YUNG-CHI HOU, MARTIN INCE AND CHUNG-LIN CHIANG

THE IMPACT OF EXCELLENCE INITIATIVES IN TAIWAN HIGHER EDUCATION

INTRODUCTION

Over the past decade, the term "world-class" has been used widely to describe how a university develops its capacity to compete in the global higher education marketplace. With the growth of competition between nations in our knowledge-based economy, the creation of world-class universities is becoming a national agenda item in developing as well as developed countries in Asia. Consequently, "policymakers in many countries have prioritized building research universities that would help their countries obtain a superior position in the global competition", particularly in the East Asian region (Shin, 2009:669). Marginson (2010, please also see the previous chapter) has indicated that accelerated public investment in research and world-class universities has forged a unique culture, which he called the "Post-Confucian Model" in the East Asian region.

What does a world-class university look like? In his book *The Challenge of Establishing World-Class Universities*, Jamil Salmi (2009) defines a world-class university as having three major indispensable components, that is: a high concentration of talent, including excellent faculty and brilliant students, abundant resources to offer a rich learning environment and conduct advanced research, and favourable governance features that encourage strategic vision, innovation and flexibility, and which enable institutions to make decisions and manage resources without being encumbered by bureaucracy. Salmi also synthesized that, generally, most nations adopt three major types of strategy for establishing world-class universities: upgrading a small number of existing universities, merging existing institutions into a new university, or creating a new one (*ibid*).

In response to the problem of building a world-class university efficiently, several Asian countries and regions have chosen to invest in research universities and centres to lift their volume of research output in order to move up the global rankings quickly (Shin, 2009; Marginson, 2010). Several excellence programmes have been created in East Asia: in 1998 mainland China approved a special funding programme to build research universities as part of its 985 project; the South Korean government supported the 1999 Brain Korea 21 (BK21) programme; and in 2001, the Japanese government established a plan to foster around 30 universities to become "world-class" institutions (Oba, 2008; Shin, 2009; Yonezawa, 2010). Similarly, the "Five Year – 50 Billion Excellence Initiative" was launched in Taiwan China, to build at least one university as one of the world's top 100

Q. Wang, Y. Cheng, & N.C. Liu (eds.), Building World-Class Universities: Different Approaches to a Shared Goal, 35–53.

universities in five years and at least 15 key departments or cross-campus research centres as the top research institutes in Asia in ten years (Hou, 2012).

These excellence programmes are clearly aimed at building at least one world-class university within a period of time through the policy of funding concentration, which significantly enhances a chosen university's volume of research papers, international collaborations and exchanges. On the other hand, the effectiveness of this approach and its impact on Asian higher education have becoming a challenging issue inside individual countries, because it raises matters such as overemphasizing meritocratic culture and disseminating research output internationally (Shin, 2009).

The main purpose of the paper is to compare the goals, funding policy and selection criteria of the excellence programmes in Asian nations. Within wider Asian ambitions, from the political, economic and cultural perspectives, the effectiveness of Taiwan's "Five Year – 50 Billion Excellence Initiative" will be assessed as a case study and the challenges being faced, subsequently, will be discussed.

EXCELLENCE PROGRAMMES IN CHINA, JAPAN, SOUTH KOREA, AND TAIWAN

From the early 1950s onwards, most research funding in the US and the UK was allocated to a small number of elite universities, which has led to them both having a larger number of world-class universities than Asian nations. Learning from the Western experience, mainland China, Taiwan China, Japan and South Korea, started in the 1990s to develop so-called "excellence" programmes which involve allocating resources to a small number of universities to enhance their research power and their attractiveness to top students at the global level. Examples, as mentioned above, include the 985 Project in mainland China, the Brain Korea 21 programme in South Korea, the "Five year – 50 Billion Excellence Initiative" in Taiwan, and the Global 30 Project in Japan. Regarding these initiatives, many East Asian countries are demonstrating the belief that a funding concentration policy will have the same result for them as it has had for the US and the UK. However, there has been continuous debate over the effect of these policies and on the performance of the recipients of this type of funding within each nation. Yale University President Richard C. Levin observed the "excellence" trend among East Asian nations and came up with two main reasons for it. First, many of these nations understand the importance of university-based scientific research in driving economic growth. Second, they expect to "educate graduates for careers in science, industry, government, and civil society who have the intellectual breadth and critical-thinking skills to solve problems, to innovate, and to lead" (Levin, 2010).

Next, four excellence programmes in mainland China, South Korea, Japan and Taiwan are reviewed in relation to their origins and goals.

The 985 Project in Mainland China

Prompted by a concern for higher education quality and competitiveness, the Chinese government launched two major initiatives, named the 211 Project, in 1995 and the 985 Project, in 1998. Whereas 100 universities were selected to receive special funding to improve their overall performance in the 211 Project, the 985 Project was mainly aimed at establishing 10 Chinese universities in top global ranking positions in the 21st century. Regarding this, on the 100th anniversary of Peking University's establishment, the then-President Jiang stated that China needed to develop some world-class universities to assist in the modernization of Chinese society (Halachmi & Ngok, 2009; Wang, 2010). In 1998, the first nine recipients officially recognized by the Ministry of Education formed a "C9 Group" to achieve the 985 Project's global target. This programme was subsequently expanded, and in all, 39 universities were selected to receive special financial support, but no new university has been added to this list since 2007.

The second phase of the programme from 2004 to 2007 focused more on quality improvement of scientific research output. Regarding the outcomes, Wang has contended that both the 985 Project and the university ranking system "have made a significant impact on the quality of China's rapidly proliferating institutions of higher education" (Wang, 2010).

The Brain Korea 21 Programme in South Korea

To respond to concern over the low quality of Korean higher education, the Ministry of Education and Human Resources Development launched the Brain Korea 21 programme in 1999. It was aimed at producing "next generation leaders with creativity", by providing fellowship funding to graduate students, postdoctoral researchers and contracted based professors, on an institutional level (Korea Research Foundation, 2010). In the first phase, from 1999 to 2005, the Ministry of Education and Human Resources Development awarded US$1.4 billion to 67 universities with doctoral programmes, with 87.1% being allocated to science and engineering studies. During the second phase, which started in 2006, the programme will award US$2.1 billion on the basis of departmental-level excellence and university-industry links (RAND, 2010).

The Global Centre of Excellence Project in Japan

Japan's "Global Centre of Excellence" started in 2001 and was intended to foster around 30 universities to become "world-class" institutions to stimulate the national economy (Yonezawa, 2010; Oba, 2008), which is often referred to as the Global 30 Project. The selection criteria and process used mean that the government selects research units as centres of excellence, instead of institutions (and from 2006, "Global Centre of Excellence"). In 2008, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) launched a further project named "Global 30" and stressed "the importance of securing a leading

position for Japanese higher education in Asia through promoting internationalization of higher education and maintaining Japan's share in the international student market" (Yonezawa, 2007:3). To this end, the ministry set the goal of recruiting 300,000 international students to study in Japan by 2020. In the 2009 first round selection, the government only selected 13 universities, based on the setting of specific institutional goals and their accomplishment by a predetermined date (Yonezawa, 2010), with each being granted between US$22 million and US$44 million.

Table 1. Comparison of excellence initiative projects among mainland China, South Korea, Japan and Taiwan

	Mainland China: the 985 Project	*South Korea: Brain Korea 21*	*Japan: the Global Centre of Excellence*	*Taiwan: the "Five Year – 50 Billion Excellence Initiative"*
Starting year	Phase one: 1998~ 2003 Phase two: 2004~2007	Phase one: 1999~2005 Phase two: 2006~2012 (7 years)	Phase one (COE): 2002~2007 Phase two: 2008~	Phase one (Five-year 50 Billion Programme): 2006~20010 Phase two (Moving into Top Universities Programme): 2011~ 2015
Goal and Mission	To provide 39 Chinese universities with extra funding so some gain top global rankings	To cultivate global leaders	To recruit 300,000 international students	To develop at least one university as one of the world's top 100 universities in five years and 10 fields or research centres as "world-class"
Focus	Research, international reputation	PhD programmes, future leaders	Internationalization, economy	Research/ international reputation
Number of recipients	39 universities	67 universities	19 to 30 universities	11~12 universities
Total funding	US$10 billion	US$3.5 billion	US$2.5 billion	US$1.67 billion

The "Five Year – 50 Billion Excellence Initiative" in Taiwan

In response to the quest for a world-class university, the government launched the project called "Five Year – 50 Billion Programme for Developing a First-Class University and Top Research Centres", in 2006. The programme had the aim of having at least one university as one of the world's top 100 universities in five

years and at least fifteen key departments or cross-campus research centres as the top in Asia in ten years (Hou, 2012; Hou et al., 2012). From 2006 to 2010, 11 universities were selected and funded through the project. The second round, from 2011 to 2015 which involved, changing the programme's name to "Moving into the Top Universities Programme", is focused more on developing 10 fields or research centres as "world-class" by 2015 (Department of Higher Education, 2011).

TAIWAN'S RESEARCH EXCELLENCE INITIATIVES

Global Competition and the Excellence Initiative in Taiwanese Higher Education

Since the 1990s, Taiwan's higher education has expanded dramatically, with respect to both the number of institutions and the number of enrolled students. As of 2011, the number of higher education institutions had increased to 165, with a total student enrolment of 1.3 million (Department of Higher Education, 2011), representing a gross enrolment ratio of 78.6%. It is evident that these quantitative increases have lifted Taiwan from the stage of mass higher education to that of universal access to higher education and generally reduced education inequality. However, the expansion has also caused several concerns, particularly how to enhance Taiwan's global competitiveness.

In response to competitiveness issue in higher education, the Taiwanese government started to reform its higher education system in the late 1990s, with a particular focus on: provision, regulation and financing (Mok, 2002). In 2002, Taiwan's Higher Education Macro Planning Commission (HEMPC) was founded by the government, with the aim of promoting Taiwan's higher education excellence. In 2003, it proposed a national plan to the government to assist a number of selected universities and research centres through concentrated investment. Subsequently, the Ministry of Education launched various types of excellence initiatives with different intended objectives, including three big projects the "Development Plan for World-Class Universities and Research Centres of Excellence", the "Teaching Excellence Initiative" and the "Academia-Industry Collaboration" (Ministry of Education, 2011a).

The foremost, was the first excellence initiative launched by the Ministry of Education, in 2005, whilst the second phase started in 2011and its title was changed to "Moving into the Top Universities" (Department of Higher Education, 2011). With a yearly total funding of US$330 million for 10 years, the recipient universities were expected to reach the rank of the top institutions around the world through infrastructure upgrading, the employment of outstanding faculty from overseas and participation in international academic collaboration. Moreover, the selected universities were encouraged to integrate various research resources, build teaching and research capacity and develop substantial collaborations with foreign prestigious universities (Ministry of Education, 2011b).

The first phase was mainly aimed at enhancing the international visibility of Taiwanese higher education by having at least one university in the world's top 100 universities within 10 years and 10 outstanding research centres or fields in the Asian top 50 within five years. In order to accelerate talent cultivation and foreign recruitment, strengthen research advantage, and foster innovation, the second phase has five specific goals: internationalizing top universities and expanding students' global perspectives, promoting research and innovation quality, building international capacity of faculty and students, strengthening collaborations between universities and industry, and enhancing graduates' competence to respond to social and market demands (Department of Higher Education, 2011).

In order to manage and execute the excellence programme effectively, the Ministry of Education developed a well-structured model in terms of policy making and implementation. Regarding this, the Advisory Committee, the University Strategic Alliance, and the University Advisory Committees are responsible for policy making at the: national, cross campus and institutional levels, respectively. Moreover, at the implementation stage, the review committee is mainly in charge of setting up review standards and criteria, reviewing proposals, and determining funding amounts and the assessment panel helps to assess the performance of institutions as well as supporting the on-site visit teams. The professional external review committee assists the assessment panel in evaluating research performance by individual field and provides the assessment panel with review outcomes as references. To increase the efficiency of individual institutions, the Ministry of Education also set up a main management office and a working group, which are responsible for quality control of implementation at the governmental and institutional levels, respectively. The working group, which consists of all institutional representatives, assists the management office in coordinating with institutions, discussing standards of quality control, and in reporting implementation progress by institutions to the Ministry of Education (see Figure 1).

Funding Allocation and Ranking Outcomes

According to the Ministry of Education, from 2006 to 2010, the National Taiwan University received US$500 million, up to 30% of the total funds available, compared to National Cheng Kung University with 17%, National Tsing Hua University, with 11.2% and National Chiao Tung University, with 8.6%. In addition, there were five recipients with less than 5% of the total. Further, only two private universities were funded initially, but one was not funded after 2008 (see Table 2).

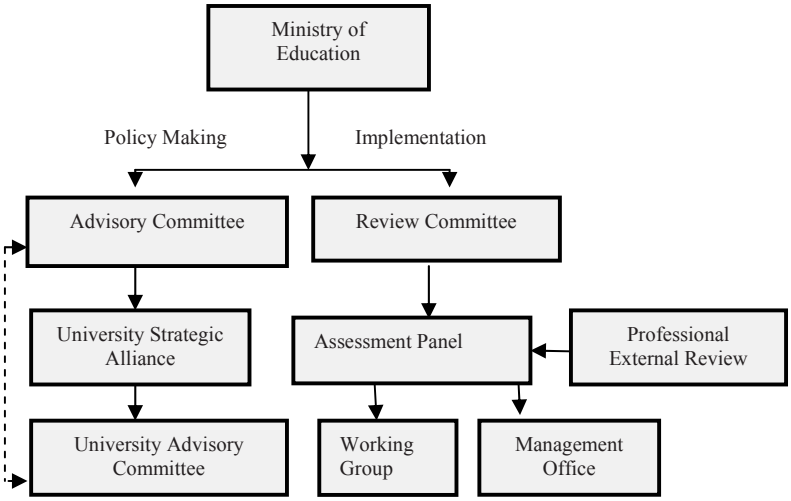

Figure 1. Management Organization of Development Plan for World-Class Universities and Research Centres of Excellence

Table 2. The Ministry of Education grants to universities (2006 to 2011) (US$ in million)

Institutions	*2006*	*2007*	*2008*	*2009*	*2010*	*Total five-year funding*		*2011*
National Taiwan University	100.0	100.0	100.0	100.0	100.0	500	30%	103.3
National Cheng Kung University	56.7	56.7	56.7	56.7	56.7	283.5	17%	53.3
National Tsing Hua University	33.3	33.3	40.0	40.0	40.0	186.6	11.2%	40.0
National Chiao Tung University	26.7	26.7	30.0	30.0	30.0	143.4	8.6%	33.3
National Central University	20.0	20.0	23.3	23.3	23.3	109.9	6.6%	23.3
National Sun Yat-sen University	20.0	20.0	20.0	20.0	20.0	100	6%	13.3
National Yang Ming University	16.7	16.7	16.7	16.7	16.7	83.5	5%	16.7
National Chung Hsing University	13.3	13.3	15.0	15.0	15.0	71.6	4.3%	10.0
National Taiwan University of Technology and Science	10.0	10.0	6.7	6.7	7.3	40.7	2.4%	6.7
National Cheng Chi University	6.8	10.0	6.7	6.7	6.7	36.9	2.2%	6.7
Chang Gung University	10.0	10.0	6.7	6.7	6.7	40.1	2.4%	6.7
Yuan Ze University	7.7	10.0	–	–	–	17.7	1.1%	–
National Taiwan Normal University	–	–	–	–	–	0		6.7

Source: Department of Higher Education (2011)

According to some global rankings, such as the Academic Ranking of World Universities (ARWU), Quacquarelli Symonds (QS) World University Rankings and the Higher Education Evaluation and Accreditation Council of Taiwan (HEEACT), there are around seven to eight Taiwan institutions in the top 500, including: the National Taiwan University, the National Cheng Kung University, the National Tsing Hua University, the National Chiao Tung University, Chang Gung University, the National Central University and the National Yang Ming University, and the National Sun Yat Sen University. Only Chang Gung University is a private institution.

It emerges that the institutions in the top 500 have all been recipients of the "Five Year – 50 Billion Excellence Initiative" by the Ministry of Education (see Table 3). They shared 90% of the total funding in the QS ranking, compared with 88.2% in the ARWU ranking, and 83.9% in the HEEACT ranking. Moreover, the top three recipients in the top 500 in the three rankings are all national universities and to the public's surprise, Chang Gung University, with amongst the lowest extra funding at US$40.1 million, performed better than many of the other recipients. However, generally speaking, there is a high level of correlation between the three global ranking outcomes and Ministry of Education funding, i.e. the greater the additional funding the institution gains, the higher it ranks.

Assessment of Academic Output

To assess their actual performance, Taiwanese institutions will be reviewed first on three key indicators, including research, internationalization, and university and industry collaboration.

Research outputs According to the Department of Education, the number of Science Citation Index (SCI) papers produced each year by the 11 selected universities grew by 49% and Social Science Citation Index (SSCI) papers by 172% between 2005 and 2010. The number of highly cited (HiCi) papers increased by 129% within five years (see Table 4), but the number of papers published in Nature and Science was declining slightly.

Internationalization In addition to the volume of research papers, the recipients were expected to upgrade their infrastructure and facilities, to hire outstanding international faculty, and to collaborate with foreign universities in international academic programmes. As Table 5 shows, the number of international degree-seeking students has increased by 79% from 2005 to 2010, and that of exchange students by 193%. In addition, the number of international conferences held and academic collaborations in research has grown approximately two and a half times. When it comes to the recruitment of international scholars, there is a tremendous progress in the growth rate of up to 700 % (see Table 6).

Table 3. Ranks of Taiwan universities in the ARWU, QS and HEEACT global rankings (2006–2010)

Global rankings	*Institutions*	*2006*	*2007*	*2008*	*2009*	*2010*	*% of Total fund*
QS	National Taiwan University	108	102	124	95	94	90%
	National Tsing Hua University	343	334	281	223	196	
	National Cheng Kung University	386	336	354	281	283	
	National Chiao Tung University	401–500	401–500	401–500	389	327	
	National Yang Ming University	392	401–500	341	306	290	
	National Taiwan University of Technology and Science	401–500	401–500	401–500	351	–	
	National Central University	401–500	398	401–500	401–500	398	
	National Sun Yat-sen University	–	401–500	401–500	401–500	–	
ARWU	National Taiwan University	181	172	164	150	127	88.2%
	National Tsing Hua University	346	317	308	297	314	
	National Chiao Tung University	440	327	322	327	313	
	National Cheng Kung University	384	367	350	262	256	
	Chang Gung University	–	–	426	408	406	
	National Central University	–	501	493	441	443	
	National Yang Ming University	479	471	498	449	447	
HEEACT	National Taiwan University	Starting 2007	185	141	102	114	83.9%
	National Cheng Kung University		360	328	307	302	
	National Tsing Hua University		429	366	347	346	
	National Chiao Tung University		471	463	456	479	
	Chang Gung University		–	–	479	493	
	National Central University		–	–	483	–	
	National Yang Ming University		–	475	493	–	

Source: ARWU (http://www.arwu.org/); QS (http://www.topuniversities.com/university-rankings); HEEACT (http://ranking.heeact.edu.tw/en-us/2011/homepage/)

Table 4. Publications of the 11 selected universities

Research performance	*2005 (Prior to the programme)*	*2010 (The 5th year of the programme)*	*Increase rate*
Number of SCI papers	11320	16906	49%
Number of SSCI papers	589	1589	170%
Number of A&HCI	29	79	172%
Nature & Science	15	14	–7%
Number of HiCi papers in the last 10 years	294	673	129%

Source: Department of Higher Education (2011)

Table 5. Number of international students of the 11 selected universities

Internationalization of international students	*2005*	*2010*	*Increase rate*
Number of international students	4033	6973	79%
Number of exchange students	629	1843	193%
Number of international conferences	180	405	125%
Number of international collaborations	171	331	94%

Source: Department of Higher Education (2011)

Table 6. Number of international scholars at the 11 selected universities

Internationalization of faculty	*2005*	*2009*	*Increase rate*
Number of top researchers serving as project leaders in research centres	220	431	1.95%
Number of international scholars	182	1,276	700%

Source: Department of Higher Education (2011)

University and industry collaboration One of the assessment indicators of the programme is what percentage of research outcomes were transferred into industry and benefited society through university-industry links. In 2010, the total funding generating from collaboration between universities and industry at the 11 selected universities was close to US$679 million and the income generated from intellectual property more than tripled (see Table 7).

Table 7. Volume of university – industry collaborations by the 11 selected universities

Results of industry-university cooperation projects	*2005*	*2010*	*Increase rate*
Funding generating from industry-university collaborations (including commissioned training programmes)	US$528.8 millions	US$679.4 millions	28%
Funds from enterprise sectors for industry-university collaborations (excluding the commissioned training programmes)	US$44.7 millions	US$55.7 millions	25%
Amount derived from intellectual property rights	US$4.2 millions	US$15.8 millions	276%
Numbers of patents and new products	320	736	137%
Numbers of patent licences and the licensed number of models	86	304	253%

Source: Department of Higher Education (2011)

Meta Assessment

In order to measure its actual effectiveness and impact on Taiwanese higher education, the Research, Development and Evaluation Commission conducted a reassessment of the Ministry of Education's Excellence Programme in terms of mission and goals, review criteria and process, and impact at the end of 2010. The study adopted both qualitative and quantitative approaches to collect opinions from eight of the 11 recipient universities and from four international scholars of higher education. A survey targeting 138 top administrators from 11 universities and 30 reviewers was also conducted. All respondents were asked to fill out the five-scale questionnaires and present their opinions regarding four categories, including the goals, criteria, outcomes and impacts. The response rates were 42.8% and 36.7%, respectively (RDEC, 2010).

Mission and goal Over 80% of the respondents agreed that some of the missions and goals for enhancing the internationalization and excellence of Taiwan's higher education were appropriate, namely: improving the infrastructure of universities, cultivating top talent and increasing the volume and quality of publications. However, there is a lower level of agreement on the goal of setting up incubators on campus, with an average score of 3.9 from the institutions and 3.5 from the review panel. Compared with the other expected goals, both types of respondents disagreed on using global rankings as one of the measures (see Table 8).

Table 8. Respondents' attitude towards the mission of the programme

	Items	*Institutions*		*Review panel*	
		Mean	*SD*	*Mean*	*SD*
Qualitative	Internationalization and excellence in higher education	4.4746	0.6527	4.4545	0.5222
	Quality improvement of organizational governance and management	4.2712	0.7151	4.1818	0.6030
	Average	4.3729	0.6893	4.3182	0.5679
Quantitative	Number of top academic talents and professional	4.4310	0.6783	4.2727	0.6467
	Number of academic outcomes and research outputs	4.3276	0.9250	4.3636	0.5045
	Recruitment of top international scholars and researchers	4.3509	0.7674	4.1818	0.6030
	Academic exchanges and collaboration with domestic and foreign universities and research centres	4.2281	0.7324	*3.9091*	*0.7006*
	Number of university incumbent centres	*3.9123*	*0.9118*	*3.5455*	*0.8202*
	Average	4.2509	0.8235	4.0545	0.7050
	Overall	4.2867	0.7879	4.1299	0.6757

Source: The Research, Development and Evaluation Commission (RDEC) (2010)

According to Table 10, the institutional respondents tended to agree strongly on the statements of the need "to enhance the quality of university research and innovation and international visibility" and "to enhance the academic environment and quality of provision" positively. In fact, institutional respondents agreed more on items such as "to enhance the quality of university research and innovation and international visibility" and "to enhance academic environment and quality of provision" more than the other type. Moreover, the average scores on three statements regarding "outcomes of global rankings" were the lowest. In other words, both types of respondent didn't consider "having top ranked universities" as one of the expected outcomes (see Table 9).

Review criteria and process Most respondents agreed that recipients should be reviewed in terms of teaching as well as research. Regarding the review criteria, the institutional respondents tended to be more negative than the review panel (see Table 10). As to the review team, procedures, and control model, many institutional contributors questioned the professionalism and qualifications of the review panel and criticized aspects of the audit system, such as "submission of mid

Table 9. Respondents' attitudes toward expected outcomes

Items	*Institutions*		*Review panel*	
	Mean	*SD*	*Mean*	*SD*
At least one university ranked top 100 in the ARWU, QS and HEEACT global rankings within 10 years	*3.5424*	*1.0879*	*3.8182*	*0.9816*
At least one university ranked top 50 in the ARWU, QS and HEEACT global rankings within 15-20 years	*3.3390*	*1.0766*	*3.5455*	*0.9342*
At least ten fields or research centres ranked top in Asia in the ARWU, QS and HEEACT global rankings within five years	*3.7119*	*1.1604*	4.0909	0.5394
To enhance the quality of university research and innovation and international visibility	4.5424	0.5966	4.2727	0.6467
To attract top academic researchers and professionals from industry	4.2712	0.7388	4.0909	0.7006
To form substantial collaboration with foreign research academies and centres	4.2881	0.6708	*3.9091*	*0.8312*
To develop an objective assessment framework and granting model for institutions applying excellence projects	4.3051	0.7011	4.1818	0.9816
To enhance the academic environment and quality of provision	4.5593	0.5341	4.4545	0.5222
To integrate interdisciplinary research resources	4.2203	0.7208	*3.8182*	*0.7508*
To enhance overall national competitiveness	4.3898	0.6700	4.0000	0.7746

Source: RDEC (2010)

Table 10. Respondents' attitudes toward review criteria

Items		*Institutions*		*Review panel*	
		Mean	*SD*	*Mean*	*SD*
Governance and management		4.0207	0.9663	4.1455	0.8259
Infrastructure (equipment, facilities, internet, student dorms, international student house, library, etc.)	E-classroom and IT infrastructure	4.3621	0.6407	*3.9091*	*0.7006*
	Average	4.5115	0.5764	4.3333	0.7773
Research and teaching	(1) Internationalization	4.1186	0.7675	*3.8182*	*0.6030*
	(2) Financial resources	4.0169	0.8406	*3.6364*	*0.5045*
	(3) Alumni performance	4.1186	0.767	*3.5455*	*0.6876*
	Average	4.1849	0.7703	4.0918	0.7192

Source: RDEC (2010)

reports every three months", "number of on-site visits by external reviewers", and "no flexibility for funding allocation and accounting system" (see Tables 11 and 12).

Table 11. Respondents' attitude towards the review panel

Items	*Institutions*		*Review panel*	
	Mean	*SD*	*Mean*	*SD*
Composition of the review panel (academia, government, and industry)	4.0545	0.5242	*3.8182*	*0.6030*
Professionalism of the review panel	*3.8182*	*0.6963*	4.0000	0.6325
Schedule and timing for on-site visits	*3.8364*	*0.7395*	*3.9000*	*0.5676*

Source: RDEC (2010)

Table 12. Respondents' attitudes towards the review and control model

Items	*Institutions*		*Review panel*	
	Mean	*SD*	*Mean*	*SD*
Number of on-site visits by external reviewers	3.4068	0.7904	3.9091	0.5394
Submission of mid reports every three months	2.8983	1.0119	3.1818	0.8739

Source: RDEC (2010)

Impact on higher education Most respondents agreed with "the programme assisted recipients to enhance international visibility", "developing academic features" and "improving their ranks in global ranking". However, there was a slight divergence between universities and reviewers' attitudes towards "carrying out social responsibility and sharing the pubic with academic output", with 86% of institutional respondents expressing the belief they did as compared to 72% of reviewers. Both types of respondents also agreed that the programme led to several problems, such as "research is [esteemed] over teaching on campus", and that "the gap in educational resources between recipients and non-recipients" is widening faster than ever (see Table 13). Generally speaking, the respondents from the review panel were more pessimistic than those from institutions about the impact of the programme on Taiwanese higher education.

DISCUSSION

Public Concerns over Goal Achievement and Teaching Quality

The global competitiveness of universities has turned into a complicated issue of balancing the teaching and research missions of an institution. Moreover, there has been widespread discussion of the appropriateness of various assessment instruments, including rankings, overall higher education quality and an individual

Table 13. Respondents' attitudes towards the impact on higher education

Items	*Institutions*		*Review panel*	
	Mean	*SD*	*Mean*	*SD*
Emphasis on research over teaching	*2.9310*	*1.1373*	*3.2727*	*0.7862*
Emphasis graduate education over undergraduate education	*2.7458*	*1.1976*	*2.9091*	*0.8312*
Emphasis sciences over social sciences and humanities	*2.6607*	*1.2399*	*2.9091*	*0.9439*
Widening the gap in resources among institutions	*3.1864*	*1.2659*	*3.2727*	*1.1909*
Reduction of general education budget	*2.4407*	*1.1028*	*2.5455*	*1.1282*
Average	*2.7584*	*1.20155*	*2.9091*	*1.02355*
Enhancement of excellence campuses	4.1864	0.8803	4.0000	0.4472
Strengthening of institutional features and academic performance	4.3559	0.8461	4.0909	0.5394
Enhancing international visibility	4.4576	0.8371	4.2727	0.4671
Improving their ranks in the global rankings	4.4915	0.8978	4.1818	0.6030
Carrying on more social accountability and academic duties	4.3051	0.8760	*3.6364*	*0.6742*
Average	*4.40253*	*0.86425*	*4.04545*	*0.570925*

Source: RDEC (2010)

university's performance. Although the number of Taiwanese higher education institutions moving into the top 500 has been steadily growing and the number of publications has increased significantly, the excellence programme has provoked severe criticism over its indicators and purposes from Taiwan college presidents. Similarly, the Taiwanese general public has expressed concern about the concentration on the performance of a few selective institutions in both research output and teaching quality through targeted investment, for the targeted institutions are expected to improve upon the latter as well (Hou, 2012).

Moreover, many non-recipients are worried that research-oriented indicators might be adopted as the only criteria in the selection process for the second stage of the Excellence Programme in 2011. Some have contended that, the definitions used for "world-class university" and "top research centres" are variously interpreted. Furthermore, the Ministry of Education has not identified clearly which global ranking should be used as evidence for goal-achieving. Most important of all, the general public has voiced its alarm that teaching quality will be sacrificed owing to the new reward systems. According to HEEACT programme accreditation outcomes in the first cycle, the percentage of accredited programmes in two recipients was lower than 90% (Hou, 2012).

Rankings or not Rankings

It is evident that the rankings have their methodological limitations and in particular, they have led to what Neubauer has termed "reductionism". That is, they can lead to an unbalanced campus culture of research over teaching, whereby the emphasis shifts to the accumulated publication indexes and the use of reputational surveys (Neubauer, 2010) and hence the multi-functioning nature of a healthy university is lost. The QS ranking minimizes this problem with the use of a survey of employers, as well as university faculty/student ratios. However, no list of the strongest universities can capture all the intangible, life-changing and paradigm-shifting work that universities undertake. A global ranking cannot even fully capture some of the basics of university activity – learning and teaching quality. Besides, "using citation counts as a way of measuring excellence also presents serious problems", because these data "emphasize material in English and journals that are readily available in the larger academic systems", like in US, UK. Many studies also show that those with medical schools and departments in the hard sciences generally have a significant advantage, because these fields generate more external funding and researchers in them publish more articles (Altbach, 2006).

In the survey reported on above it was found that most respondents disagreed with rankings, but nevertheless, they are still having a considerable impact on higher education institutions in Taiwan. First, the fact that an increasing number of Taiwanese universities have been moving into the top 500 in the global rankings demonstrates that the efficacy and success of the Ministry of Education's Excellence Initiative programme. More and more Taiwanese institutions, including teaching-oriented universities, are encouraged to use the performance indicators of the global rankings as a benchmark to set their institutional long-term goals, such as "Moving into the Top 500". In fact, many have changed their institutional policies in some respect, such as Tam Kang University whose board of directors requested university administrators make a self-improvement plan based on each indicator of the HEEACT's global ranking outcomes (Hou, 2012).

Second, there is indeed a high positive correlation between the global ranking of institutions and their level of government funding. This suggests that the global rankings will marginalize teaching focused institutions, leaving them on the "knowledge periphery" of Taiwan's higher education system. In addition, the global ranking inevitably causes fiercer competition between universities, resulting in contestation over the allocation of government resources between research-oriented and teaching-type institutions. Moreover as higher education becomes more globalized the pressure from international competition and public accountability will accelerate the importance of accreditation and ranking in Taiwan.

Hawkins has advised that the excellence initiatives in Taiwan and other Asian nations should be re-examined to see what they have achieved thus far and whether: the continuous investment was worth it, whether they can be restructured to better achieve the goals and whether there should be a "mini" excellence initiative to help the smaller higher education institutions or private

institutions (2010, personal communication). At the same time, there should be money to encourage innovation and excellence in teaching independently from the excellence initiative (Salmi, 2010, personal communication). In fact, Taiwan government has provided other resources for other institutions to permit teaching quality enhancement.

A world-class university is a university with world-class people, especially in research. Asian excellence initiatives are already hunting for talent globally and their ability to deliver supportive work environments and good infrastructure (as well as agreeable salaries) makes them a formidable competitor with Western institutions for obtaining the best people. All in all, if Asian nations still aim to develop one or more world-class universities, they still have to fund only a few targeted schools with extra money to help reach that goal. That is, it will be impossible for all institutions to have this status (Morse, 2010, personal communication) and in fact, it will be available only to a privileged few.

CONCLUSION

"Competitiveness" and "concentrated investment" are two principles for higher education policy making in East Asia and it is inevitable that universities will continue to monitor closely their position in university rankings. However, there is little that most universities can do to improve its position in rankings in the short term. The way to climb the rankings is to become attractive to top staff and students, develop key research areas, engage internationally, and have enough resources to do things properly. These, we believe, are all things that well-run universities should be doing anyway.

Understandably, this study's findings concur with the view that the more nations invest in targeted institutions, the more they achieve. For example, mainland China's increased funding has led to more output in papers, internationalization and excellence. However, the financial sustainability of these investments is a big challenge for Asian nations, because "striving to achieve excellence should be an on-going goal regardless of the world-class university idea" (Hawkins, 2010, personal communication). For those who worry about the gap in quality and size, there will always be gaps in complex systems. The case of Taiwan has demonstrated that these worries regarding inequality are turning into a reality. However, although the gap between leading and following universities may grow, we agree that these nations need world-class universities and research centres.

Asian universities that act in this way will, over the medium term, become significant players on the world stage and hence, feature strongly in the world rankings. However, they are urged to approach the problems in that order, not the other way around, that is, a high ranking should come as a result of the pursuit of comprehensive excellence and not as a barren auditing exercise aimed simply at acquiring the badge of being a world-class university.

REFERENCES

Altbach, P. G. (2006). The dilemmas of ranking. *International Higher Education*, *42*. Retrieved February 22, 2006, from http://www.bc.edu/bc_org/avp/soe/cihe/newsletter/Number42/p2_Altbach.htm

Department of Higher Education. (2011). *Five Year – 50 Billion Programme for Developing First-Class University and Top Research Centers*. Retrieved April 1, 2011, from http://www.edu.tw/high/itemize.aspx?itemize_sn=3520&pages=1&site_content_sn=1234

Halachmi, A., & Ngok, K. (2009). Of sustainability and excellence: Chinese academia at a crossroads. *Public Administration Review*, *69*(December), 13–20. Retrieved April 10, 2012, from http://gms.sysu.edu.cn/kyglxt/lunwen/uploads/keyan/2304.pdf

Hawkins, J. (2010, June). Personal communication.

Higher Education Evaluation and Accreditation Council of Taiwan. (2011). *Performance Ranking of Scientific Papers for World Universities*. Retrieved from http://ranking.heeact.edu.tw/en-us/2011/homepage

Hou, Y. C. (2012). Impact of excellence programmes on Taiwan higher education in terms of quality assurance and academic excellence -examining the conflicting role of Taiwan's accrediting agencies. *Asian Pacific Education Review*, *13*(1), 77–88.

Hou, Y. C., Morse, R., & Chiang, C. L. (2012). An analysis of positions mobility in global rankings: Making institutional strategic plans and positioning for building world-class universities. *Higher Education Research & Development*. (In press).

Korea Research Foundation. (2010). Official website. Retrieved January, 2011, from http://www.krf.or.kr/KHPapp/eng/mainc.jsp

Levin, R. C. (2010). *The Rise of Asia's Universities. President Levin's Speeches and Statements*. Retrieved January 1, 2011, from http://opac.yale.edu/president/message.aspx?id=91

Marginson, S. (2010). Higher education in the Asia-pacific: Rise of the Confucian model. *Evaluation in Higher Education*, *4*(2), 21–53.

Ministry of Education. (2011a). *Education in Taiwan 2010–2011*. Retrieved April 1, 2011, from http://120.96.85.10/news055/2011070702.asp?c=0200

Ministry of Education. (2011b). Developing world-class universities and valuing higher education. *Higher Education, Technological and Vocational Newsletter*. Retrieved April 1, 2011, from http://120.96.85.10/news055/2011070702.asp?c=0200

Mok, K. H. (2002). Reflecting globalization effects on local policy: Higher education reform in Taiwan. *Journal of Education Policy*, *15*(6), 637–660.

Morse, R. (2010, November 23). Personal communication.

Neubauer, D. (2010). Ten globalization challenges to higher education quality and quality assurance. *Evaluation in Higher Education*, *4*(1), 13–38.

Oba, J. (2008). Creating world-class universities in Japan: Policy and initiatives. *Policy Futures in Education*, *6*(5), 629–640. Retrieved April 10, 2012, from http://dx.doi.org/10.2304/pfie.2008.6.5.629

Quacquarelli Symonds. (2011). *World University Rankings*. http://www.topuniversities.com/university-rankings.

RAND. (2010). *Evaluating the BK 21 Programme*. Retrieved April 1, 2011, from http://www.rand.org/content/dam/rand/pubs/research_briefs/2008/RAND_RB9332.pdf

Salmi, J. (2009). *The Challenges of Establishing World-Class Universities*. Washington, DC: The World Bank.

Salmi, J. (2010). Personal communication.

Shanghai Jiao Tong University. (2011). *Academic Ranking of World Universities (ARWU)*. http://www.arwu.org/

Shin, J. C. (2009). Building world-class research university: The Brain Korea 21 project. *Higher Education*, *58*(5), 669–688.

The Research, Development and Evaluation Commission. (2010). *Meta Evaluation on Development of a World-class University and Top Research Centre Programme*. (RDEC-CON-099-001). Unpublished.

Wang, G. H. (2010). *China's Higher Education Reform*. Retrieved February 16, 2011, from http://www.chinacurrents.com/spring_2010/cc_wang.htm

Yonezawa, A. (2007). Japanese flagship universities at a crossroads. *Higher Education*, *54*(4), 483–499.
Yonezawa, A. (2010, June). Personal communication. Japan: JIHEE.

AFFILIATIONS

Yung-Chi Hou (Angela)
Graduate School of Educational Leadership and Development,
Fu Jen Catholic University, Taiwan
Dean of the Office of Research and Development
Higher Education Evaluation and Accreditation Council of Taiwan, Taiwan

Martin Ince
Martin Ince Communications Limited
London, UK

Chung-Lin Chiang
Fu Jen Catholic University, Taiwan