

Excellence Initiatives to Create World-Class Universities: Do They Work?

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Abstract

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 system. In this context, governments want to make sure that their top universities are actually operating at the cutting edge of intellectual and scientific development. A major concern has therefore been to identify the most effective method for inducing substantial and rapid progress in a country's top universities. In order to accelerate the process of improving their top universities, several governments have launched so-called “excellence initiatives,” consisting of large injections of additional funding to boost their university sector. The purpose of this article is to assess the impact of these initiatives on the universities involved and on the rest of the tertiary education system. While the first section of the chapter analyzes the main features of excellence initiatives, the second part examines their results as well as their limitations.⁺

Keywords: Excellence Initiatives; World-Class Universities; Elite Universities; Global Rankings

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1. Introduction

Knowledge has become a fundamental component of economic and social development. The ability of a society to produce, select, adapt, commercialize, and use knowledge is critical for sustained economic growth and improved living standards (World Bank, 1999). In this context, tertiary education plays an essential role in building a strong human capital base and contributing to an efficient national innovation system. Tertiary education institutions help countries build globally competitive economies by developing a skilled, productive and flexible labor force and by creating, applying and disseminating new ideas and technologies.

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 (World Bank, 2002). 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 tertiary education systems, 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 system. In this context, policy-makers are keen to see their top universities operating at the cutting edge of intellectual and scientific development.

With the 2003 publication of the first international ranking of universities by Shanghai Jiao Tong University and the subsequent emergence of competing global league tables (THE, HEEACT, QS, etc.), more systematic ways of identifying and classifying world-class universities have appeared (Salmi, 2009). As a result, often for reasons of national prestige, a major concern of governments in a growing number of countries has been to find the most effective method for inducing substantial and rapid progress in their country's top universities. While a few nations—Kazakhstan and Saudi Arabia for example—have opted for establishing new universities from scratch, most interested countries have adopted a strategy combining mergers and upgrading of existing institutions. In order to accelerate the transformation process, a few governments have launched so-called “excellence initiatives”, consisting of large injections of additional funding to boost the performance of their university sector.

In this context, the purpose of this article is to assess the impact of excellence initiatives on the universities involved as well as on the tertiary education system overall. The first section of the article analyzes the main features of excellence

initiatives while the second part examines their achievements and limitations.

2. Characteristics of Excellence Initiatives

As epitomized by the German case, an “excellence initiative” in tertiary education can be described as a large injection of additional funding by a national government, aimed at upgrading existing universities in an accelerated fashion.

The Excellence Initiative aims to promote top-level research and to improve the quality of German universities and research institutions in general, thus making Germany a more attractive research location, making it more internationally competitive and focusing attention on the outstanding achievements of Germany universities and the German scientific community.¹

Table 1 presents the total number and broad geographical distribution of these Initiatives, divided into two periods, first the 15 years between 1989 and 2004 when the expression “excellence initiative” was not used as such and the global rankings did not exist yet, and second the last decade since the launching of the Shanghai ranking up to 2015. The comparison between the two periods reveals a dramatic increase in excellence initiatives since the publication of the Shanghai and Times Higher Education global rankings in 2003 and 2004 respectively, reflecting the growing interest of national governments in the development of world-class universities.

Table 1 – Number of Excellence Initiatives by Region and Period

Region	1989 - 2004	2005 - 2015
Africa	0	1
Asia & Pacific	8	14
Europe	4	19
Middle East	0	2
North America	1	1
Total	13	37

Source: Elaborated by the author

Table 2 gives the detailed list of countries having launched some form of excellence initiatives during the two periods under review.

¹ <http://www.germaninnovation.org/research-and-innovation>

Table 2 – Geographical Distribution of Excellence Initiatives

Region	1989 - 2004	2005 – 2015
Africa	-	Nigeria
Asia & Pacific	Australia, China, Hong Kong, Japan, New Zealand South Korea	China, India, Japan, Malaysia, Singapore, South Korea, Taiwan, Thailand
Europe	Denmark, Finland, Ireland, Norway	Denmark, France, Germany, Luxembourg, Norway, Poland, Russian Federation, Slovenia, Spain, Sweden
Middle East	-	Israel, Saudi Arabia
North America	Canada	Canada

Source: Elaborated by the author

Note: Some countries have had several initiatives or phases. Each one is counted as one initiative, which explains why Table 1 shows more initiatives than the number of represented countries in Table 2.

These tables show that only a few countries had an early vision of the importance of upgrading their university system in the 1990s as one of the pillars of an innovative economy, including the Nordic nations, Canada, China, Japan and South Korea. The recent excellence initiatives come mainly from East Asia and Western Europe, in line with their economic modernization agenda (Shin and Kehm, 2013). Latin America is surprisingly absent from this movement, considering the population size and economic strength of that region. This is due, to a large extent, to the absence of a vision of the central role of education in development.

The United States and the United Kingdom, whose universities have been consistently at the top of the global league tables, have not considered the need for additional financing, given their already high levels of research funding. The same applies to Switzerland, where the successful upgrading efforts at the two polytechnic universities, E.T.H Zurich and E.T.H. Lausanne, have taken place within the existing generous resource envelope.

In all cases, the additional funding mobilized through the excellence initiative comes exclusively from the public purse, with some innovative features in a few countries. In Germany, for example, the excellence initiative represented a partnership between the federal government and the state governments (*Länder*). Similarly, in the case of the Chinese initiatives (211 and 985 projects), the local

governments were involved in co-financing with the national government on a fifty/fifty basis. The now-defunct Spanish excellence program was to transfer resources to the beneficiary universities in the form of a concessionary loan. Perhaps the most original financing feature comes from the recent French excellence initiative, where the funding is provided through a large endowment (9.5 billion US\$) whose yearly yield will constitute the resources allocated to the beneficiary institutions. This financial set up offers an element of long-term financial sustainability that is absent from all the other initiatives.

Most of the times, these dedicated programs are very selective in terms of the limited number of beneficiary universities and the research focus of the transformation efforts (Box 1).

Box 1 – The first German “Initiative for Excellence”

In January 2004, the federal Ministry of Education and Research launched a national competition to identify about 10 universities with the potential of becoming elite universities. Extra funding would be provided under three windows: (i) to entire institutions aiming to become world-class universities, (ii) to centers of excellence with international recognition, and (iii) to graduate schools intent of strengthening the quality of their programs.

After initial resistance from the regional States (*Länder*) jealous of their traditional authority in the area of tertiary education funding, a compromise was reached and a joint commission was established, with representatives of the German Research Foundation and the Science Council.

In January 2006, the Commission selected 10 universities among 27 candidates, 41 proposals for centers of excellence among 157 submissions, and 39 graduate schools among 135 proposals. The majority of selected universities (7 out of 10) were located in two states (Baden-Württemberg and Bavaria) and only 10 percent of the winning centers of excellence were in the humanities and social sciences. Most of the selected graduate schools have a strong multi-disciplinary focus. A total of 2.3 billion dollars of additional funding would be made available to support the winning proposals over a period of four years.

Source: Kehm (2006)

With the exception of Japan, Korea and Taiwan, where both public and private universities were eligible to compete for additional funding, most excellence initiatives have targeted only public universities.

In their great majority, excellence initiatives have concentrated almost exclusively on upgrading the research capacity of universities. The main exception was Taiwan, which established a specific program to improve excellence in teaching alongside its research-focused initiative. The Teaching Excellence Development Program was launched in 2005 with an overall budget equivalent to about 650 million dollars to stimulate the modernization of curricular and pedagogical practices in both public and private universities. Each of the 31 selected universities received a total amount of 21.5 million dollars over five years. Germany also had a small program to promote excellence in teaching along the large research development initiative.

Without any exception, all excellence initiatives have been launched by Ministries of Education / Higher Education. In most cases, the Ministry partnered with the main national research agency for the actual implementation part of the initiative. This was especially important when a competitive selection process was followed, because of the detailed technical evaluation work involved. In most cases, the implementing agency relied on the technical work of specialized expert groups to assess the validity of proposals in various disciplines. During the evaluation phase of the second round of the German Excellence Initiative, for example, 37 panels composed of 457 experts worked diligently to assess the 127 submissions for new graduate schools and research clusters. The principal advantage of this approach has been to reduce political interference and to provide a more flexible management framework to carry out the initiative.

The amounts allocated in the various excellence initiatives reflect a large range of funding levels, as presented in Table 3. China, France, Singapore and Taiwan stand out as the most generous contributors as countries that have financed universities as a whole. Israel and Japan have the highest level of funding per center of excellence. The Scandinavian countries have the lowest level of financing, due to the fact that the base funding of their universities is already significantly higher than most other European countries.

Table 3 – Range of Amounts Per University / Center of Excellence for Most Recent Excellence Initiative

Whole Universities		Centers of Excellence	
Level of Support	Countries	Level of Support	Countries
20 million \$ ≤	Denmark, Germany	1 – 5 million \$	Denmark, Finland, Norway
20 - 100 million \$	Russian Federation, Spain, Thailand	5 – 10 million \$	Australia, Germany, Hong Kong, Korea, Nigeria, Slovenia
≥ 100 million \$	China, France, Singapore, Taiwan	≥ 10 million \$	Israel, Japan

Source: Elaborated by the author

The selection process used to choose the beneficiary universities and/or centers of excellence to be supported is perhaps the most noteworthy element of excellence initiatives. In the majority of cases the government’s approach has involved a competition among eligible universities with a thorough peer review process to select the best proposals, reflecting international experience that shows that a competitive funding process can greatly stimulate the performance of tertiary education institutions and can be a powerful vehicle for transformation and innovation (World Bank, 2002). The peer review process involves the work of expert evaluation teams that may include only national experts, or a mix of national and international experts. In some cases, the international experts represent the majority, and for the French Excellence Initiative even the head of the international jury was a foreign specialist (former rector of a major Swiss university).

The participation of international experts in the selection process tends to give an additional dimension of objectivity and credibility. In the latest round of the German Excellence Initiative, for instance, 87 percent of the experts involved in the assessment of the proposals were from outside Germany.

To conclude this overview of the main characteristics of excellence initiatives, two observations are in order. First, while the first excellence initiatives had more of an endogenous character, reflecting a long-term policy of strengthening the contribution of tertiary education to national economic development, the most recent wave seems to have been primarily induced by external considerations linked to the perception of a competitive disadvantage relative to the more stellar performance of foreign universities, as measured by the global rankings. For instance, the 2013 Excellence

Initiative in Russia explicitly aims to place 5 universities in the top 100 by 2020.

Second, many of these excellence initiatives mark a significant philosophical shift in the funding policies of the participating countries, notably in Western Europe. In France, Germany and Spain, for instance, where all public universities have traditionally been considered to be equally good in terms of performance, the excellence initiative represents a move away from the principle of uniform budget entitlements towards a substantial element of competitive, performance-based funding.

3. Impact of Excellence Initiatives

Measuring the effectiveness and impact of excellence initiatives on the beneficiary universities is not an easy task for at least two reasons: time and attribution. First, upgrading a university takes many years, eight to ten at the very minimum (Salmi, 2009 & 2012). Since many excellence initiatives are fairly recent, attempts at measuring success would be premature in most cases. It is indeed unlikely that the scientific production of beneficiary universities would increase significantly within the first few years immediately after the beginning of an excellence initiative. A thorough analysis would therefore require looking at a reasonably large sample of institutions for comparison purposes, either within a given country or across countries, over many years.

The second challenge is related to attribution. Even if a correlation could be identified on the basis of a large sample of institutions, establishing elements of causality would require an in-depth analysis of case studies similar to those presented in the book *The Road to Academic Excellence* (Altbach and Salmi, 2011).

Taking these limitations in consideration, this section attempts to draw a few preliminary lessons from the initial results of excellence initiatives in terms of boosting the research capacity and output of the beneficiary universities. It also looks at emerging tensions between research and teaching, excellence and equity, and excellence and academic freedom.

In the absence of impact analyses of the recent excellence initiatives, the global rankings can be used as proxy of the performance of universities. Comparing the results of the top 200 universities in the Shanghai Ranking over the past decade (2004-2014) offers a few relevant insights.² Table 4 shows the evolution of the

² On the advice of the creators of the Shanghai ranking, this analysis takes the 2004 data as baseline, rather than the 2003 ranking, because of a significant methodological change from 2003 to 2004, which would make the comparison over time less appropriate. The methodology has remained stable over the past eleven years.

number of universities by country between 2004 and 2014. The four countries that have made considerable progress are China (24 additional universities in the top 500), Australia (5 additional universities), Saudi Arabia and Taiwan (4 additional universities each), which could be safely attributed to the sustained investment linked to their excellence initiatives. Spain is the only country with 3 additional universities. However, in the absence of a detailed case study, it is difficult to credit this increase to the excellence initiative, whose funding ran into trouble as a result of the serious economic and fiscal crisis faced by the country in recent years.

**Table 4 – Evolution of Number of Ranked Universities per Country
(Top 500 from 2004 to 2015)**

Country	Ranked Universities in 2004	Ranked Universities in 2015	Variation 2004-2015
China	16	44	+28
Australia	14	20	+6
Saudi Arabia	0	4	+4
Taiwan	5	9	+4
South Korea	8	12	+4
Spain	9	13	+4
Brazil	4	6	+2
Iran	0	2	+2
Malaysia	0	2	+2
Portugal	1	3	+2
Austria	5	6	+1
Chile	1	2	+1
Croatia	0	1	+1
Egypt	0	1	+1
Finland	5	6	+1
Serbia	0	1	+1
Sweden	10	11	+1
Netherlands	12	12	0

Argentina	1	1	0
Belgium	7	7	0
Czech Republic	1	1	0
Denmark	5	5	0
Greece	2	2	0
Hong Kong	5	5	0
Ireland	3	3	0
Mexico	1	1	0
Poland	2	2	0
Russia	2	2	0
Singapore	2	2	0
Slovenia	1	1	0
South Africa	4	4	0
France	22	22	0
Hungary	3	2	-1
Israel	7	6	-1
New Zealand	3	2	-1
Norway	4	3	-1
Switzerland	8	7	-1
Turkey	2	1	-1
India	3	1	-2
Canada	23	20	-3
Italy	23	20	-3
Germany	43	39	-4
UK	42	37	-5
Japan	36	18	-16
United States	170	146	-24

Source: Academic Ranking of World Universities

<http://www.shanghairanking.com/aboutarwu.html>

Note: The countries in bold are those with an excellence initiative

At the bottom of the list, the main “losers” are Japan and the US, which place, respectively, 15 and 24 universities fewer among the top 500 in 2014 compared to ten years earlier. Germany and the United Kingdom lost four universities each. Considering that, by definition, the league tables operate on a zero-sum basis, it is inevitable that progress in some countries forces the exit of universities from other countries. But the evolution of these four countries calls for a few comments. In the case of the United States, it is interesting to note the relatively higher proportion of public universities that dropped out of the ranking, which tends to confirm the adverse impact of the significant reduction in public subsidies since the 2007 financial crisis. In 2014, the proportion of public universities in the entire contingent of US universities was 63.7%, down from 64.5% in 2004. This is a small decline but the trend is significant.

To a large extent, Japan’s decline may also be linked to the financial crisis, which prevented the university sector from receiving the additional funding expected in the context of the excellence initiative. Observers also note that Japanese universities have encountered difficulties in making significant progress on the internationalization front (Kakuchi, 2015). It is also noteworthy that Japan lost two universities in the top 100 between 2004 and 2015 (down from 5 to 3).

In the German case, half of the drop is due to the disappearance of two prestigious universities: Free University of Berlin and Humboldt University. Actually, the drop is not related to a significant decrease in their actual performance but to their inability to reach an agreement on how to split the Nobel Prizes winners before World War II, when Berlin hosted only one university. Faced with this dilemma, the Shanghai rankers decided to just leave them out. Ironically, they are among the eleven main beneficiaries of the excellence initiative.

The lack of competitiveness of British universities is more difficult to explain. Not only did the United Kingdom lose 4 universities overall, but the number of universities ranked in the top 100 also went down from 11 to 8.

Another way of looking at the evolution between 2004 and 2014 is to calculate the number of universities that each country has in the top 100, relative to the size of the population. Table 5 presents the results of this analysis, while indicating for each country whereas it had an excellence initiative.

Table 5 – Evolution of Number of Ranked Universities in the Top 100 Per Million Inhabitants (2004 to 2015)

Country	Number of universities in 2004	Number of universities in 2015	2004	2015	Excellence Initiative
United States	51	51	0.16	0.16	No
United Kingdom	11	9	0.17	0.14	No
Japan	5	4	0.04	0.03	Yes
Canada	4	4	0.11	0.11	Yes
Switzerland	3	4	0.38	0.52	No
Netherlands	2	4	0.12	0.24	No
France	4	4	0.07	0.06	Yes
Germany	7	4	0.08	0.05	Yes
Australia	2	4	0.09	0.17	Yes
Sweden	4	3	0.42	0.31	Yes
Denmark	1	2	0.18	0.36	Yes
Israel	1	2	0.15	0.26	Yes
Belgium	0	2	0.00	0.19	No
Russia	1	1	0.01	0.01	Yes
Norway	1	1	0.20	0.20	Yes
Finland	1	1	0.19	0.18	Yes
Austria	1	0	0.12	0.00	No

Source: Academic Ranking of World Universities (ARWU) and World Atlas

<http://www.shanghairanking.com/aboutarwu.html>

<http://www.worldatlas.com/aatlas/populations/ctypopls.htm#.UkjUH3brz9c>

These data call for several observations. First, the best performing countries are all small countries, including Switzerland (top score), the Nordic countries, the Netherlands and Israel. Second, the countries that show the most progress are Switzerland, Denmark, Israel, Australia and Belgium. Three of these, Australia,

Denmark and Israel, had an excellence initiative. Third, the countries with significantly declining performance are Japan and the United Kingdom, as signaled earlier, as well as Sweden and Austria.

While these results are not fully conclusive regarding the effect of excellence initiatives—in part because some of these initiatives are too recent to show significant improvements, for example in the French and German cases—, they confirm the importance of sustained high levels of funding (Switzerland, the Netherlands).

A careful examination of the list of all the universities that experienced a significant jump (more than 25 places) in the Shanghai ranking between 2004 and 2014 gives a more telling story (Table 6).

Table 6 – Universities with the Largest Jump between 2004 and 2014

University	Country	Change*	Excellence Initiative
Shanghai Jiao Tong University	China	404-502 to 101-150	Yes
King Saud University	Saudi Arabia	402-501 to 151-200	Yes
Aix Marseille University	France	302-403 to 101-150	Merger under excellence initiative
Fudan University	China	302-403 to 101-150	Yes
Technion - Israel institute of Technology	Israel	202-301 to 78	Yes
Nanyang Technological University	Singapore	302-403 to 151-200	Yes
University of Lausanne	Switzerland	302-403 to 151-200	No
University of Science and Technology of China	China	302-403 to 151-200	Yes
Zhejiang University	China	302-403 to 151-200	Yes
Autonomous University of Barcelona	Spain	404-502 to 201-300	Yes
Beijing Normal University	China	401-500 to 201-300	Yes
Harbin Institute of Technology	China	402-503 to 201-300	Yes
Huazhong University of Science and Technology	China	402-503 to 201-300	Yes

Korea University	Korea	404-502 to 201-300	Yes
Maastricht University	Netherlands	404-502 to 201-300	No
National Cheng Kung University	Taiwan	404-502 to 201-300	Yes
Northeastern University	China	404-502 to 201-300	Yes
Sun Yat-sen University	Taiwan	403-510 to 201-300	Yes
University College Dublin	Ireland	404-502 to 201-300	Yes
University of Exeter	United Kingdom	404-502 to 201-300	No
University of Lisbon	Portugal	404-502 to 201-300	No, but merger
Xian Jiao Tong University	China	401-500 to 201-300	Yes
King Abdulaziz University	Saudi Arabia	301-400 to 151-200	Yes
The University of Western Australia	Australia	153-201 to 88	Yes
London School of Economics and Political Science	United Kingdom	202-301 to 101-150	No
Monash University	Australia	202-301 to 101-150	Yes
Peking University	China	202-301 to 101-150	Yes
Radboud University Nijmegen	Netherlands	202-301 to 101-150	No
Tsinghua University	China	202-301 to 101-150	Yes
University of Massachusetts Medical School - Worcester	United States	202-301 to 101-150	No
Swiss Federal Institute of Technology Lausanne	Switzerland	153-201 to 96	No
VU University Amsterdam	Netherlands	153-201 to 100	No
University of Manchester	United Kingdom	+40 (78 to 38)	Merger
University of Melbourne	Australia	+38 (82 to 44)	Yes
University of Geneva	Switzerland	101-152 to 66	No
Ghent University	Belgium	101-152 to 70	No
Aarhus University	Denmark	101-152 to 74	Yes

Source: Source: Academic Ranking of World Universities (ARWU)

<http://www.shanghai ranking.com/aboutarwu.html>

*Note: The first rank indicated in the “Change” column refers either to 2004 or to the first year that a university appeared in the ranking if it was not ranked in 2004.

While the results shown in the table do not offer evidence of causality, it appears that most of the top performers have been the beneficiaries of excellence initiatives. This is especially clear with regard to the Chinese, Irish, Israeli, Korean, Singaporean, and Taiwanese universities featured in the table. The French and Portuguese cases are the product of mergers in 2013, so the higher ranking is unlikely to reflect improved performance so soon after the consolidation process. The table confirms the findings of the previous table about the outstanding performance of Swiss and Dutch universities without the need for any special excellence initiative.

4. Alignment of Drivers of Performance

To assess the relative merits of the design dimensions of the various excellence initiatives beyond looking at rankings results, this report applies the analytical framework developed in *The Challenge of Establishing World-Class Universities* (Salmi, 2009). The superior results of world-class universities (WCUs)—highly sought graduates, leading-edge research, and dynamic technology transfer—can essentially be attributed to three complementary sets of factors at play in top universities: (a) a high concentration of talent (faculty and students), (b) abundant resources to offer a rich learning environment and conduct advanced research, and (c) favorable governance features that encourage strategic vision, innovation, and flexibility, enabling institutions to make decisions and manage resources without being encumbered by bureaucracy

To complement this framework, recent policy research has identified a number of “accelerating factors” that can play a positive role in the quest for excellence (Altbach and Salmi, 2011). The first factor consists in relying extensively on the Diaspora when establishing a new institution. As illustrated by the experiences of Pohang University of Science and Technology (POSTEC) in South Korea and Hong Kong University of Science and Technology (HKUST), bringing a large numbers of overseas scholars to come back to their country of origin is an effective way of rapidly building up the academic strength of an institution.

The second factor, using English as the main language of a university, greatly enhances an institution’s ability to attract highly qualified foreign academics and graduate students, as the National University of Singapore has managed to accomplish. POSTEC also deliberately adopted English as its language of operation for the same

reason.

Concentrating on niche areas is the third suitable manner of achieving critical mass more rapidly, as demonstrated by the examples of HKUST and POSTEC in Asia, or the Higher School of Economics in Russia. The fourth element consists in using benchmarking as a guiding methodology to orient the institution in its upgrading efforts. Shanghai Jiao Tong University, for instance, anchored its strategic planning work in careful comparisons with leading Chinese universities first and then moved to include peer foreign universities in the benchmarking exercise.

The fifth factor is to introduce significant curriculum and pedagogical innovations. HKUST, for example, was the first U.S.-style university in Hong Kong, a feature that made it distinct from the existing institutions operating according to the British model. The Higher School of Economics in Moscow was among the first Russian institutions to offer a curriculum that integrates teaching and research and to establish a supportive digital library. These kinds of innovative features—part of the “latecomer advantage”—are of great consequence for new institutions that need to be attractive enough to entice students away from existing universities and to get them to risk enrolling in an “unknown” program.

An additional point worth underlining is the need for successful institutions to remain vigilant and to maintain a sense of urgency in order to avoid complacency. This aspect involves continuous monitoring and self-assessment to identify dysfunctions, tensions or threats, act quickly to address them, and constantly explore areas for improvement.

The review of the main strengths and weaknesses of the recent excellence initiatives can be organized by looking at the extent to which they contribute to (i) increased talent concentration, (ii) improved resource base, and (iii) more appropriate governance.

5. Talent Concentration

Besides supporting entire universities in their improvement efforts, many excellence initiatives have offered funding to build critical mass by establishing new centers of excellence or strengthening existing ones, oftentimes with a focus on multi-disciplinary approaches.

A recent OECD review of excellence initiatives finds that one of their major benefits has been to provide funding for high-impact / high-risk basic research as well as for interdisciplinary and cooperative research endeavors (OECD, 2014).

[Research excellence initiatives] ... can therefore lead to broad changes in the structure of the research system by pushing research centers and institutions to continually prove and develop their strengths, show their ability to build interdisciplinary networks, create links with the private sector and abroad, and generally enhance a country's overall research capacity (OECD, 2014, p. 18).

In addition, some programs—for example in China and Singapore—have explicitly linked the selection of university-based research themes to economic priorities in the country's development strategy or to specific themes such as climate change.

To facilitate talent development and concentration, several excellence initiatives allocate resources for creating favorable work conditions and offering attractive career prospects to young scholars who have recently started their post-doctoral research career or who are in the process of completing their doctoral degree. The German Excellence Initiative, for example, provides funding specifically to establish graduate schools intended to provide a new, more appealing career path for young researchers, both Germans and foreigners.

Internationalization has been a core feature of several excellence initiatives. Many programs have sought to deepen the international dimension of universities through a variety of modalities such as sending doctoral students overseas, recruiting foreign students and scholars, setting up joint degree programs, and undertaking collaborative research projects with foreign partners. The Spanish Excellence Initiative was even explicitly named “International Campuses of Excellence”. In addition to contributing to building critical mass in an accelerated fashion, increased internationalization has also been a useful way of reducing endogamy, which has been identified as a major limitation in several European tertiary education systems (Salmi, 2009).

By contrast, Japan's failure to fully embrace internationalization has seriously limited the global reach of the country's universities. A recent study reveals that existing restrictions on collaboration with foreign partners explain the research output gap between Japan and the United States, as well as between Japan and the United Kingdom (Kakuchi, 2015). Only 25% of scientific papers written by Japanese academics have international co-authors, compared to 52% for British scientists. Japanese universities count only 4% of foreign academics, whereas top universities such as Harvard and Cambridge have 30% and 40%, respectively. The “Super Global Universities” program, launched in October 2014 by the Japanese Ministry of Education, is an attempt to boost the international standing of the nation's universities.

Institutional size is another important aspect to consider with respect to the talent development objective of excellence initiatives. Several countries, including China,

Denmark, France and Russia, have encouraged their universities to merge as a way of rapidly achieving critical mass in research and boosting their scientific production, responding to the recognition that some international rankings compare the number of publications and faculty awards of institutions independently from the size of their student enrollment (Harman and Harman 2008). In Denmark, the government set up an Innovation Fund that rewarded, among other things, the combination of similar institutions. In China, too, a number of mergers took place to consolidate existing institutions. For example, Beijing Medical University merged with Beijing 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.

Similarly, in Russia, mergers have been at the heart of the successive excellence initiatives. 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 received additional funding to support their efforts to recruit highly qualified researchers and equip state-of-the-art laboratories (Holdsworth 2008). In subsequent years, the Russian government “encouraged” the creation of more federal universities through mergers.

A recent study of the performance of the Finnish tertiary education systems identified the relatively small size of Finnish universities and the dispersion of resources as a limiting factor.

Finland’s research results offer a mixed picture. The scientific production is high in relation to the country’s population, but the University of Helsinki is the only institution appearing in the top 100 according to the 2014 Shanghai ranking. The other four Finnish universities included in the top 500 are either in the group of 301 to 400 (Oulu University and Turku University) or the group of 401 to 500 (Aalto University and the University of Eastern Finland). This may indicate a lack of critical mass to operate a sufficiently large number of research groups at the most advanced levels of scientific development (Salmi, 2015, p. 37).

To finish this exploration of how excellence initiatives have helped increase talent concentration in participating universities, it is important to identify three severe risks and challenges associated with the ongoing race to establish world-class universities. First, the over-emphasis on research sends the wrong signal that the quality of teaching and learning is not as important. Indeed, the indicators on which international rankings rely are generally biased in favor of research-intensive universities, at the cost of excluding first-rate institutions that primarily enroll undergraduate students. In the United States, for instance, liberal arts or science colleges such as Carleton, Harvey

Muddy, Olin, Pomona, Wellesley and Williams Colleges are recognized as outstanding undergraduate teaching institutions, yet they will never make the global rankings because they are not research powerhouses. In a recent speech to the universities, the British Minister for Universities and Science denounced the poor quality of teaching as a result of over-emphasis on the development of research.

Because many universities see their reputation, their standing in prestigious international league tables and their marginal funding as being principally determined by scholarly output, teaching has regrettably been allowed to become something of a poor cousin to research in parts of our system (O'Malley, 2015).

Second, the focus on world-class universities is likely to further promote elitism and increase inequalities in tertiary education. In the search for academic excellence, top universities tend to be very selective, which bears the risk of keeping talented students from low-income / low cultural capital families away. With a 1:100 success ratio, the Indian Institutes of Technology are the most selective institutions in the world. Similarly, the Ivy League universities are the most selective universities in the United States. Research has shown that the average SAT score of students accepted into top US universities, which is closely correlated with their socio-economic background, has risen steadily in recent years (Gladwell, 2011).

Third, some universities have become so driven by the rankings that, in their efforts to boost research output, they may be tempted to take shortcuts instead of building capacity in a genuine manner. Some universities have approached academics in other institutions to encourage them to provide positive feedback through the reputation surveys conducted by some of the global rankings. A number of Australian universities have hired "ranking managers" to provide guidance on how to better position the institutions (MacGregor, 2013). Observers have accused Saudi universities of artificially inflating their scientific output by contracting, on a part-time basis, highly cited foreign researchers who accept to publish under the affiliation of the Saudi institution (Bhattacharjee, 2011).

Financing

The level of resources and the sources of funding of excellence initiatives constitute the second key dimension that needs to be assessed as they strongly influence the impact and sustainability of these excellence initiatives. Three observations can be made in that respect. First, the design of these initiatives is flawed in so far as they do not address explicitly the sustainability issue, on the assumption that giving a boost

to a university is sufficient to transform it. Many excellence initiatives are organized as a one-time, or maximum two-phase investment to upgrade selected universities. This can be a double-edge sword if the beneficiary universities do not manage to diversify their income sources and expand their resource base sufficiently to sustain the level of investment and operating costs arising from their transformation efforts. Indeed, as the beneficiary universities proceed to improve their talent base by recruiting a complement of young and experienced academics to raise their research capacity, they need to worry about their ability to keep these additional academics on board beyond the duration of the excellence initiative.

While this may not be a problem in tertiary education systems that are well resourced through general taxes—as happens in the Nordic countries and in Switzerland—, in many cases the beneficiary universities may not be able to maintain their progress if public resources are not forthcoming on a continuing basis, which is a likely scenario in many economies facing mild to severe fiscal constraints. In the words of the Australian Physics Nobel Prize laureate Brian Schmidt (2012), “science capability is built up through the long term investment in programs and people, and short-term fluctuations are wasteful and counter-productive.”

The French approach, based on the establishment of a national endowment fund for the universities participating in the Excellence Initiative, is one of the few recent cases that embody a structural element of sustainability. However, the jury is still out, as it is not clear how the scheme will actually operate, considering the country’s fiscal challenges. Canada provides another relevant example: in 1997, the federal government decided to make the Network of Centers of Excellence program a permanent feature of its budgetary allocation to tertiary education institutions.

Recent developments in Germany are also interesting to note in that respect. The Constitutional Court recently accepted a request from the Federal government to change the Constitution. This will allow for more significant involvement of the federal government in the funding of the country’s universities, which until now had been a prerogative of the state governments (*Länder*). This change has come partly as a direct consequence of the excellent initiative, reflecting concerns about the possible lack of sustainability of the investments made in the context of the excellence program, and partly because the federal government had no jurisdiction to fund teaching.

Second, in several cases, the deteriorating financial situation has compromised the ability of the government to fulfill its commitments as spelled out in the excellence initiative. The most extreme example in that regard is the painful experience of Spain. Not only did the design not incorporate any element of sustainability—the

funding was supposed to be considered as a reimbursable loan to the beneficiary universities—, but in addition the entire excellence initiative itself had to be abandoned two years into its implementation period because of the financial crisis, with dire consequences for the tertiary education system as a whole. Similarly, India has not been able to provide the additional financing promised in 2012 when it announced its first excellence initiative. Russia recently announced a 10% cut across the board, which is likely to adversely affect all the universities that are the beneficiaries of the new 5/100 excellence initiative (Vorotnikov, 2015).

Clearly, very few nations have managed to match China's experience of taking a long-term vision and pursuing consistent policies to finance the development of its top universities through successive excellence initiatives spanning close to twenty years (Box 2).

Box 2 – The Chinese Excellence Initiatives

The Chinese government has been eager to develop universities of international stature, and recent reform efforts reflect this goal. In 1993, the government adopted the *Guidelines of China's Educational Reform and Development*, which called for, among other things, building up 100 key universities with high-quality courses of specialized studies. In 1998, then-President Jiang Zemin announced the goal of building world-class universities, with a clear focus on the advancement of science and technology. Since then, state financing for tertiary education has more than doubled, reaching US\$10.4 billion in 2003, or almost 1 percent of GDP. Several top universities received grants to improve institutional quality under the successive 985 and 211 Projects, reflecting a deliberate strategy to concentrate resources on a few institutions (the C9 group) with the greatest potential for success at the international level.

Chinese universities have spent millions of dollars to recruit internationally renowned, foreign-trained Chinese and Chinese-American scholars and to build state-of-the-art research laboratories, particularly in science and technology. The strategy is to surround their star faculties with the brightest students, give them academic leeway, and provide competitive remuneration packages. With low labor costs, structural upgrades are achievable at a tenth of the cost of those in industrial countries. All this is happening in the context of a new regime of financial autonomy, significant cost

sharing, and intense efforts to develop management expertise at all levels of university leadership.

Source: Salmi (2009)

The third and last observation has to do with the distribution of financial resources across the entire tertiary education system. In several countries, notably France, Germany and Spain, the introduction of a competitive funding approach in the form of an excellence initiative has marked a radical rupture with traditional resource allocation practices, whereby all universities would receive similar financing amounts regardless of their relative performance. This is one of the most salient features of excellence initiatives, one of its positive results being that the additional funding has proven to be a powerful incentive to encourage universities to develop a transformational vision, set priorities and elaborate solid projects to implement the vision.

At the same time, observers have voiced concern that excellence initiatives could create funding distortions as the leading universities seek an ever-growing share of the overall public budget envelope for tertiary education. In Australia, for instance, the executive director of the group of eight, the country's top research universities explained in 2008 that "Australia cannot afford to spread its relatively small resources too thinly. It must invest in niche areas. This means that some universities and some fields should get preferential treatment. If Australia does not have some universities playing at the high end, Australia will fall behind." (Gallagher, 2008). Along the same lines, the Thai Minister of Education stated in 2009 that "universities which earned a place in the top 500 rankings... were entitled to financial support".³

Implicit behind such views is the belief that the simple fact of being a top university, or aspiring to become one, would make it eligible for funding privileges that other, less prestigious, tertiary education institutions should not and could not hope to receive. Such approaches that favor research universities carry the risk of underfunding all the other--equally important--tertiary education institutions that are an integral part of a well balanced system.

Governance

One of the main weaknesses of several excellence initiatives seems to be the absence of a much-needed governance reform to accompany or facilitate the implementation

³ Jurin Laksanavisit, Education Minister, Thailand, 2009

of the projects supported by the additional funding. In Germany, for example, where universities operate as public bodies following civil service rules within the context of each regional State's higher education governance framework, some of the beneficiaries of the Excellence Initiative have introduced innovative organizational structures and management processes to be able to mount and run their new doctoral programs and multi-disciplinary research clusters. But this presents the risk of creating islands of excellence in the midst of universities which continue to operate in a traditional way with rigid public sector rules, thereby allowing two parallel structures to function side by side within the same institution. Thus, the unfavorable governance framework under which German universities operate makes it difficult to take full advantage of the additional resources provided by the Excellence Initiative. Institutionalizing the innovations would require integrating the new research centers into the regular university structure, but this in turn depends on the willingness of the existing faculties and departments to allocate, within the regular budget envelope, positions for the top scholars who have been recruited in the context of the Excellence Initiative but are funded only for five years. These universities may find it challenging to scale up and sustain the positive changes under way in the absence of an appropriate governance reform.

In Spain, the international commission set up by the Government to assess the implementation of the International Campuses of Excellence Initiative in 2011 concluded that outdated governance was the main obstacle faced by Spanish universities.

Universities should be given the freedom to succeed and to fail. Being held on a short leash by Government will not lead to excellence... An appropriate balance between regulation, steering and institutional autonomy needs to be found... (Tarrach et al, 2011, p. 4)

Similarly, in Taiwan, evaluations of the recent Excellence Initiative found that the rigid salary scheme that public universities must follow prevents them from attracting and keeping top foreign researchers in their upgrading efforts (Hou and Chiang, 2012). In the Russian case, the continuing segmentation of research between universities and academies of science is seen as a serious obstacle to any improvement in the research production of the universities, notwithstanding the additional resources available through the excellence initiative.

Even in France, where a governance reform was implemented in 2009 to increase institutional autonomy, it appears that the reform did not go far enough, as universities still encounter significant rigidities that prevent them from easily opening new

positions in an autonomous manner and being in a position to offer attractive remuneration packages to top academics, especially foreign researchers.

Similarly, critics of the recent excellence initiative in Japan, which focuses on internationalization, argue that the proposed funding fails to address core governance and management issues that affect the country's top universities. One of them is the salary structure in public universities, which makes it difficult to keep leading researchers from working in the private sector (Kakuchi, 2014).

By contrast, Denmark seems to be among the few countries that have embodied their excellence initiative in an overall governance reform aimed at transforming its universities into more flexible and dynamic institutions. This high degree of alignment between the additional financial resources and the governance framework explain, to a large extent, the rapid rise of Danish universities in the Shanghai ranking. Between 2004 and 2014, the University of Copenhagen gained twenty spots, from 79 to 59. Even more impressive was the progress of Aarhus University, the nation's second top university, which emerged from the 101-150 group in 2004 to climb to number 74 in 2014.

Similarly, in China, the top universities supported by the C9 initiative have been recently allowed to transform their governance and management structures to allow for increased institutional autonomy and flexibility (Ruish, 2014). This governance reform complements the considerable additional financial resources documented earlier.

University College Dublin (UCD) is an interesting example of institution that made significant progress (see Table 8) as a result of strong and visionary leadership that helped steer the university quite effectively towards a deeper research focus. This happened in spite of misgivings about the perceived “managerialism” of the vice-chancellor in his efforts to align the academic and organizational cultures better in support of the concerted strategy to improve the research output and the international visibility of UCD.⁴

A second serious governance issue, which has emerged in recent years in a growing number of nations, is the tension between the search for excellence and the absence of full academic freedom. Several excellence initiatives have been launched in countries that are not fully democratic—China, Russia and Saudi Arabia for example—and it remains to be seen whether top universities can operate with outstanding results where academic freedom may be restricted. While it is not a

⁴ Based on interviews by the author. In recognition of his achievements, the UCD vice-chancellor was invited in 2014 to lead the University of Bristol.

significant constraint in the hard sciences—although government control of the Internet affects all scholars alike—it certainly hinders the ability of social scientists to conduct scientific inquiries on issues that are politically sensitive. The Chinese Minister of Education recently told universities to shun textbooks that promote Western values, indicating that academics should refrain from criticizing the Communist Party (Li, 2015). These potential restrictions may undermine the positive governance reforms mentioned earlier. In the same vein, academics at Hong Kong universities, which have so far enjoyed unrestricted academic freedom, have expressed fears of increased government intrusion in the light of recent academic interference incidents that may reflect the growing influence of the central Chinese government (Yeung, 2015).

Conclusion

Excellence, like all things of abiding value, is a marathon, not a sprint.

Daniel Lincoln

The top ten universities in the Shanghai Jiao Tong University ARWU ranking were all founded before 1900, and two are more than eight centuries old. Indeed, it is no surprise that the world's leading universities are among the oldest established tertiary education institutions, enjoying what could be called the “vintage” element: the power of reputational effects that allows these universities to continue to attract the best scholars and students, thus self-perpetuating their excellence standards and outstanding results.

In recent years, however, the realization that tertiary education is part and parcel of a country's competitive advantage, together with the impetus given by the global rankings, have provoked a radical change in the way governments consider the role and importance of universities. There is growing recognition that, with proper leadership and focused investment, existing universities that have not been seen in the upper tiers of the global university hierarchy can be transformed into world-class institutions over a relatively short period.

The determination of governments to enhance the performance and visibility of their leading universities has translated into excellence initiatives in many corners of the planet. While it is still early to assess the impact of the various excellence initiatives—some of which are only a few years into their first implementation phase—, available data show that the most successful institutions are those that have managed to align the three main components of excellence, namely critical masses of talent, abundant resources, and appropriate governance, the latter being perhaps the most critical level of rapid change.

Another important finding is that excellence initiatives may engender negative behaviors and carry adverse consequences. Policy makers and university leaders must keep in mind, in particular, the risk of harmful effects on teaching and learning quality, reduced equality of opportunities for students from underprivileged groups, and diminished institutional diversity.

In fact, “excellence initiative” may be a misnomer. These initiatives appear to focus more on creating “world-class” universities—as measured by the global rankings—than on promoting excellence across the board. At best they stimulate the

search for excellence in research. But research is only one function of universities. Equally important are the quality of teaching and learning and the value of a university's engagement with the productive sectors and the communities in their economic and social environment.

An excellence initiative is not a substitute for a meaningful reform of the entire tertiary education system. By definition, an excellence initiative aims to support and transform only those universities that are likely to become globally competitive. This approach does not exclude introducing system-wide reforms at the same time, especially in the areas of quality assurance, financing and governance. Not only would such reforms strengthen the sustainability of excellence initiatives, but they would also ensure the balanced development of the entire tertiary education system. At the end of the day, the best tertiary education systems are not those that can boast the largest number of highly ranked universities. Governments should worry less about increasing the number of world-class universities and dedicate more efforts to the construction of world-class systems that encompass a wide range of good quality and well articulated tertiary education institutions with distinctive missions, able to meet collectively the great variety of individual, community and national needs that characterize dynamic economies and healthy societies.

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