

The Challenge of Establishing World-Class Research Universities in Emerging Economies



Jamil Salmi¹

Abstract

Governments in emerging economies are becoming increasingly aware of the important contribution that high performance research universities make to global competitiveness and economic growth. There is growing recognition of the need to establish one or more world-class research universities that can compete effectively with the best of the best around the world. Contextualizing the drive for world-class higher education institutions and the power of international and domestic university rankings, this article outlines possible strategies and pathways for establishing globally competitive research universities in emerging economies and explores

¹ Jamil Salmi is a Global Tertiary Education Expert. Until 2012, he was the World Bank's Tertiary Education Coordinator. This chapter is derived from a book published in February 2009 under the title *The Challenge of Establishing World-Class Universities*, Washington D.C., The World Bank. An earlier version of this chapter was published in Altbach, P. (Ed) 2012. *Leadership for World-Class Universities: Challenges for Developing Countries*. New York and London: Routledge. www.tertiaryeducation.org; jsalmi@tertiaryeducation.org

the challenges, costs, and risks involved. The article starts by proposing an operational definition of a world-class research university. It then explores three strategic approaches for establishing a world-class research university and reviews the role of university leaders in this context. It concludes by outlining some of the specific challenges faced by emerging economies.

Keywords: world-class research universities; university challenges; emerging economies; competitiveness factors; university strategies.

Introduction

The ranking of world universities published by the *Times Higher Education Supplement*² in September 2005 created a major controversy in Malaysia when it showed the country's top two universities slipping by almost 100 places compared with those of the previous year. Notwithstanding the fact that the big drop was mostly the result of a change in the ranking methodology—which was a little known fact and of limited comfort—the news was so traumatic that there were widespread calls for the establishment of a royal commission of inquiry to investigate the matter. A few weeks later, the Vice-Chancellor of the University of Malaya stepped down. This strong reaction was not out of character for a nation whose current Ninth Development Plan aims at shaping the transformation of the country into a knowledge-based economy, with emphasis on the important contribution of the university sector. And though apparently extreme, this reaction is not uncommon in developing countries around the world.

² THES. (2007). *The Times Higher World University Rankings 2007*. Retrieved March 30, 2008, from: <http://www.thes.co.uk/worldrankings/>.

Preoccupations about university rankings reflect the general recognition that economic growth and global competitiveness are increasingly driven by knowledge and that research universities play a key role in that context. Indeed, rapid advances in science and technology across a wide range of areas—from information and communication technologies (ICTs) to biotechnology to new materials—provide great potential for developing countries to accelerate and strengthen their economic development. The application of knowledge results in more efficient ways of producing goods and services and delivering them more effectively and at lower costs to a greater number of people.

Tertiary education plays a critical role in that context. It helps countries build globally competitive economies by developing a skilled, productive, and flexible labor force and by creating, applying, and spreading new ideas and technologies. A recent global study of patent generation has shown, for example, that universities and research institutes, rather than firms, drive scientific advances in biotechnology¹. Tertiary education institutions can also play a vital role in their local and regional economies².

According to *Constructing Knowledge Societies*, the World Bank's latest policy report on the contribution of tertiary education to sustainable economic development³, high-performing tertiary education systems encompass a wide range of institutional models—not only research universities but also polytechnics, liberal arts colleges, short-duration technical institutes, community colleges, open universities, and so forth—that together produce the variety of skilled workers and employees sought by the labor market. Each type of institution has an important role to play, and achieving a balanced development among the various components of the system is a major preoccupation of many governments.

Within the tertiary education system, research universities play a critical role in training the professionals, high-level specialists, scientists, and researchers needed by the economy and in generating new knowledge in support of the national innovation system⁴. An increasingly pressing priority of many developing countries is therefore to ensure that their top universities are actually operating at the cutting edge of

intellectual and scientific development despite the financial constraints that most of them face.

The main objective of this article is to explore the challenges involved in setting up globally competitive research universities in developing countries that will be expected to compete effectively with the best of the best. Is there a pattern or template that might be followed to allow more rapid advancement to world-class status? What kind of leadership is needed to inspire and drive research institutions? To answer these questions, the article starts by constructing an operational definition of a world-class research university. It then outlines and analyzes possible strategies and pathways for establishing such universities and identifies the multiple challenges, costs, and risks associated with these approaches. It concludes by examining some lessons from recent and ongoing experiences to set up new research universities in emerging economies.

What Does It Mean to Be a World-Class University?

In the past decade, the term «world-class university» has become a catch phrase, not simply for improving the quality of learning and research in tertiary education but also, more important, for developing the capacity to compete in the global tertiary education marketplace through the acquisition, adaptation, and creation of advanced knowledge. With governments keen on maximizing the returns on their investments in research universities, global standing is becoming an increasingly important concern for institutions around the world⁵. The paradox of the world-class university, however, as Altbach has succinctly and accurately observed, is that «everyone wants one, no one knows what it is, and no one knows how to get one»⁶.

Becoming a member of the exclusive group of world-class universities is not achieved by self-declaration; rather, elite status is conferred by the outside world on the basis of international recognition. Until recently, the process involved a subjective qualification, mostly that of reputation. For example, Ivy League universities in the United States (U.S. or U.S.A.), such as Harvard, Yale, or Columbia; the Universities of Oxford and Cambridge in the United Kingdom (U.K.); and the University of Tokyo have traditionally been counted among the exclusive group of elite universities, but no direct and rigorous measure was available to substantiate their superior status in terms of outstanding results such as training

¹ Cookson, C. (2007). Universities drive biotech advancement. *The Financial Times*, 6 May 2007.

² Yusuf, S. & K. Nabeshima (2007). *How Universities Promote Economic Growth*. Washington D.C.: The World Bank.

³ The World Bank. (2002). *Constructing Knowledge Societies: New Challenges for Tertiary Education*. Washington, DC: The World Bank.

⁴ Ibid.

⁵ Williams, R. & Van Dyke, N. (2007). Measuring the international standing of universities with an application to Australian Universities. *Higher Education*, 53, pp. 819-841.

⁶ Altbach, Philip.G. (2004). The Costs and Benefits of World-Class Universities. *Academe*. January-February 2004. Retrieved April 10, 2006, from www.aaup.org.

of graduates, research output, and technology transfer. Even the higher salaries captured by their graduates could be interpreted as a signaling proxy as much as the true value of their education.

With the proliferation of league tables in the past few years, however, more systematic ways of identifying and classifying world-class universities have appeared¹. Although most of the 60 existing rankings are national rankings categorizing universities within a given country, there have also been attempts to establish international rankings. The two most comprehensive international rankings, allowing for broad comparisons of institutions across national borders, are those prepared by *Times Higher Education* and Shanghai Jiao Tong University (SJTU).

To compare the international stature of institutions, these league tables are constructed by using objective or subjective data (or both) obtained from the universities themselves or from the public domain. The THE ranking selects the top 200 universities in the world. First presented in 2004, the methodology for this ranking focuses most heavily on international reputation, combining subjective inputs (such as peer reviews and employer recruiting surveys), quantitative data (including the numbers of international students and faculty), and the influence of the faculty (as represented by research citations). Operating since 2003, SJTU uses a methodology that focuses on objective indicators exclusively,

such as the academic and research performance of faculty, alumni, and staff, to identify the top 500 universities in the world. The measures evaluated include publications, citations, and exclusive international awards (such as Nobel Prizes and Fields Medals).

Notwithstanding the serious methodological limitations of any ranking exercise³, world-class universities are recognized in part for their superior outputs. They produce well-qualified graduates who are in high demand on the labor market; they conduct leading-edge research published in top scientific journals; and in the case of science-and-technology-oriented institutions, they contribute to technical innovations through patents and licenses.

As illustrated by Figure 1, most universities recognized as world-class originate from a very small number of countries, mostly Western. In fact, the University of Tokyo is the only non-US, non-UK university among the top 20 in the SJTU ranking. If one considers that there are only between 30 and 50 world-class universities in total, according to the SJTU ranking they all come from a small group of eight North American and Western European countries, Japan being again the only exception. THES has a slightly wider range of countries of origin among the top 50 universities (11 countries), including Hong Kong, China; New Zealand; and Singapore besides the usual North American and Western European nations.

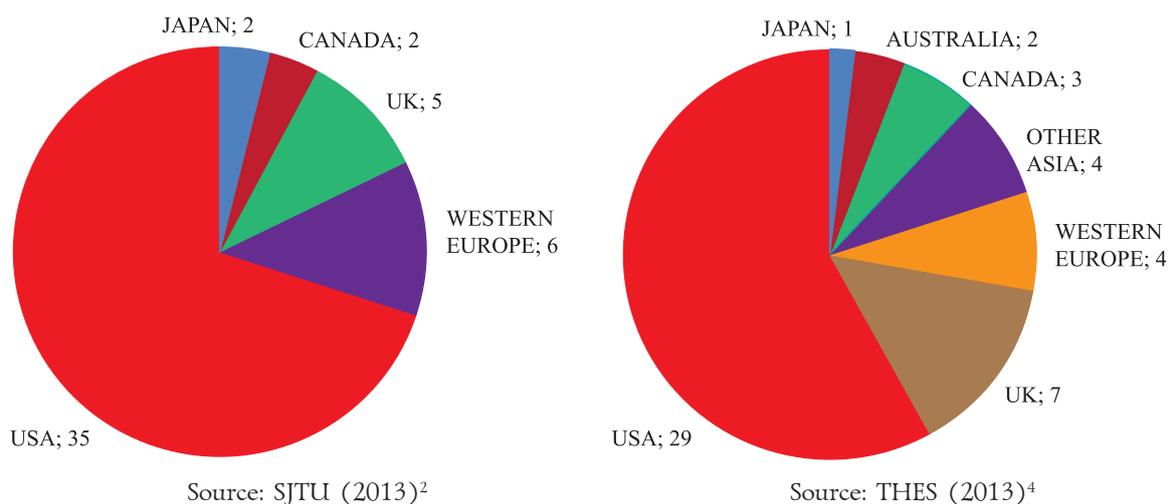


Figure 1. Geographical Distribution of World-Class Universities (Top 50 in 2013)

¹ Institute for Higher Education Policy — IHEP (2007). *College and University Ranking Systems: Global Perspectives and American Challenges*. Washington DC.

² Shanghai Jiao Tong University. (2007). *Academic Ranking of World Universities 2007*. Retrieved March 30, 2008, from: <http://ed.sjtu.edu.cn/ranking2006.htm>.

³ Salmi, J. & Saroyan, A. (2007). *League Tables as Policy Instruments: Uses and Misuses*. *Higher Education Management and Policy*. OECD, Paris. 19 (2).

⁴ THES. (2007). *The Times Higher World University Rankings 2007*. Retrieved March 30, 2008, from: <http://www.thes.co.uk/worldrankings/>.

The few scholars who have attempted to define what world-class universities have that regular universities do not possess have identified a number of basic features, such as highly qualified faculty; excellence in research; quality teaching; high levels of government and nongovernment sources of funding; international and highly talented students; academic freedom; well-defined autonomous governance structures; and well-equipped facilities for teaching, research, administration, and (often) student life¹. Recent collaborative research on this theme between U.K. and Chinese universities² has resulted in an even longer list of key attributes, ranging from the international reputation of the university to more abstract concepts such as the university's contribution to society, both very difficult to measure in an objective manner.

In an attempt to propose a more manageable definition of world-class universities, this article makes the case that the superior results of these institutions highly sought graduates, leading-edge research, and dynamic technology transfer can essentially be attributed to three complementary sets of factors (a) a **high concentration of talent** (faculty and students), (b) **abundant resources** to offer a rich learning environment and to conduct advanced research, and (c) **favorable governance** features that encourage strategic vision, innovation, and flexibility and that enable institutions to make decisions and to manage resources without being encumbered by bureaucracy.

Concentration of Talent

The first and perhaps foremost determinant of excellence is the presence of a critical mass of top students and outstanding faculty. World-class universities are able to select the best students and attract the most qualified professors and researchers.

In the sciences, being at the right university—the one where the most state-of-the-art research is being done in the best-equipped labs by the most visible scientists—is extremely important. George Stigler describes this as a snowballing process, where an outstanding scientist gets funded to do exciting research, attracts other faculty, then the best

students—until a critical mass is formed that has an irresistible appeal to any young person entering the field.

Mihaly Csikszentmihalyi³

This has always been the hallmark of the Ivy League universities in the United States or the Universities of Oxford and Cambridge in the United Kingdom. And it is also a feature of the newer world-class universities, such as the National University of Singapore (NUS) or Tsinghua University in China.

Beijing's Tsinghua University said last month it would increase the number of awards this year. Students with high scores, such as champions of each province and winners of international student academic competitions, will be entitled to scholarships of up to 40,000 yuan (\$5,700), more than double that of last year.

*University World News*⁴

Important factors in that respect are the ability and the privilege of these universities to select the most academically qualified students. For example, Peking University, China's top institution of higher learning, admits the 50 best students of each province every year.

One corollary of this observation is that tertiary education institutions in countries where there is little internal mobility of students and faculty are at risk of academic inbreeding. Indeed, universities that rely principally on their own undergraduates to continue into graduate programs or that hire principally their own graduates to join the teaching staff are not likely to be at the leading edge of intellectual development. A 2007 survey of European universities found an inverse correlation between endogamy in faculty hiring and research performance: the universities with the highest degree of endogamy had the lowest research results⁵.

It is also difficult to maintain high selectivity in institutions with rapidly growing student enrollment and fairly open admission policies. The huge size of the leading universities of Latin American countries such as México or Argentina—the Universidad Nacional Autónoma de México (Autonomous University of México, or UNAM) has 190,418 students, and the University of Buenos Aires (UAB) has 279,306—is certainly

¹ Altbach, Philip.G. (2004). The Costs and Benefits of World-Class Universities. *Academe*. January-February 2004. Retrieved April 10, 2006, from www.aaup.org. and Niland, J. (2007). The Challenge of Building World-Class Universities. In Sadlak, J. and Liu, N.C. (eds.), *The World Class University and Ranking: Aiming Beyond Status*. Bucharest: UNESCO-CEPES.

² Alden, J. & G. Lin (2004). Benchmarking the Characteristics of a World-Class University: Developing an International Strategy at University Level. London: The UK Higher Education Leadership Foundation. May 2004.

³ Csikszentmihalyi, M. (1997). *Creativity: Flow and the Psychology of Discovery and Invention*. New York: Harper Collins.

⁴ University World News (2008). China: Growing competition for top students. Retrieved 14 June 2008 from: <http://www.universityworldnews.com>

⁵ Aghion, P., M. Dewatripont, C. Hoxby, A. Mas-Colell, and A. Sapir (2008). «Higher aspirations: An agenda for reforming European universities». *Bruegel Blueprint Series*. Number 5.

a major factor in explaining why these universities have failed to enter the top league, despite having a few excellent departments and research centers that are undoubtedly world-class. At the other extreme, Peking University maintained its overall enrollment at less than 20,000 until the early 2000s and even today has no more than 30,000 students.

World-class universities also tend to have a high proportion of carefully selected graduate students, reflecting their strength in research and the fact that graduate students are closely involved in the research activities of these institutions.

The international dimension is becoming increasingly important in determining the configuration of these elite institutions. This enables them to attract the most talented people, no matter where they come from, and open themselves to new ideas and approaches. At the University of Cambridge, 18 percent of the students are from outside the U.K. or European Union (EU) countries. The U.S. universities ranked at the top of the global surveys also show sizable proportions of foreign academic staff. For instance, the proportion of international faculty at Harvard University, including medical academic staff, is approximately 30 percent. By contrast, only 7 percent of all researchers in France are foreign academics. Unquestionably, the world's best universities enroll and employ large numbers of foreign students and faculty in their search for the most talented.

Abundant Resources

Abundance of resources is the second element that characterizes most world-class universities, in response to the huge costs involved in running a complex, research-intensive university. These universities have four main sources of financing: government budget funding for operational expenditures and research, contract research from public organizations and private firms, the financial returns generated by endowments and gifts, and tuition fees.

In Western Europe, public funding is by far the principal source of finance for teaching and research, although the top U.K. universities have some endowment funds, and «top-up fees» have been introduced in recent years. In Asia, the National University of Singapore, which became a private corporation in 2006, has been the most successful institution in terms of substantial endowment funding. It has managed to build up a sizable portfolio of US\$774 million through effective fund-raising, making it richer than any British university after Cambridge and Oxford. The United States and to a lesser extent Japan, have thriving private research universities.

A comparative analysis of the SJTU rankings of U.S. and Western European universities confirms that level of expenditures is one of the key determinants of performance. Globally, total spending on tertiary education (public and private) represents 3.3 percent of gross domestic product (GDP) in the United States versus only 1.3 percent in the EU25 countries. Per student spending is about US\$54,000 in the United States, compared with US\$13,500 in the European Union¹. Similarly, there are large spending variations among European universities that are correlated with the rankings results of the respective countries. The United Kingdom and Switzerland have relatively well-funded universities and achieve the highest country scores in terms of rankings, while universities from the Southern European countries, including France and Germany, have lower ranking scores associated with low levels of funding². The availability of abundant resources creates a virtuous circle that allows the concerned institutions to attract even more top professors and researchers.

Favorable Governance

The third dimension concerns the overall regulatory framework, the competitive environment, and the degree of academic and managerial autonomy that universities enjoy. The *Economist*³ referred to the tertiary education system in the United States as «the best in the world» and attributed this success not only to its wealth but also to its relative independence from the state, the competitive spirit that encompasses every aspect of it, and its ability to make academic work and production relevant and useful to society. The report observed that the environment in which universities operate fosters competitiveness, unrestrained scientific inquiry, critical thinking, innovation, and creativity. Moreover, institutions that have complete autonomy are also more flexible because they are not bound by cumbersome bureaucracies and externally imposed standards, even in light of the legitimate accountability mechanisms that do bind them.

The comparative study of European and U.S. universities mentioned earlier also found that governance was, along with funding, the other main determinant of rankings. «European universities suffer from poor governance, insufficient autonomy

¹ Aghion, P., M. Dewatripont, C. Hoxby, A. Mas-Colell, and A. Sapir (2008). «Higher aspirations: An agenda for reforming European universities». *Bruegel Blueprint Series*. Number 5.

² Aghion, P., M. Dewatripont, C. Hoxby, A. Mas-Colell, A. Sapir (2007). «Why reform Europe's Universities?» *Bruegel Policy Brief*. Issue 2007/04. September 2007.

³ *Economist* (The) (2005). *Secrets of success*. London: September 10, 2005, Vol. 376, Issue 8443, p. 6.

and often perverse incentives»¹. A subsequent paper reporting on a survey of European universities found that research performance was positively linked to the degree of autonomy of the universities in the sample, especially with regard to budget management, the ability to hire faculty and staff, and the freedom to set salaries². With respect to the composition of university boards, the report concludes that «having significant outside representation on the board may be a necessary condition to ensure that dynamic reforms taking into account long-term institutional interests can be decided upon without undue delay.»

The autonomy elements outlined above are necessary, though not sufficient, to establish and maintain world-class universities. Other crucial governance features are needed, such as inspiring and persistent leaders; a strong strategic vision of where the institution is going; a philosophy of success and excellence; and a culture of constant reflection, organizational learning, and change.

Alignment of Factors

Finally, it is important to stress that it is the combination of these three sets of features—concentration of talent, abundant funding, and appropriate governance—that makes the difference. The dynamic interaction among these three groups of factors is the distinguishing characteristic of high-ranking universities (as illustrated by figure 2).

The results of the recent survey of European universities mentioned above confirm that funding and governance influence performance together. They indicate clearly that the higher-ranked universities tend to enjoy increased management autonomy, which, in turn, increases the efficiency of spending and results in higher research productivity³. A study of the influence of governance arrangements on the research output of public universities in the USA arrives at the same conclusion. When competitive research funding is available, the more autonomous universities tend to be more successful in producing patents⁴.

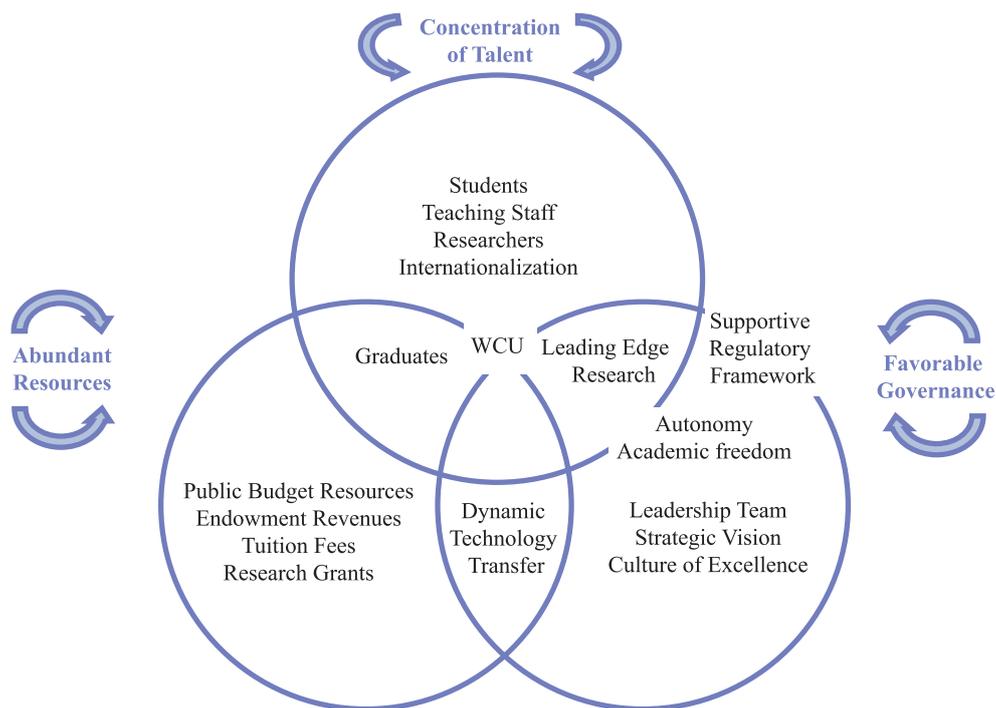


Figure 2. Characteristics of a World-Class University (WCU): Alignment of Key Factors

Source: Elaborated by Jamil Salmi

¹ Aghion, P., M. Dewatripont, C. Hoxby, A. Mas-Colell, A. Sapir (2007). «Why reform Europe's Universities?» *Bruegel Policy Brief*. Issue 2007/04. September 2007.

² Aghion, P., M. Dewatripont, C. Hoxby, A. Mas-Colell, and A. Sapir (2008). «Higher aspirations: An agenda for reforming European universities». *Bruegel Blueprint Series*. Number 5.

³ Ibid.

⁴ Aghion, P., M. Dewatripont, C. Hoxby, A. Mas-Colell, and A. Sapir. (2009). «The Governance and Performance of Research Universities: Evidence from Europe and the U.S.» National Bureau of Economic Research. Working Paper No. 14851, April 2009.

Having an appropriate governance framework without sufficient resources or the ability to attract top talent does not work either. Similarly, just investing money in an institution or making it very selective in terms of student admission is not sufficient to build a world-class university, as illustrated by the case of Brazil's top university, the University of Sro Paulo (USP). Brazil is the 5th-most-populated nation and the 10th largest economy on the planet, it is among the six largest producers of cars in the world, it has world-class companies such as Embraer and Aracruz Celulose, but there is no Brazilian university among the 100 top-ranked universities in the world.

How is it that USP, the country's foremost research university, does not make it into the top group in the international rankings, despite having some of the features of world-class universities? When it was created in 1934, the founders and first leaders of USP made it a point to hire only prominent professors from all over Europe¹. Today, it is the most selective institution in Brazil, it has the highest number of top-rated graduate programs, and every year it produces more PhD graduates than any U.S. university. At the same time, its ability to manage its resources is constrained by rigid civil service regulations, even though it is the richest university in the country. It has very few linkages with the international research community, and only 3 percent of its graduate students are from outside Brazil. The university is very inward looking: most students come from the state of Sro Paulo, and the majority of professors are USP graduates (this latter feature of endogamy being a typical feature of European universities, as discussed earlier). Foreign professors cannot be recruited, by law, and it is forbidden to write a doctoral dissertation in a language other than Portuguese. According to Schwartzman, the key missing element is the absence of a vision of excellence to challenge the status quo and transform the university. The lack of ambitious strategic vision can be observed as much at the national and state government levels as among the university leadership.

Paths to Transformation

Two complementary perspectives need to be considered in examining how to establish world-class research universities. The first dimension, of an external nature, concerns the role of government and the resources that can be made available to enhance the stature of institutions. The second dimension is internal. It has to do with the individual institutions themselves, their

leadership, and the necessary evolution and steps that they need to take to transform themselves into world-class research universities.

The Role of Government

In the past, the role of government in nurturing the growth of world-class universities was not a critical factor. The history of the Ivy League universities in the United States reveals that, by and large, they grew to prominence as a result of incremental progress, rather than by deliberate government intervention. Similarly, the Universities of Oxford and Cambridge evolved over the centuries of their own volition, with variable levels of public funding, but with considerable autonomy in terms of governance, definition of mission, and direction. Today, however, it is unlikely that a world-class university can be rapidly created without a favorable policy environment and direct public initiative and support, if only because of the high costs involved in setting up advanced research facilities and capacities.

International experience shows that three basic strategies can be followed to establish world-class research universities:

- Governments could consider upgrading a small number of existing universities that have the potential of excelling (picking winners).
- Governments could encourage a number of existing institutions to merge and transform into a new university that would achieve the type of synergies corresponding to a world-class research institution (hybrid formula).
- Governments could create new world-class universities from scratch (clean-slate approach).

Upgrading Existing Institutions. One of the main benefits of this first approach is that the costs can be significantly less than those of building new institutions from scratch. This is the strategy followed by China since the early 1980s, with a sequence of carefully targeted reforms and investment programs. Indeed, Peking University and Tsinghua University, China's top two universities, have been granted special privileges by the national authorities, allowing them to select the best students from every province before any other university, much to the consternation of the other leading universities around the country.

But this approach is unlikely to succeed in countries where the governance structure and arrangements that have historically prevented the emergence of world-class universities are not drastically revised. A comparison of the experiences of Malaysia and Singapore can serve to illustrate this point. Because Singapore was initially one of the provinces of the Malaysian Kingdom during the first few years following independence from the British, the contrasting stories of the University of Malaya and of the National University of

¹ Schwartzman, J. (2005). *Brazil's leading university: between intelligentsia, world standards and social inclusion*. Instituto de Estudos do Trabalho e Sociedade.

Singapore (NUS) can be quite instructive, given their common cultural and colonial origins.

At independence, the University of Malaya operated as a two-campus university, one in Kuala Lumpur and the other in Singapore. The former evolved into the flagship University of Malaya from the very beginning, and the other became the University of Singapore, which merged with Nanyang University in 1980 to create NUS. By all global ranking measures, NUS today functions as a true world-class university (ranked 19th by the 2006 *THES*), while the University of Malaya struggles as a second-tier research university (ranked 192nd). In examining the different evolutionary paths of these two institutions, several factors appear to be constraining the University of Malaya's capacity to improve and innovate as effectively as NUS: affirmative action and restrictive admission policies, lower levels of financial support, and tightly controlled immigration regulations regarding foreign faculty.

The affirmative action policy implemented by the Malaysian government in favor of the children of the Malay majority population (*Bumiputras*) has significantly opened up opportunities for that segment of the population. The proportion of Malay students—the Malay population represents 52 percent of the total Malaysian population—went from about 30 percent to two-thirds of the total student population between the early 1970s and the late 1980s. The proportion of Chinese students decreased from 56 to 29 percent over the same period¹.

But the downside of these equity policies was that they prevented the university from being very selective in its student admissions to target the best and brightest in the country. Large numbers of academically qualified Chinese and Indian students, in particular, were unable to attend Malaysia's best universities and had to seek tertiary education abroad, thereby removing important talent from Malaysia. In addition to restrictions among its own population, the Malaysian Ministry of Higher Education places a 5 percent cap on the number of foreign undergraduate students that public universities can enroll.

By contrast, the proportion of foreign students at NUS is 20 percent at the undergraduate level and 43 percent at the graduate level. The cost of their studies is highly subsidized by NUS. The primary consideration for attracting these foreign students is not to generate income, as often happens in U.K. and Australian universities, but to bring in highly qualified individuals who will enrich the pool of students.

NUS is also able to mobilize nearly twice as many financial resources as the University of Malaya (US\$205 million annual budget versus US\$118 million, respectively) through a combination of cost sharing, investment revenue, fund-raising, and government resources. The success of NUS's fund-raising efforts is largely the result of the generous matching-grant program set up by the government in the late 1990s as part of the Thinking Schools, Learning Nation Initiative, which provided a three-to-one matching at the beginning and is now down to one-to-one. As a result, the annual per student expenditures at NUS and the University of Malaya were US\$6,300 and US\$4,053, respectively, in 2006.

Finally, in Malaysia, on one hand, civil service regulations and a rigid financial framework make it difficult, if not impossible, to provide competitive compensation packages to attract the most competent professors and researchers, particularly foreign faculty. NUS, on the other hand, is not bound by similar legal constraints. The PS21 public service reform project in the early 2000s aimed at promoting a culture of excellence and innovation in all public institutions, including the two universities. NUS is therefore able to bring in top researchers and professors from all over the world, pay a global market rate for them, and provide performance incentives to stimulate competition and to retain the best and the brightest. Indeed, a good number of Malaysia's top researchers have been recruited by NUS.

Merging Existing Institutions. The second possible approach to building up a world-class research university consists of promoting mergers among existing institutions. In China, for example, a number of mergers have taken place to consolidate existing institutions. Beijing Medical University merged with Peking University in 2000; similarly, in Shanghai, Fudan University merged with a medical university, and Zhejiang University was created out of the merger of five universities. In 2004, in the United Kingdom, the Victoria University of Manchester (VUM) and the University of Manchester Institute of Science and Technology (UMIST) merged, creating the largest university in the United Kingdom, with the purposefully stated goal of being «top 25 by 2015»². The government of the Russian Federation is also relying on amalgamation as a key policy within its overall strategy of developing elite research universities. In 2007, two pilot federal universities were set up by merging existing institutions in Rostov-on-Don in southern Russia and in the Siberian city of Krasnoyarsk. The two new institutions will also receive additional

¹ Tierney, W. and M. Sirat (2008). Challenges Facing Malaysian Higher Education. *International Higher Education*. Boston: Number 53, Fall 2008, pp. 23-24.

² <http://www.manchester.ac.uk/research/about/strategy/>.

funding to support efforts to allow them to recruit highly qualified researchers and equip state-of-the-art laboratories¹.

The great advantage of mergers is that they can result in stronger institutions able to capitalize on the new synergies that their combined human and financial resources may generate. But mergers can also be risky, potentially aggravating problems instead of resolving them. In the case of France, for example, recently proposed mergers would augment the critical mass of researchers and bring about a higher place in the SJTU ranking that favors research output, but they would not address the fundamental limitations of French universities, including inflexible admission policies, a weak financial basis, rigid governance arrangements, and outdated management practices.

Another danger associated with mergers is that the newly consolidated institution could suffer because of clashing institutional cultures. It has become clear, for example, that the previously mentioned merger between VUM and UMIST has not been as successful as expected or originally perceived. Currently acknowledging a £30 million budget deficit and the likelihood of up to 400 jobs lost on the campus, the University of Manchester has had immediate experience with the complexities of merging². Among the main problems encountered are duplication of staff and curricular offerings, the political challenges of engendering support for the merger by making promises that have proven detrimental to keep, and the short-term absorption of labor contracts and institutional debt. In addition, the newly formed institution, with its commitment to achieving world-class status, invested heavily in hiring «superstar» academic staff and supplying them with correspondingly superstar facilities. This exacerbated further the staffing debt that the institution inherited with the merging of the distinct and separate institutional staffs into the one university. It remains to be seen how Manchester will address these financial, cultural, and interpersonal obstacles while simultaneously maintaining its quest for world-class status.

Creating New Universities. In countries where institutional habits, cumbersome governance structures, and bureaucratic management practices prevent traditional universities from being innovative, creating new universities may be the best approach, provided that it is possible to staff

them with people not influenced by the culture of traditional universities and provided that financial resources are not a constraint. New institutions can emerge from the private sector, or governments can allow new public institutions to operate under a more favorable regulatory framework. One of the earlier success stories in that respect was the establishment of the Indian Institutes of Technology, which, in the past decades, have gradually risen to world-class status.

Kazakhstan is a country intent on following this path as it seeks to make its economy less dependent on oil and more competitive overall. The government has decided to set up a new international university in Astana. The plan is that this university will follow a highly innovative multidisciplinary curriculum designed in cooperation with leading foreign universities. In the same vein, the government of Saudi Arabia announced in late 2007 its plans for a US\$3 billion graduate research university, King Abdullah University of Science and Technology, which would operate outside the purview of the Ministry of Higher Education to allow for greater management autonomy and academic freedom than the regular universities of the kingdom enjoy.

Time is an important dimension that also needs to be factored into the strategic plan of any aspiring world-class university. However, governments are often under pressure to show immediate results, running the risk of taking precipitous decisions and overseeing the fact that the establishment of a strong research university is a long-term process. Building ultra-modern facilities before adequately defining programs, curricula and pedagogical practices that are fully aligned or hiring star researchers from overseas without matching them with a critical mass of national faculty are common mistakes. Developing a culture of excellence in research and teaching does not happen from one day to the next, it requires proper sequencing of interventions, careful balance among the various quantitative and qualitative objectives of the project, and a long-term view.

The creation of new institutions may have the side benefit of stimulating existing ones into becoming more responsive to the global competitive environment. In several countries, the emergence of high-quality private institutions has provoked the existing public universities into becoming more strategically focused. In Uruguay, for example, the venerable University of the Republic—which had exercised a monopoly over tertiary education in the country for 150 years—started a strategic planning process and considered establishing postgraduate programs for the first time only after being confronted in the mid-1990s with competition from newly established private universities. Similarly, in Russia, the creation

¹ Holdworth, N. (2008). Russia: Super League of 'Federal' Universities. *University World News*. 26 October 2008.

² Qureshi, Yakub. (2007). 400 university jobs could go. *Manchester Evening News*. Retrieved May 20, 2007 from: http://www.manchestereveningnews.co.uk/news/education/s/1001/1001469_400_university_jobs_could_go.html.

of the Higher School of Economics and of the Moscow School of Social and Economic Sciences in the 1990s pressured the Department of Economics at the State University of Moscow to revamp its curriculum and get more actively involved in international exchanges.

Strategies at the Institutional Level

The establishment of a world-class research university requires, above all, strong leadership, a bold vision of the institution's mission and goals, and a clearly articulated strategic plan to translate the vision into concrete targets and programs. Universities that aspire to better results engage in an objective assessment of their strengths and areas for improvement, set new stretch goals, and design and implement a renewal plan that can lead to improved performance. By contrast, many institutions have weak leadership, are complacent in their outlook, lack an ambitious vision of a better future, and continue to operate as they have in the past, ending up with a growing performance gap compared with that of their national or international competitors.

Recent research on university leadership suggests that in the case of top research universities, the best-performing institutions have leaders who combine good managerial skills and a successful research career¹. To be able to develop an appropriate vision for the future of the university and to implement this vision in an effective manner, the university leader needs to fully understand the core agenda of the institution and be able to apply the vision with the necessary operational skills.

A case study of the University of Leeds in the United Kingdom illustrates how the arrival of a new leader in 2003 marked the beginning of a conscious effort to reverse a downward trend through carefully planned and implemented strategic change. Rapid growth in student numbers (the second-largest university in the United Kingdom) had led to tensions between the teaching and research missions of the university, resulting in diminishing research income and results. Among the main challenges faced by the new vice-chancellor was the need to create a sense of urgency among the entire university community and to convince everyone of the importance of achieving a better alignment between corporate goals and the contribution of individual faculties and departments with a long tradition of autonomy.

For the University of Leeds, our reputation and profile made this challenge harder. As a great institution we had to demonstrate the vulnerability

of our current position, alongside the importance and achievability of our vision. Staff were not going to engage in a strategy unless its credibility and relevance could be clearly established. To achieve this we used a variety of internal and external measures of performance reputation and ranking to clearly articulate the current position and the vision. . . . Considerable time and effort was dedicated to developing the vision of «by 2015 our distinctive ability to integrate world-class research, scholarship and education will have secured us a place among the top 50 universities in the world.»

Donoghue and Kennerley ²

A crucial element of the vision is the selection of niche domains of research toward which the institution will seek to build and maximize its comparative advantage. In that respect, it is important to underline that a research university—even a world-class university—most likely cannot excel in all areas. Harvard University, widely recognized as the number one institution of higher learning in the world, is not the best-ranked university in all disciplines. Its strengths are especially noted in economics, medical sciences, education, political science, law, business studies, English, and history.

Conclusion

The highest-ranked universities are the ones that make significant contributions to the advancement of knowledge through research, teach with the most innovative curricula and pedagogical methods under the most conducive circumstances, make research an integral component of undergraduate teaching, and produce graduates who stand out because of their success in intensely competitive arenas during their education and (more important) after graduation.

There is no universal recipe or magic formula for «making» a world-class research university. National contexts and institutional models vary widely. Therefore, each country must choose, from among the various possible pathways, a strategy that plays to its strengths and resources. International experience provides a few lessons regarding the key features of such universities—high concentrations of talent, abundance of resources, and flexible governance arrangements—and successful approaches to move in that direction, from upgrading or merging existing institutions to creating new universities altogether.

Furthermore, the transformation of the university system cannot take place in isolation. A long-term vision for creating world-class universities—and its implementation—should be closely articulated

¹ Goodall, A. (2006). The Leaders of the World's Top 100 Universities, *International Higher Education*. Center for International Higher Education. Number 42, Winter 2006, pp. 3-4.

² Donoghue, S. and M. Kennerley (2008). Our Journey Towards World Class Leading Transformational Strategic Change. *Higher Education Management and Policy*. Paris: OECD. Forthcoming.

with (a) the country's overall economic and social development strategy, (b) ongoing changes and planned reforms at the lower levels of the education system, and (c) plans for the development of other types of tertiary education institutions to build an integrated system of teaching, research, and technology-oriented institutions.

Finally, the building pressures and momentum behind the push for world-class research universities must be examined within the proper context to avoid over-dramatization of the value and importance of world-class institutions and distortions in resource allocation patterns within national tertiary education systems. Even in a global knowledge economy, where every nation, both industrial and developing, is seeking to increase its share of the economic pie, the hype surrounding world-class institutions far exceeds the need and capacity for many systems to benefit from such advanced education and research opportunities, at least in the short term.

References

- Aghion, P., M. Dewatripont, C. Hoxby, A. Mas-Colell, A. Sapir (2007). Why reform Europe's Universities? *Bruegel Policy Brief*. Issue 2007/04. September 2007.
- Aghion, P., M. Dewatripont, C. Hoxby, A. Mas-Colell, and A. Sapir. (2009). The Governance and Performance of Research Universities: Evidence from Europe and the U.S. National Bureau of Economic Research. Working Paper No. 14851, April 2009.
- Aghion, P., M. Dewatripont, C. Hoxby, A. Mas-Colell, and A. Sapir (2008). Higher aspirations: An agenda for reforming European universities. *Bruegel Blueprint Series*. Number 5.
- Alden, J. & G. Lin (2004). Benchmarking the Characteristics of a World-Class University: Developing an International Strategy at University Level. London: The UK Higher Education Leadership Foundation. May 2004.
- Altbach, Philip G. (2003). The Costs and Benefits of World-Class Universities. An Americans Perspective. Hong Kong: Chinese University of Hong Kong - Hong Kong America Center.
- Altbach, Philip.G. (2004). The Costs and Benefits of World-Class Universities. *Academe*. January-February 2004. Retrieved April 10, 2006, from www.aaup.org.
- Cookson, C. (2007). Universities drive biotech advancement. *The Financial Times*, 6 May 2007.
- Csikszentmihalyi, M. (1997). *Creativity: Flow and the Psychology of Discovery and Invention*. New York: Harper Collins.
- Donoghue, S. and M. Kennerley (2008). «Our Journey Towards World Class Leading Transformational Strategic Change». *Higher Education Management and Policy*. Paris: OECD. Forthcoming.
- Economist (The) (2005). Secrets of success. London: September 10, 2005, Vol. 376, Issue 8443, p. 6.
- Goodall, A. (2006). The Leaders of the World's Top 100 Universities, *International Higher Education*. Center for International Higher Education. Number 42, Winter 2006, pp. 3-4.
- Harman, G. & K. Harman. (2008). Strategic mergers of strong institutions to enhance competitive advantage. *Higher Education Policy*, 21, pp. 99-121.
- Holdworth, N. (2008). Russia: Super League of 'Federal' Universities. *University World News*. 26 October 2008.
- Institute for Higher Education Policy – IHEP (2007). *College and University Ranking Systems: Global Perspectives and American Challenges*. Washington DC.
- Levin, M. H., Jeong, D.W., D. Ou (2006). What is a World Class University? Paper prepared for the 2006 Conference of the Comparative & International Education Society. Retrieved April 12, 2007, from www.tc.columbia.edu/centers/coce/pdf_files/c12.pdf.
- Niland, J. (2007). The Challenge of Building World-Class Universities. In Sadlak, J. and Liu, N.C. (eds.), *The World Class University and Ranking: Aiming Beyond Status*. Bucharest: UNESCO-CEPES.
- Qureshi, Yakub. (2007). 400 university jobs could go. *Manchester Evening News*. Retrieved May 20, 2007 from: http://www.manchestereveningnews.co.uk/news/education/s/1001/1001469_400_university_jobs_could_go.html.
- Salmi, J. (2009). The Challenge of Establishing World-Class Universities. Washington D.C., The World Bank.
- Salmi, J. & Saroyan, A. (2007). League Tables as Policy Instruments: Uses and Misuses. *Higher Education Management and Policy*. OECD, Paris. 19 (2).
- Schwartzman, J. (2005). Brazil's leading university: between intelligentsia, world standards and social inclusion. Instituto de Estudos do Trabalho e Sociedade.
- Shanghai Jiao Tong University. (2007). Academic Ranking of World Universities 2007. Retrieved March 30, 2008, from: <http://ed.sjtu.edu.cn/ranking2006.htm>.
- The World Bank. (2002). *Constructing Knowledge Societies: New Challenges for Tertiary Education*. Washington, DC: The World Bank.
- THES. (2007). The Times Higher World University Rankings 2007. Retrieved March 30, 2008, from: <http://www.thes.co.uk/worldrankings/>.
- Tierney, W. and M. Sirat (2008). Challenges Facing Malaysian Higher Education. *International Higher Education*. Boston: Number 53, Fall 2008, pp. 23-24.
- University World News (2008). China: Growing competition for top students. Retrieved 14 June 2008 from: <http://www.universityworldnews.com>
- Williams, R. & Van Dyke, N. (2007). Measuring the international standing of universities with an application to Australian Universities. *Higher Education*. 53, pp. 819-841.
- Yusuf, S. & K. Nabeshima (2007). How Universities Promote Economic Growth. Washington D.C.: The World Bank.