.

If there ever was an academic community, it is weakened by the circumstances of mass higher education. The differences in salaries, working conditions and prestige between the minority of academics with positions in the research universities at the top of the system and the very large majority of those with appointments elsewhere are huge.

An examination of the status of the academic profession in the BRIC countries – particularly the terms and conditions of academic appointments, remuneration and contracts – is of central relevance because the future of the academic systems of these key countries will depend, in a large degree, on the health of the academic profession.

Unlike the professoriate in many others parts of the world, including the US, and dramatically in developing countries with rapidly expanding enrolments, none of the BRIC countries is overwhelmed by part-time academics. Brazil is particularly notable since the rest of Latin America relies on part-time faculty for a large majority of teaching. There are part-time teachers in the BRIC countries and their numbers seem to be growing, but they do not dominate. A pattern, however, which is evident in China and Russia, is that regular faculty members often teach extra classes to students who are admitted "above the state allocation", to earn extra salary for themselves and income for the university or "moonlight" in private post-secondary institutions.

Salaries and Remuneration

Our research reveals some surprising patterns in salaries among the four BRIC countries (Altbach et al 2012). Surprisingly, in public colleges and universities, India and Brazil score best on academic salaries when measured according to purchasing power parity (Table 3).

Table 3: Academic Salaries Comparison

	Salaries (US$PPP)			Top/Average
	Entry	Average	Top	Ratio
Brazil	1,858	3,179	4,550	2.4
China	259	720	1,107	4.3
India	3,954	6,070	7,433	1.9
Russian Federation	433	617	910	2.1
US	4,950	6,054	7,358	1.5

Source: Altbach, Reisberg, Yudkevich, Androushchak and Pacheco (2012).

Indeed, both compare reasonably favourably with the US and other developed countries. Full-time academics in these countries can live on their academic salaries, without earning significant extra income. Russia and China compare less favourably. At average levels, their salaries are only one-fifth of those in the other two countries and dramatically under salaries in developed countries.

These basic salary comparisons have great significance for the academic profession. Chinese and Russian academics cannot live on their academic salaries and must earn additional funds from other sources, from within or outside the university (Ma 2009). The need for additional income means that they cannot devote full attention to their academic work and both research and teaching suffer as a result.

The comparisons also show inequalities among academic ranks. China is the most unequal, with senior professors earning more than four times the salaries of junior academic staff. The other three countries show an approximate doubling between the most junior and the top ranks. The US and other

developed countries show less variation between the ranks and thus a flatter academic salary structure.

While there is relatively little data on the total compensation earned by academics in the four countries, it is clear that in all of them academics typically earn more from their universities than the basic salaries reported here. In China, especially, academics are paid extra for publication, research and other academic activities; and the most productive staff can earn significant additional income. In both China and Russia, as noted earlier, many academics earn extra income by teaching more classes. These practices seem to be less evident in Brazil and India, although Indian academics earn added income through special allocations – due to cost of living in cities and other categorical increments.

Somewhat surprisingly, Indian academic salaries, when measured by purchasing power parity, are highest among the four BRIC countries, largely as a result of recent across the board salary increments implemented by the University Grants Commission (UGC) and funded by the central and state governments. Current salary scales place Indian academics in the burgeoning middle class and provide a reasonable standard of living. However, these relatively attractive salaries are not accompanied by any performance measures and are incrementally increased on the basis of length of service and not according to any evaluation. Brazilian salaries are also relatively attractive and permit most Brazilian academics with full-time appointments to enjoy a middle-class lifestyle. In both China and Russia, academics do not earn enough from their basic academic salaries to enjoy a middle-class existence and thus must earn additional income – with consequences for academic productivity, morale, teaching quality and institutional commitment.

In all four BRIC countries, the basic pattern of allocation of salary increments is largely based on length of service and other bureaucratic elements, than on productivity or merit. Generally, it is possible to estimate the salary of a member of the academic staff, based on his or her rank and length of service, with other variables playing little role. The lack of a merit system for salary allocation removes a key measure of productivity among academic staff.

In common with most countries, the salary structures available in the BRICs are not competitive with similarly qualified professionals in other fields, nor are salaries competitive internationally. Even Indian and Brazilian academic salaries do not compare favourably when measured in direct terms with salaries in developed countries – even if it is possible for academics in India and Brazil to enjoy a middle-class local lifestyle. For Russia and China, salaries are dramatically below global norms. These disparities contribute to a significant brain drain and non-return rates from all the BRIC countries, particularly from Russia, China and India.

Academic Appointments

The terms and conditions of academic appointments are central to creating a career structure and measuring the productivity of academic staff. Academic freedom is, in part, dependent on the nature of academic appointments. Without an effective means of hiring, evaluating and promoting the academic profession, it is difficult to attract and retain the best minds for the profession.

In all four BRIC countries, there is a significant degree of academic inbreeding – hiring faculty members who received their degrees from the university hiring them. Most agree that inbreeding limits the diversity of the professoriate and mobility among institutions, reduces the possibilities of hiring the best talent and creates a more hierarchical structure in departments and faculties. On the other hand, there are often reasons for this practice, including a lack of appropriate talent outside the university that is hiring, and of course a tradition of inbreeding.

With the exception of a few universities at the top of the academic hierarchy in each of the BRIC countries, there is no national market for hiring and little possibility of employing internationally. India has legal restrictions on hiring permanent foreign staff. Some of the top universities in China and Russia do hire internationally and offer distinguished professors salary packages significantly higher than national averages. China's top universities also place a premium on hiring Chinese with foreign doctorates as a way of building a high-quality faculty and reducing inbreeding.

While appointment processes at the top institutions in the BRIC countries are well established and reasonably transparent, positions are typically advertised publicly and open to all applicants. At many institutions, however, appointment processes are less clear and often subject to favouritism and other irregularities. The appointment processes in the private higher education sector is often problematical, with few controls.

Most academics are appointed at the beginning ranks, and over time are promoted up the hierarchy. In some countries there are quotas on the number of full professors, and thus not everyone can achieve the top rank. Only rarely are openings available for senior professors.

Security of Employment

None of the BRICs has formal tenure arrangements similar to the system in the US or civil service appointments as are common in western Europe. These arrangements provide security of employment after a period of probation and, in the US case, a careful evaluation of the individual prior to promotion and awarding of a tenured position. Tenure and civil service appointments protect academic freedom and at the same time provide significant but not completely guaranteed security of employment (Chait 2002).

For most public universities, in all four BRICs, as is the case for most countries, academic staff has considerable "de facto" job security. Once appointed at the bottom rank, few are ever fired. Although a variety of formal employment arrangements exist – including renewable contracts, periodic reviews, and others – there is little evaluation of academic work and an expectation by both the employer and the faculty member that jobs are permanent until retirement. There are some exceptions to this generalisation – for example, at many of China's top universities, rigorous internal evaluation processes have been instituted for contract renewals and promotions.

The de facto job security arrangements have significant disadvantages for universities and some individual academics. First, a significant security of tenure for most academics; and second, no firm guarantee of job protection related to academic freedom. In all four BRIC countries, academic salaries are by and large related to rank and longevity of service – and not related to job performance or market conditions (Altbach and Jayaram 2006). Only in China are some academics at the top universities judged and rewarded on the basis of academic performance.

Conclusions

The higher education systems of the BRIC countries, because of the growing economic importance of these four key nations, are now global players. They have received a great deal of attention and are seen as on their way to the top ranks of the world's academic systems. All four countries see higher education as a key ingredient to future economic development and all have developed impressive plans for their universities. All have goals of improving the status of their top universities in the global rankings, as they provide increased access to underserved populations. Observers worldwide – pointing to impressive plans and, especially in China, increased spending on higher education and improved performance in research, patents and publications – have been optimistic about the future prospects of the BRICs.

This analysis shows that BRIC countries face quite significant challenges in their efforts to build world-class higher education systems. Among these challenges are

- Building a "system" of post-secondary education that accommodates both research universities at the top and mass access at the bottom – with appropriate articulation for students,
- Ensuring that the private higher education sector serves a broader public interest and that quality is maintained,
- Adequately funding the post-secondary sector to ensure both quality and access,
- Ensuring that the academic profession is appropriately trained and adequately paid,
- Supporting effective internal governance and management of universities so that the academic profession has appropriate authority and at the same time complex academic institutions are effectively managed,
- Providing appropriate institutional autonomy, so that the key academic decisions can be taken by the academic community, while at the same time there is effective overall supervision by government or other relevant authorities.

The higher education success of the BRICs is by no means assured – the stakes are quite high because these four key countries need effective higher education systems to support their impressive economic growth. Just as important, universities are central to the civil societies of countries that will inevitably play a global leadership role in the coming decades.

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