CHAPTER 21

The Asian Tiger University Effect

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INTRODUCTION

A common wisdom is that we are now entering the Asian Century, having travelled the American century in the 1900s and the British century in the 1800s. This reflects the array of impressive economic indicators emerging in the East. As the *Australia in the Asian Century* white paper (Australian Government, 2012) notes, in the past 20 years alone China and India have "almost tripled their share of the global economy", and the Asian Development Bank estimates that by mid-century "an additional 3 billion Asians could enjoy living standards similar to those in Europe today, and the region could account for over half of global output". (ADB, 2011). Such profound change prompts many questions, not the least being the implications for the world's research universities.

The quest for world-class universities in Asia has been a topic of interest for some time (Niland, 1998), with a growing literature of policy analysis (Tan, 2008) and comprehensive case studies (Altbach & Salmi, 2011) emerging in recent years. While the story with China and India will continue to dominate, equally interesting questions lie with a subset of other countries often referred to as the Asian Tiger Economies: Hong Kong, Taiwan, Singapore and Korea. Their stunning economic growth over the past several decades has already lifted living standards to developed-country levels for many of their citizens. They have also laid strong foundations for developing first-rate university systems, with some comprehensive universities, such as Hong Kong University and the National University of Singapore, already well-established in the top band of world-class universities. But this is just the start, for a wave of new, more agile universities may well be on the way.

One marker is the rankings of newer universities — those under 50 years old — by QS and THE. Impressively, the QS top seven in the under-50s group also make it to the top 100 of the main ranking table. And five of that seven are from three of the four tiger economies: Chinese University of Hong Kong (CUHK), Hong Kong University of Science and Technology (HKUST), Nanyang Technological University (NTU), Korea University of Science and Technology (KAIST) and Pohang University of Science and Technology (POSTECH). Taiwan seems to be the exception in the nexus between tiger economy and tiger university: National Yang Ming University, at rank 37, is the only Taiwanese university to appear in the young list, while Taiwan National University, at 134, is the only Taiwanese university to rank in the top 200 of the main list. (O'Leary, 2012). A similar profile appears in the Times Higher Education World University young list (THE, 2013) where POSTECH is one, HKUST is two, KAIST is five, CUHK is 12, NTU is 16 and National Yang Ming is 30.

Against this background emerges the idea of the Asian Tiger University. No model is invariable and none of the three rapidly rising star universities taken as reference points for this paper carry all elements discussed below. But a mix of core features can be identified. The typical tiger university is newly established, usually purpose designed to fast track to eminent international standing as a research-intensive university. It is extremely well funded, at least in comparative terms, and serves both as a magnet for international recruitment of faculty and students, and as a beachhead for change in sibling (even national flagship) universities which have followed more traditional (and leisurely) paths of development. It is more often specialist than comprehensive, generally with an emphasis on science and technology. It is well embedded in nation-building strategies, and it is expected to reciprocate with its own deep determination to rise to the top in the minimum time. Thus, "the young aristocrat" or "young gun" or "princeling" universities (as they are sometimes called) in the tiger economies are being cast both as contributors to social enhancement and aerobic economic advancement, and as beneficiaries of that dynamic. Like a country's flag carrier airline of an earlier era, they are expected to build the national reputation (and do so probably with a better cost: benefit fit!)

This paper aims to address three main issues.

- To understand the environment or general context within which the Asian tiger university effect or dynamic is emerging: why Asia, why now?
- To examine the key core strategies being implemented by several Asian tiger universities, notably Singapore Management University (SMU, established 2000), Hong Kong University of Science and Technology

(HKUST, established 1991) and South Korea's Pohang University of Science and Technology (POSTECH, established in 1986).

- To assess the overall impact of the tiger university effect on the various stakeholders, both at home and abroad.

THE GENERAL CONTEXT

"Singapore universities today … exist in a complex societal and economic ecosystem and interact with many parties — research institutes, business, government agencies and the wider community." (Tan, 2008: 138). Beyond this, relevant ecosystem elements in the tiger economies include issues of demographics, geography, IT capacity, IP security, judicial integrity and the rule of law, governance norms, cultural commitment to education, personal and corporate attitudes to philanthropy, and much more. Salmi (2011: 342) speaks of "the weight of the tertiary education ecosystem in influencing the performance of research universities in seeking to achieve world-class status", making reference, *inter alia*, to quality assurance, the regulatory framework, vision, leadership and reform capacity, and resources and incentives.

For the purposes of this discussion, the focus is on five of the ecosystem elements that seem particularly critical to the tiger universities referenced here: economic momentum; aspirational society; higher education environment; lively public policy climate (for the advancement of universities onto the world stage); and global portals.

National Economic Momentum

To state the obvious, it is no accident that higher education has fared better in developed economies, and best under growth scenarios: "For much of the nation's history, American universities recognized that their existence and success were intertwined with the economic fortunes of the nation. Economic growth, in turn, has been inexorably tied to the increase of new knowledge and an educated population." (Schramm, 2008: 19). A similar story is evident in Europe, where the Prussian government was supporting the Humboldt model "because it promised to assist in national development and help Prussia — and later Germany — to achieve international power and influence". (Altbach, 2011: 15).

The higher education systems in Asia are the latest, and most intense, variant on this particular compact between government and gown: national pride is clearly part of the mix; well-founded goals for economic growth are more ambitious; and the compact is set to a much tighter time frame than has been evident in other eras — yet another reflection of the raw competitiveness that comes with globalization. A sense of urgency prevails, and this helps shape the

strategies in higher education systems generally, and for the tiger universities in particular. The comparison is made even more stark by Schramm's assessment that "the United States has watched its universities slip further from economic relevance … as other countries have been more ambitious about establishing the vital link between university research, student education and economic growth". (Schramm, 2008: 25). And in this "race to the top", more than "bragging rights are involved … for a world-class university system is a powerful engine for economic development, and research is the fuel powering that engine". (Normile, 2012: 1162).

National economic momentum, together with the drive of the educationally aspirational society, is key in understanding the "why Asia, why now" aspect of the tiger university dynamic.

Aspirational Society

Education is widely seen as central to societal aspiration in Asian cultures. One particularly strong example is South Korea, where words like "thirst", "mania" and even "abnormal" have been used to describe "education's hold on South Korea's collective psyche and its shaping of society." (Morgan, 2010: 1). As Duderstadt *et al.* (2008: 282) note, Korea's "Confucian culture has long placed a high premium on Education", leading to an extremely high proportion (80%) of high-school graduates going on to college. But there are two sides to this coin. The style of its mass higher education system has also been fingered for reinforcing Korea's tendency towards monoculture, and denying universities a strong research dimension. The advent of the tiger university strategy, in particular the emergence of KAIST and POSTECH, together with enhanced government funding, has bolstered Korea's research effort. New and less hidebound, these two rising stars have also led the way in meeting government priorities for a balanced set of admission criteria to better reflect a more nuanced sense of merit. One lesson seen time and again, in Singapore and Hong Kong as well as in Korea, is that the tiger university creates a beachhead for reform elsewhere in the country's higher education system.

In Asia, success in the education domain is particularly prized (in contrast, say, to Australia where academics often complain about the national obsession with international sporting success!), and students seem more driven to keep company with the best. Against this background, governments (and private sponsors) have more scope to differentiate, and to implement funding strategies that in many western countries would face serious opposition on equity grounds. Another effect of the high valence on education is mega-philanthropy, examined shortly.

The media in Singapore, Korea and Hong Kong widely report rises in the rankings of their universities, and the tiger universities are becoming prominent locally for their international standing. This, in turn, boosts their capac-

ity to compete with the flagship universities for top students, and to some extent mutes the flow of the most talented local high school graduates to brand name universities in the U.S. and the U.K. From an early stage, POSTECH attracted the top 1% of high school graduates, and by the ten-year mark several of SMU's schools were level pegging (at least) with NUS and NTU in the student quality stakes. In 2013, undergraduates at the SMU Law School (established in 2006) won the Singapore division of the prestigious Jessup International Mooting Competition, and placed second in the world finals. Oddly, though, HKUST spent its initial decade with a stronger reputation abroad than at home, and its undergraduate admission profile was nothing special, but by the 20-year point that had changed dramatically.

Educational Environment

The tiger university is not established, nor could it develop, in a vacuum. Important elements of the prevailing ecosystem include: a network of established universities which in one dimension are supportive and in another are competitive; a mature administrative framework for oversight of the university sector, including external quality monitoring and assurance; public policy provisions that accept, preferably promote, differential funding and in other ways foster the new university (in much the same manner as tariff protection does in the infant industry proposition of international trade theory).

In Hong Kong the university sector is overseen and shaped by the University Grants Committee (UGC), an intermediary between the Government and the universities. It distributes a total of US$585 million annually to the eight universities for research, of which about 20% is through a competitive grants system. International scholars sit on an array of discipline panels that channel funding support to projects based on merit, (as opposed to formulaic block grants for each university based on student numbers). Over the past ten years the UGC has leveraged its funding authority to shape the system in ways important to the development of top-line research universities. One outcome might be seen in Hong Kong's unparalleled success in the various rankings exercises: three of its universities now place in the top 50 of the QS rankings. Put another way, over 50% of Hong Kong's students attend a university in the top 75 of the various recognized ranking regimes. This is one important element of the higher education ecosystem that stimulates HKUST (and CUHK for that matter) to rise as strongly as it has.

Singapore displays a similar quality profile. Two of its four universities currently rank in the top 100 of the main ranking regimes, and over 70% of enrolled students are at NUS or NTU. As to Korea, a much higher proportion of students go on to post secondary education, there are many more universities and those ranked highly are generally smaller, with the result that the same quality profile for the sector is not so evident.

Lively Public Policy Climate

The language of public-policy pronouncements in the tiger economies is alive with references to higher education hubs, world-class recognition, eminent international alliances and so forth. It is tempting to sometimes see this as an exercise in hubris, but the record in Korea, Hong Kong and Singapore speaks for itself. In each country, the advancement of higher education is a front foot public policy issue, and this creates an ideal environment for the tiger university dynamic.

In Hong Kong, the move in 2012 by all eight universities in the UGC system from a three- to a four-year undergraduate degree standard came as part of perhaps the most intense government-initiated reform to a university sector anywhere in the world in the past 25 years. The liveliness of the public policy climate in Hong Kong is also reflected in the government's pursuit of merger between the HKUST and CUHK. Ultimately abandoned in 2004 because of a bruising public debate and fierce opposition from HKUST (reflecting its tiger culture), we see that not all national strategies to advance higher education arrangements follow the planned path. The idea behind the merger proposal was to create twin peaks of excellence, with the merged entity joining HKU at the top table of world universities (Niland, 2004). It can be argued that the serious threat of merger spurred HKUST (and to some extent CUHK) to even stronger performance. As O'Leary notes, by 2012 HKUST was the top-ranked Hong Kong university in the QS regime, and the leading university in Asia by this measure (although this order was reversed in the 2013 THEWUR listings, highlighting the relative volatility and variability of these exercises).

In Singapore, higher education is a headland public policy issue, and government, through its Ministry of Education (and to some extent its Economic Development Board), actively shapes the sector in ways that would probably be resisted in Europe, Australasia and North America where university culture is more laissez faire.

Global Portals

Some university systems, as well as their component institutions, are more globally engaged than others. The tiger university dynamic is best fostered where the broader national system drives international engagement. Government involvement is critical, and can range from visa regimes designed to facilitate international student enrolment and faculty recruitment, to strategic funding, such as for major research projects that meet standards set through international peer reviews. Each of the reference countries illustrates in their own way how to build windows on the world — the global portals.

In Hong Kong, a third of the University Grants Committee's members are from overseas. They are mostly serving or former university heads and in the

past 10 years have been drawn largely from the U.K. and the U.S., but also from Australia, the Netherlands, Singapore and China. Major reviews of the system, conducted every ten years or so, are led by overseas experts, as are particular enquiries into specific problem issues. The 13 panels of the Research Assessment Exercise (RAE) are all led by overseas academics of international standing. The Hong Kong government further enhances its global portal by funding 135 new doctoral fellowships each year to attract "the best and brightest students in the world to pursue their PhD studies in Hong Kong institutions", assigned on a competitive basis. For Hong Kong, another important portal is the higher education strategy of China. One example is the Shenzhen Campus Project in the Pearl River Delta, sponsored by municipal authorities, which has drawn a significant cross-border presence from six of the eight universities in Hong Kong.

With Singapore, the global culture in higher education is advanced through many initiatives. Prominent is the region's most active and well-funded program to bring into the country elite overseas universities for deep collaboration with local universities: medical schools at NUS by Duke University and at NTU by Imperial College, the Yale-NUS Liberal Arts College, the MIT cornerstone stake in the new fourth university, Singapore University of Technology and Design (SUTD), and the mentoring of SMU by the Wharton School in its start-up phase. Also of note is the standalone branch campus of INSEAD. Another indicator of the strength of Singapore's global window is CREATE (Campus for Research Excellence and Technological Enterprise) which leverages Singapore's strengths as a doorway to Asia for elite universities and corporate research labs wishing to set up their own bases nearer the action. The support funding is impressive, said to be about US$400 million over 5 years, and has attracted some nine entities from an array of elite universities including Cambridge, MIT, UC Berkeley, ETH, Teknion-Israel, as well as Shanghai Jiao Tong and Peking Universities. All will partner with Singapore universities in various ways, including hosting their PhD students.

The Korean University system has been less global in outlook than Singapore and Hong Kong, but this is changing. There is a stronger effort to adopt English as a mode of instruction at its leading universities, with POSTECH becoming a bilingual campus in 2010 and English the mode of instruction for most undergraduate and all postgraduate courses. The government is sponsoring the Songdo Global University Campus (SGUC). Located in the Incheon Free Economic Zone (IFEZ), it operates as "a university complex, where foreign universities are located together" and offer their own degrees. A special independent administration manages campus facilities (Jung, 2011).

Each of the three countries builds its own style of global portal. The details vary, but the central purpose is constant: to create a global-rich cultural setting to further foster international alliances at the discipline and individual-

researcher level, and to promote cross border faculty collaboration, not to mention enhancing the international recruitment of faculty as the sector continues to expand. This all builds a virtuous, self-reinforcing circle which is a necessary (though not sufficient) condition to deliver on the tiger university ideal.

THE CORE STRATEGIES

The first prerequisite for the development of a tiger university is an overall ecosystem that will be supportive of this ideal. The second prerequisite is a set of specific strategies adopted by the tiger university to carry forward its rapid rise to international prominence. The list of potential strategies is long, and their effectiveness will vary from country to country. Those that seem to be core, judging from the journey travelled by HKUST, POSTECH and SMU, relate to: differentiating themselves from other institutions in their national system; tapping into patrons with deep pockets; engaging the strategic hand of government; adopting modern management systems for both academic and administrative domains; attracting eminent international partners and leveraging from this the recruitment of first-rate faculty; consciously crafting a university culture which prizes research and global engagement; and purpose-designed governance, both at the institutional level and for the academic community. Enviable campus facilities also figure prominently.

The *Sui Generis* factor — be Different

Inevitably, the tiger university promotes itself as breaking the mould in ways that matter: degree structures; teaching modes; special, even unique, areas of disciplinary concentration; geographical location; eminent partnering institutions; influential sponsors; a special institutional spirit, energy and drive … the list goes on. The tiger university needs to present itself to stakeholders as something really new, a breath of fresh air, but still with its feet on the ground. For prospective students and their parents, this may come across as better career paths in a rapidly changing world; for prospective faculty, the magnet may be the opportunity to work in an exciting environment with top-notch infrastructure and premium funding to support the type of research that supercharges the CV: "flocking to Asia for a shot at greatness", as Normile (2012:1) describes the phenomenon. The danger, always, is that the start-up will be seen as an upstart. Thus the whole *sui generis* package needs to make plausible the declared goal of reaching world standing in 20 to 30 years, not the traditional 100 years plus. Credibility is critical.

For POSTECH, lines of differentiation started with its patronage from POSCO (Pohang Iron and Steel Company), leading to an extremely well-funded specialization in science and technology. Early on, POSTECH

launched a lively marketing campaign to prospective students across the country, highlighting: their unprecedented level of resourcing; full fee waivers; free on-campus accommodation and other forms of student support; their academic excellence; and their positive differences. As Rhee (2011: 107) notes, "historically, such promotional activities simply were not practised by universities, least of all by elite universities". As with SMU and its energetic marketing program, POSTECH broke tradition to better compete, and in ways which were soon taken up by the legacy institutions themselves.

For SMU, the niche narrative was built around its introduction into Singapore of the North American four-year undergraduate degree arrangement, rather than following the three-year British model prevailing at NUS and NTU. SMU also adopted faculty structures and promotion review processes common at American universities. It was described as a private university (albeit mostly built with public funds) which enabled the Government to see it as Singapore's first "autonomous" university with a "corporate style" governing body. Within several years, NUS and NTU had been translated into autonomous universities. Equally important, SMU was Singapore's first specialized university, as distinct from the much larger conurbations at NUS and NTU. All these unique design features were consciously built into the model developed by the Government, or they flowed from it. (Tan, 2008: 132). For HKUST it was the tag line "be different — do not duplicate" which guided much that unfolded.

From this orientation the tiger universities in Singapore, Hong Kong and Korea became beachheads for change across the sector, a key impact which is considered in the final section.

Patrons with Deep Pockets

A feature common to young universities on the rising star path is a massive funds infusion in the start-up stage. This can arise from several sources: for SMU it was a particular premium funding formula implemented by government; for HKUST the initial boost came from a high-ranking community institution, the Hong Kong Jockey Club; and for POSTECH it was corporate benefaction from POSCO. This is not dissimilar from the U.S. for what are now many of its world-class universities, but there the benefaction was private from the beginning, with names such as Carnegie, Rockefeller, Mellon, Cornell, Stanford, Hopkins and Duke obvious examples. One hypothesis is that such state, corporate or community benefaction, as distinct from private benefaction, more strongly sets the new university into a type of nation-building obligation, and this is certainly reflected in the tiger university dynamic.

In Hong Kong, the Jockey Club is a wealthy non-profit entity, with a deep commitment to supporting higher education. This is well reflected in its foundation pledge in 1987 of US$192 million, or two thirds of the start-up costs

for HKUST. As the HKUGC observes, "the success of HKUST today (simply would) not have been possible without HKJC's generosity." POSTECH's endowment is largely donated POSCO stock valued at about US$2 billion today, give or take market fluctuations. One downside is that the dominance of its leading Patron to some extent "makes it more difficult to reach out to other potential sponsors and donors" (Rhee, 2011: 123). And, as with SMU (and HKUST to some extent), the model of small classes limits the pool of alumni to be tapped. Most challenged on this front is POSTECH which in the period 1990-2012 had produced just 15,097 graduates: 2,455 PhDs, 6,733 MSc and 5,909 BSc.

SMU's endowment and surplus, at the ten-year mark since its founding, was about US$700 million, built up through donations and the Government providing three-to-one matching of private donations in the period 2000 to 2004, and thereafter one-to-one matching, which is standard in Singapore (and to some extent, in Hong Kong). Completing the picture, the Government allows 2.5 times of tax deduction per dollar donated. One donor is reported to have calculated that these policies "effectively mean that every $1 contributed could potentially become $8 for the endowment". (Appell, 2013).

The sheer scale of the start-up funding, not to mention the patron's profile, creates a halo effect, which gives the new university some greater credibility in articulating its grand plans for world-class status in a short time. In this, the physical face of the new university is also important, and patrons have played a major role here at all three tiger universities. For SMU, a cornerstone element in its government funding was a new, purpose-built campus, adjacent to the financial district. POSCO provided a remarkable facility for POSTECH, and the various patrons for HKUST ensured an iconic campus development at Clearwater Bay. All of this gives comfort to potential faculty and students who might otherwise demur about involvement with what in reality is an unproven entity. A striving new university needs a good "story" to attract top students and faculty, and there is perhaps no better start than storied funding. By contrast, many of the world's blue ribbon universities have a large and often quite wealthy alumni cohort, who fill the patron role, with Stanford currently the outstanding case.

Strategic Hand of Government

In Asia, the targeted development of a particular university into the company of the best of Europe and North America means that government quite openly exercises its hand in more actively shaping research focus, areas for teaching emphasis and the needs of human capital planning. For the tiger university, this figures as part of their contribution toward nation building. Certainly research universities in the West are now familiar with the "piper's tune" rule, as Newby noted in quoting the British cabinet minister on the point that uni-

versities could indeed hope for a return to traditional autonomy, but they should then also expect medieval levels of public funding! (Newby, 2008: 61). But the role of public policy and the contingent funding that comes with it, is more intense in Asia, and perhaps more accepted, though not without some concerns being expressed from time to time. It is in this context, for example, that a Yale-NUS leadership group recently emphasized that "the administration will not be instituting any speech restrictions (and that) faculty members and students must judge for themselves the best manner to express their ideas, determining the balance of sensitivity and provocation." (Davie, 2013b).

In Singapore, a key strategy has been preserving post-secondary sector boundaries and offering differentiated funding, reflected in the clear distinction made between the four public institutions on the university side of the institutional divide, and the five public polytechnics on the other. Unlike Australia and the U.K., Singapore has firmly resisted upgrading "adjacent" institutions into the university sector, which in terms of outcome has been to the benefit of both universities and polytechnics. By setting SMU into the university sector (rather than upgrading a polytechnic to it) the government clearly signalled an expectation of higher scholarship, particularly in world-class research. It is too early for SMU to be considered in the institution-wide ranking exercises such a ARWU, QS or THEWUR, but one indicator of early success is the various discipline-specific ranking regimes based on referred articles in top-line academic journals. Thus, after just 12 years, SMU ranks 3rd in Asia and 52nd globally in the UTD list for Business; 3rd in Asia and 66th globally in the Tilburg University rankings in Economics; for Accountancy in the BYU regime it ranks 4th in Asia and 44th globally (on a par with the London School of Economics). By 2012 the Lee Kong Chian Business School had become the youngest ever to gain both AACSB and EQUIS accreditation.

Another critical requirement from the Singapore Government was the adoption of the North American four-year undergraduate degree standard. Also important, SMU has been shaped as a niche university, as has Singapore University of Technology and Design (SUTD), the newest rising star, where MIT plays a similar guiding role to that of Wharton for SMU (see para 42).

In Hong Kong, a number of polytechnics were brought into the university sector in the 1990s, but by 2009 the UGC had drawn the line on research standards expected, and, despite an intense campaign for elevation, determined that the Hong Kong Institute of Education, which for historical reasons was part of the UGC regulatory framework, nonetheless should not take on the university title. In another sweep of the government hand, the overall higher education budget is effectively top sliced for the Research Grants Council (RGCHK) to operate a competitive bidding process. This has facilitated funding that is differentiated by excellence, an essential building block for the tiger university as it moves past start-up stage. Thus, by 2009 HKUST's

application success rate was 47%, ahead of 36% for the other two (and somewhat older) research universities. As Postiglione notes (2011: 65), the amount awarded per HKUST faculty member was almost double that for any other university (although some allowance should be made for variable discipline mix).

Modern Management Systems: Academic and Administrative

A feature common to SMU, HKUST and POSTECH is their departure from management styles common in legacy institutions. All three eschewed elected deans and opted for appointment by a high-level search committee, internationally focussed, with a core of members coming from the school in question. With HKUST this provided useful precedent for HKU when, in 2003, it departed from 100 years of tradition in favour of international searches for deans over internal elections. This helped reshape the budgeting system, with greater devolution of responsibility (with accountability) to the dean and others at the school level.

POSTECH, reflecting its origin with strong private sector patronage, imported POSCO's "management techniques and systems, albeit selectively", thus avoiding "bureaucratic red tape and decision-making procrastination", argued to be evident in many of its older colleague institutions. Beyond this, the university plan carried performance indicators, published on the website, detailing metrics, timelines and deadlines. This represented a "massive departure" from management practices in Korean university circles in the 1980s. (Rhee, 2011: 108).

Academic management systems at SMU initially drew heavily on Wharton's experience and input (the first president was a senior professor on leave from Wharton), applying the Wharton governance handbook from day one to facilitate a fast-track start-up. More recently, INSEAD thinking (reflecting the background of the fourth president) has been influential, as for example with the introduction in 2013-14 of responsibility centre accounting, and a business process improvement unit (incorporating the Six Sigma Methodologies), which together drive both cost efficiency and transparency, as well as developing management skills to deliver better productivity, efficiency and innovation. Beyond this, annual performance reviews for senior academic managers were introduced early on, and then extended to the academic ranks, where annual remuneration adjustment varies under a bell curve, and follows specific merit reviews (rather than the more traditional method of the U.K. and Australian systems of essentially automatic increases, uniform across the faculty). Two further design features served to boost research performance. First, and in another departure from the style of NTU and NUS, SMU remuneration incorporates the "ninths" system of North America, which reinforces the role of individual performance in adjusting total remuneration. Second,

differentiated appointment and promotion modes operate. In the teaching and practice tracks, faculty face lighter research requirements but heavier teaching loads, and vice versa in the tenure track. The challenge has been to give legitimacy and standing for practice or teaching faculty in an environment where research is so prized.

The North American tenure clock of seven or eight years has been adopted by HKUST, POSTECH and SMU, and draws on significant input from leading overseas academics in the referee process. Inevitably, some fail to gain tenure, and in an Asian context this can be quite problematic, even traumatic. Also, the more limited array of alternate job opportunities, particularly in Singapore, presents a further difficulty for those who fail to secure tenure or contract renewal.

Eminent Partners, Top Faculty

One effect of globalization is that virtually all research universities build international alliances, for purposes ranging from student exchange to faculty research collaboration. For the tiger universities the imperative is towards a deeper and more complex collaboration than the norm. As with the eminent patron, the eminent partner institution can accelerate credibility, particularly important in the start-up phase when external perceptions of the new university are formative. This strategy served SMU well, as the association with Wharton and then Carnegie Mellon University helped encourage senior research faculty from overseas to take up permanent and visiting appointments, and to join research project teams. In Singapore the CREATE initiative bolstered this effect. Partner immersion to help initial planning and institutional development is also evident with the role of MIT at SUTD. The level of funding from Singapore to attract and sustain these eminent partner relationships is not published, but is doubtless significant.

While the start-up phase for the tiger universities in Hong Kong and Korea also has seen partnerships with top-tier offshore universities, both HKUST and POSTECH have concentrated more on industry alliances. HKUST early on established the Research and Development Corporation (RDC), a wholly owned subsidiary dedicated to commercializing faculty research and innovation, and pushing the university into the global world. At POSTECH the relationship with POSCO led to the early establishment of a world-class particle accelerator, whose effect was to draw in eminent scholars to collaborate with POSTECH researchers. Their jointly authored papers gave a small and young university a remarkable opportunity to feature in top-line journals, adding both to POSTECH's recognition factor, and enhancing standing in international league tables, which in turn contributed to a virtuous circle for offshore faculty recruitment. This is a classic tiger university dynamic, where "academics from around the world are taking jobs in Hong Kong and Singapore …

lured by generous budgets and a welcome sign for foreigners". (Normile, 2012: 1162).

At HKUST, an important element in the recruitment dynamic was the founding president Woo Chia-wei who, as "the first person of Chinese descent to head a major university in the United States", leveraged this distinction into recruiting excellent faculty, "a key factor in its rapidly won success". (Postiglione, 2011:77). The parallel at POSTECH is where a high-profile foundation president who, with the encouragement of POSCO, exercised greater authority than normal for Korean private universities in recruitment, implementing a two-step process. First, tap the high end of the Korean scientist and engineer pool in the U.S., and then fund them to energize the recruitment of rising star faculty from the U.S. and Korea: "Every year since then, the backbone professoriate has successfully attracted a large number of talented young scholars". (Rhee, 2011: 108).

Consciously Crafted University Culture

Each of the three tiger universities referenced here has made conscious efforts from the very beginning to embed into the academic culture a deep commitment to research and the need for strategies to build international recognition. While these values are common in promotional material and vision statements of most universities, the hard reality is that it takes a deep commitment to deliver on the ideal. The drive (even hunger) for recognition needs to go beyond building any individual's CV, to the core spirit of the whole university. In some respects this runs counter to the norm in academic communities where store is placed on self-determination and individual autonomy, which is one dimension of academic freedom. So, much depends on the founding leadership's capacity to not only inspire with the vision, but in quite pragmatic ways to structure systems and implement standards that reinforce the desired institution-wide culture; it does not happen automatically or organically.

Recruitment of the founding cohort of research committed professors is critical, and one strategy has been to bring in eminent scholars on extended visiting appointments to demonstrate the priority being given to research excellence, and to help recruit and mentor the first cohort of younger scholars. The tenure and promotion system discussed earlier is equally important, and again there is a clear indication that each of SMU, HKUST and POSTECH, from the outset, adopted strong research standards in promotion and tenure matters. In many respects the first ten years are the most formative, and research culture is particularly difficult to retrofit.

As with faculty, a university's culture both influences and is influenced by the student body. SMU, for example, looks for prospective students with more than high grades. In 2013 a range of faculty-led panels is interviewing all 7,000 short-listed applicants to fill its entry positions, which in 2012 num-

bered 1,900 places (www.smu.edu.sg). The filter is to find students with high grades who will prosper in the four-year undergraduate environment. Employers are said to speak of the SMU difference: students that are "a distinct breed, outspoken, confident and willing to tackle the unfamiliar" (Davie, 2013b).

The physical quality of campus at all three tiger universities also has helped shape culture, by encouraging students and faculty alike to feel they are in a special place. This in turn dovetails with and enhances academic aspiration. Universities, it seems, can proudly operate in diminished physical conditions (as with the artist's garret!) once they have made their world reputation, but certainly not before that these days.

Fit for Purpose Governance Framework

Governance in a university setting can be taken to mean that system of checks, balances and oversights which give legitimacy to decision-making. Two broad levels operate: institutional governance relates to the university's governing body, and the roles and responsibilities it reserves to itself and board committees; and academic governance, which assigns roles and responsibilities for running the institution to the President, and on throughout the academic hierarchy. At both levels the tiger university often displays arrangements quite different from the general pattern in the legacy universities (although, of course, there is variation in detail). This reflects both the Asian context and the core objective of fast tracking the new university to a world standing.

At the institutional level, the governing body of the aspirant start-up university tends to be smaller and can be found to operate more along "corporate" rather than "representational" (some might even say "collegial") lines. At POSTECH and SMU, for example, no trustees are elected and none are drawn from the ranks of students or faculty (at least at this stage), as is common in legacy universities.

In the start-up phase the governing board of the tiger university tends to reserve greater decision-making to itself (but can be expected to step back over time). Similarly, the president is more inclined to a centralized approach with academic administrative roles. This way, it might be argued, the board and a president can sharpen the strategic focus and shorten timelines in the growth path. This contrasts with the standard culture in large established research universities where over many years the faculty have driven a lower centre of gravity for decision-making on academic matters such as recruitment and promotion, and sometimes in what are posited to be related issues, such as budgeting and strategic direction.

There is a delicate balance between centralism to set and embed the culture and the planned growth path on the one hand, and on the other hand staged devolution to meet best practice and the expectations of academic communi-

ties, particularly where recruitment of top, overseas scholars is key to the strategic plan. This highlights a critical issue in the launch and early development of the tiger university: how to shift the governance centre of gravity, and to what timeframe? At SMU, for example, an academic subcommittee of the Board of Trustees had prime carriage of the faculty appointment process in its first decade, but now, in the second decade, this role has been delegated to the President in consultation with a committee of eminent professors (internal and external). Important aspects of budget responsibility are also being devolved from the relevant Board level committee. By the third decade, with the research culture well and truly set, both academic and institutional governance should have matured. The critical issue is that a plan for transition over these three trimesters of gestation, so to speak, needs to be well understood, for there will be challenges, with competing interests at play, between those who want to preserve their level of authority through time and those who want a faster track for devolution. Timing is of the essence.

THE OVERALL IMPACT

The pace of Asian university development in the past several decades is without precedent, and the trajectory of the tiger sub-species is even more spectacular. What are the implications: will the tiger university in time be seen simply as a precocious and passing phase in the 1,000-plus year history of university evolution, perhaps ultimately swamped by the digital revolution, or by re-energized legacy institutions? Or do we now have an alternate model for the research university of the future? Will the tiger university bring fundamental changes to the higher education system in which it nests? Will governments pull back strategic support as goals are met, or will the success of the tiger university keep the model rolling forward? Has a tiger university "bubble" been brought on by the rise of ranking regimes?

We are only at the beginning of the phenomenon examined here, so it is really a case of "watch this space". However, five themes or propositions do emerge from what we have seen so far from the cases of SMU in Singapore, HKUST in Hong Kong and POSTECH in South Korea.

The first proposition is that the key elements driving the dynamic of the tiger university are not stand alone, but rather form an interlocking web. Hefty early phase funding has an obvious practical value, but it also serves to quickly establish credibility for the new university's rather grand vision, which then helps recruit top overseas research-oriented faculty who might otherwise hesitate to join a start-up. Sparkling, purpose-built campuses burnish the nascent halo. This in turn lays down important elements of the culture that is being consciously developed. At the same time, donors are more inclined to feel they are putting good money after good money. And, with the enhanced

resourcing base, the academic community is more inclined to accept governance with a centre of gravity that is higher than in many legacy institutions, thus facilitating focus and strategy development. Each of these elements can be examined separately, but in reality they are interlocking and reinforce one another in a virtuous circle.

The second proposition goes to the powerful role model for the tiger university offered by key elements of research universities in the U.S. Elite American universities show a keen interest in giving guidance, in return for elegant funding arrangements and a door to Asia for their own global footprint. Ironically, this is at a time when many leading universities in the U.S. are seen to be under significant pressures post the GFC, and even from a higher education bubble. (Thiel, 2010).

The third proposition is to do with the symbiotic nature of the relationship between the tiger university and the overall higher education system in which it lives. Interestingly, it both "draws strength from the other research universities … and … becomes a catalyst for those universities' reforms." (Postiglione, 2011: 92). Reform pressure grows out of advancement strategies common, if not unique, to the tiger universities: tenure regimes; management systems; marketing and promotion styles; governance practices; recruitment strategies; remuneration adjustment linked to performance reviews; new modes of learning; nodes of research concentration … and much more. Building such beachheads for change undoubtedly is part of government strategy for enhancing practices and lifting standards across the higher education sector in each country. In time, one of the most significant roles of the tiger university will be seen in its impact as an agent of change for other universities. But in time the tiger university will also need to reinvent itself.

The fourth proposition is that the tiger university is a direct consequence of globalization and the emergence of university ranking regimes. Without these two (necessary but not sufficient) forces, the young aspirational university would be more anonymous, and would find it difficult, if not impossible, to shake up the established order.

The fifth proposition is that, notwithstanding its stunning success, the tiger university model is not without potential downside effects. Some observers may worry that the core and critical role of government in the early phases of development will in time become a barrier to full autonomy and the vibrancy of academic debate, as well as curiosity-driven research, at least as these hallmarks of higher education are understood in the West. Another concern arises in the minds of those who see significant benefit in students from the science and technological quadrant, or those in the business, economics, law and accountancy quadrant, co-mingling on campus and in classrooms with others from across the discipline spectrum. Some would question the certainty of the Asian miracle running for another decade or two, let alone a whole century;

will the loss of serious economic momentum shift funding priorities away from the tiger university? Another worry may be the loss of energy and focus as a young and rising star reaches middle age. And, of course, the "coming avalanche", as Barber *et al*. (2013) describe the higher education revolution ahead may not play out well for the tiger university, as amalgamations and other rationalization measures emerge.

So, on balance, where does this leave the idea of an Asian Tiger University Effect? While there are many factors to play out, it seems safe (or at least as safe as any broad conclusion on the future form and substance of the world's research universities) to see the rapidly rising stars in Asia as an interesting new development, and one of several forces playing on the traditional paradigm of higher education.

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LIST OF ACRONYMNS

ADB – Asian Development Bank
ARWU – Academic Rankings of World Universities (Shanghai Rankings)
BYU – Brigham Young University
CMU – Carnegie Mellon University
CREATE – Campus for Research Excellence and Technological Enterprises
CUHK – Chinese University of Technology
ETH - Eidgenössische Technische Hochschule
HKU – Hong Kong University
HKUST – Hong Kong University of Science and Technology
IFEZ – Incheon Free Economic Zone
INSEAD – Institut Européen d'Administration des Affaires
KAIST – Korean University of Science and Technology
MIT – Massachusetts Institute of Technology
NTU – Nanyang Technological University
NUS – National University of Singapore
POSCO – Pohang Iron and Steel Company
POSTECH – Pohang University of Science and Technology
QSWUR – Quacquarelli Symonds World University Rankings
RDC – Research Development Corporation
SGUC – Sangdo Global University Campus
SMU – Singapore Management University
SUTD – Singapore University of Technology and Design
THEWUR – Times Higher Education World University Rankings
UGC – University Grants Committee (of Hong Kong)
UTD – University of Texas - Dallas