

Speech by Chairman A*STAR Mr Lim Chuan Poh on “Singapore’s Pursuit of University Excellence” at the Higher Education Planning in Asia Forum 2015 23rd March 2015, Singapore Management University

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Distinguished Guests
Ladies and Gentlemen

Introduction

A very good morning to all of you.

Let me first thank the organisers for inviting me to join you at this Forum and I hope I can contribute something useful to your discussion over the next two days.

I congratulate HEPA and both SMU and HKUST for organising this Forum. This is an important platform for everyone involved in Higher Education in Asia and beyond, to share experiences on how higher education should continue to evolve in its role, and also how it should respond to the global and local challenges and opportunities confronting the sector.

I have been asked to speak on Singapore’s experience as someone who has worked with Higher Education here and continue to do so today.

In Singapore, education has always been a topic close to our hearts.

We gained independence in 1965 as a small island nation with no natural resources except for our people.

At that time, we experienced high population growth with significant unemployment among the largely uneducated population.

So, investing in education was an imperative, not a choice, for us to open up new opportunities, grow our economy and build the nation.

The present Minister for Education, Mr Heng Swee Keat, described the emphasis in education then as“读书” or ‘study book’ as it was mainly about teaching literacy and numeracy¹.

Over time, the emphasis shifted to technical education and eventually to university level education in order to meet the needs of the rapidly expanding economy and one that is constantly moving up the technological and value added curve.

Throughout this journey, the Government has consistently kept three aims in mind, namely, the needs of the nation; the aspirations of the people; and the quality of the institutions.

Singapore has come a long way since independence and this year, we celebrate our golden jubilee, what we coined as SG50, and there is much for us to celebrate.

One indication of this is the growth of our per capita GDP from less than US\$500 at independence to over US\$50,000 today, a growth of 100 times in less than 50 years.

¹ Speech by Minister for Education Heng Swee Keat at FY 2015 Committee of Supply Debate

Our investment in education, and in particular the university sector, is a significant contributor to this growth and it is a sector that the government pays a lot of attention to.

The university sector itself has undergone profound change since the days of independence when we started out with only two universities, Singapore University and Nanyang University, with the latter using Chinese as their medium of instruction.

At that time, the Cohort Participation Rate, or CPR, at university was a mere 3%.

Today, Singapore has six established universities with two large comprehensive universities and four with niche foci and the CPR is projected to reach 40% by 2020.

The universities are also well recognised internationally for their excellence.

One recent major turning point for the university sector in Singapore came soon after the start of the new millennium, when the Singapore Government recognized that the global university landscape was growing increasingly competitive, particularly in terms of talent, funding and research.

In response, the Government called for a review to empower Singapore's universities to better respond to these changes and to prepare themselves for the next phase of change.

I was honoured to be asked by then Deputy Prime Minister, Dr Tony Tan, who oversaw higher education, to lead this review in 2004 in my capacity as the Permanent Secretary of the Ministry of Education (MOE).

Transformation of the Public Universities to Autonomous Universities (AUs)

The first step was to review the autonomy of Singapore's public universities.

At that time, both the National University of Singapore (NUS) and the Nanyang Technological University (NTU) were statutory boards of Singapore and were subject to government regulations and practices.

On the other hand, SMU, conceived in 1997, started out as a corporatized autonomous university and our experience with SMU gave us confidence to explore similar autonomy for NUS and NTU.

Having increased autonomy would allow these universities the space to differentiate themselves and chart their own strategies towards achieving peaks of excellence.

The aim of the review, as the then-Minister for Education, Mr Tharman Shanmugaratnam put it, was "to ensure that they continue to contribute to the well-being of Singapore and its people, not just economically by producing graduate manpower to support the economy, but also in propelling Singapore up the curve of knowledge creation through a concerted investment in R&D capabilities."

To study the implications of university autonomy, we looked to the US as a reference point.

The US was particularly interesting for such a study as their public universities had different approaches to balancing autonomy and public accountability and they have excellent private universities.

Of the two public universities studied, one of them was a state agency that had to adhere to state policies and regulations.

On the other hand, the second university had full autonomy from state legislature while still remaining a public university. Yet, both were successful and renowned for education and research while recognising that some of the state policies and regulations might have reduced the competitiveness of one of them.

We concluded that within the Singapore context, each university had the potential to excel while remaining publicly funded and greater competition within the university landscape would in fact spark greater excellence.

The Government thus accepted the recommendations made by the University Autonomy, Governance and Funding (UAGF) Review Steering Committee and devolved autonomy to NUS and NTU while still supporting them with significant government funding.

This allowed them to enjoy autonomy comparable to that of private universities in the US, while continuing to receive strong government support for education and research.

Both NUS and NTU were granted autonomy in 2005 and corporatized.

As corporate entities, they gained more administrative and financial autonomy to explore different ways to pursue teaching and research excellence, raise their international standing and enhance the student experience.

Corporatization sent a strong signal that the university belonged to its stakeholders, not just the Government.

We hoped that this would serve to inspire a mindset change and encourage university stakeholders to take ownership and play more active roles in charting the university's direction for the future.

However, before corporatization could take place, we also needed to ensure that the necessary internal systems, processes were present to support the new set-up.

It was also critical to have people of the right quality and commitment, who were prepared to take up the challenge of steering the universities in the years ahead.

This necessitated a transformation of the university's governance.

The University Council, which had to consult MOE before any policy decisions, was changed to a Board of Trustees, where members were selected not simply to represent the stakeholders, but for their ability to contribute.

They were expected to take greater ownership of, and play a stewardship role in developing and growing the university.

A clear accountability framework was also established to provide assurance that public funding for the universities would be utilized appropriately and directed towards the achievement of mutually agreed outcomes.

To further develop our universities into world-class institutions, we also had to resource them adequately, even as they sought alternative sources of funding.

The Government continued to be the principal source of funding for our universities.

In the spirit of financial autonomy, funding was given in the form of a block grant comprising streams of funds for their operating, research and development expenditure.

This financing framework enabled universities to derive greater value from the funding as they could internalize the opportunity costs of all their endeavours.

At the same time, as corporate entities, the universities were also encouraged to actively raise funds for their endowment.

To incentivize such efforts, the Government provided matching contributions and attractive tax deductions for donors.

These efforts have borne fruit, with the endowment funds of NUS and NTU doubling from S\$1.7 billion in 2005 to S\$3.4 billion in 2012 in total, providing significant new resources for the universities to pursue their own strategic interests.

Building Research-intensive Universit

Having established the universities' autonomy, the second step was to transform these autonomous universities, or AUs, into globally competitive research intensive universities.

I was also asked to lead the University Research Landscape Review.

The main recommendations of this second review were to increase the Academic Research Fund significantly to drive academic R&D;

to set up an international Academic Research Council to advise on strategic thrusts;

and, to launch Research Centres of Excellence, or RCEs, to conduct world class research in close affiliation with the host universities.

Following the review, MOE's research funding for the AUs nearly tripled.

But, aside from the increased MOE funding, there were other R&D funding sources in Singapore that the AUs could access competitively, such as the extramural fund provided by my agency, the Agency for Science, Technology and Research (A*STAR), or the competitive research grants from the National Research Foundation.

As a result, the R&D spending from higher education institutes in Singapore almost doubled from S\$580 million in 2006, before the research landscape review, to over S\$1 billion in 2011.

A significant part of the increased funding went to supporting five RCEs.

The RCEs were introduced to develop sharp peaks of research excellence in areas where there were already existing strengths.

They were provided with an assured 5-year funding of about S\$150 million to enable them to attract world-class talent to Singapore to do ground-breaking research.

One example of RCE is the Centre for Quantum Technologies, or CQT in NUS, helmed by Prof Artur Ekert who was from Oxford.

Artur is one of the pioneers in quantum cryptography and a recipient of the Royal Society Hughes Medal.

Another example is the Earth Observatory of Singapore, or EOS in NTU, headed by Prof Kerry Sieh, formerly from Caltech.

Kerry's early work on the San Andreas fault led to the discovery of how frequently and regularly it produces large earthquakes in South California.

The RCEs have contributed to raising the research intensity in the university.

At the same time, it also created deep capabilities and excellence in a targeted field to be among the best in the world².

As a result of these changes, both NUS and NTU have significantly increased their research intensity and excellence within a relatively short span of time.

Greater Diversity and Opportunities in the University Sector

Besides increasing university autonomy and research excellence, the Government was also keen to create greater diversity for Singaporeans in the university landscape.

Back in 1991, when NUS was the sole university in Singapore, NTU was formed to address the increasing need for engineers and technologists in the economy while continuing with the focus of ensuring access and graduate employability when planning for university expansion.

² International Academic Advisory Panel report on Developing-Research Intensive Universities (2007)

Likewise, the Singapore Management University (SMU) was conceived not to be another NUS or NTU.

Dr Tony Tan, then Deputy Prime Minister and presently the 7th President of Singapore, as many of you would know, was intimately involved with the development of the university sector in Singapore.

While visiting the new SMU premises in 2000, he stated that, “NUS will continue to develop as a comprehensive university; NTU will have a distinctive engineering and professional bent; and SMU will focus on being business and management oriented. There is room in such a structure to allow for greater competition to spur our universities to greater heights”³.

Similarly, when Singapore University of Technology and Design (SUTD) was started in 2009, it brought a new focus and concept to engineering training and research, through a multi-disciplinary approach that incorporated not only technology but also design to create innovations.

In 2012, Prime Minister Lee Hsien Loong further announced the Government’s commitment to more publicly-funded university spaces being created for Singaporeans, with the Singapore Institute of Technology (SIT) as Singapore’s fifth AU and public funding for full-time degree places in SIM University (SIM).

SIT also offered its own unique tripartite model, through providing industry-oriented degree programs by reputable foreign universities, in partnership with local polytechnics.

To further diversify the educational offerings, an applied degree pathway to cater to a broader range of students with different learning preferences and interests, was also started.

The pathway aimed to create a close nexus with industry and economic needs to enhance employability of graduates.

Such a move of offering diversity and choice was part of Singapore's efforts to cater to the diverse needs and aspirations of our population while creating the environment and support for each of these institutions to pursue excellence in their niches and become world-class institutions.

Transforming the university sector is crucial to RIE success

Having discussed the changes in the university sector, let me now talk about the wider research landscape in Singapore of which universities are a critical part.

As the global economy recovers following the financial crisis in 2008, many countries are looking to improve their Research, Innovation and Enterprise, or

RIE ecosystems, in order to spur economic growth and create high-value jobs.

Over the last two years, we decided to do a series of study visits to gain insight into the research, innovation and enterprise (RIE) structure, framework and strategies of other countries' innovation systems and also how they are innovating on their systems.

From these visits, we found that many countries are adopting strategies and seeking approaches to achieve greater economic and societal impact from their investments in public sector R&D.

Quite clearly, the strategies vary from country to country depending on their own specific set of circumstances, however, what they have in common is the increasing emphasis on coordination and alignment across the ecosystem as well as a certain balance between funding top down thematic programs and providing opportunities for ground up investigator led research.

This is something that Singapore has also recognised and is working towards. It was also clear that the RIE system that we have in place and how we are evolving are quite similar to what most of these research intensive economies are pursuing as well.

In Singapore, the Prime Minister chairs the Research, Innovation and Enterprise Council (RIEC) comprising Ministers, and international academic and industry leaders.

The RIEC approves the five-year Research, Innovation and Enterprise, or RIE plans.

Below the RIEC are the various Ministries such as Ministry of Education, Health, and Trade and Industry among others who are given significant funding for research in accordance to their respective missions.

So far, no real surprises.

The research landscape in Singapore has matured over the years although still nascent.

We have the universities doing academic research and the corporates doing industry research.

Since we launched our Biomedical Sciences effort at the turn of the century, we have since also created two academic medical centres to do translational and clinical research.

In addition, we have always had mission oriented research in my Agency, A*STAR, where the primary goal is to further economic growth and it operates between academia and industry.

Such publicly funded Research and Technology Organisations that operates between academic and industry are also found in Finland, Germany, Japan, Netherlands, South Korea, Sweden, UK and also states in the US.

Overall, the RIE system provides some level of clarity for the missions of the different research performers in the landscape, for example that of the universities and A*STAR.

This has helped the universities to focus on their primary mission of providing research based education and not be overly driven by having to deliver on the

economic mission yet be able to contribute to the economic mission in meaningful ways where they have the relevant capabilities and excellence.

Open Talent Strategy

I started this talk by highlighting that the only resource that we have is our people.

Notwithstanding, we have a small population and the young people in Singapore have many different career choices.

In order for our universities to become research intensive, they need access to a far larger pool of talent.

Singapore's open talent strategy is fundamental to the excellence of our universities.

As a matter of fact, it is also pivotal to almost all the top universities in the world especially those that are consistently ranked in the top 10.

In terms of the international make up of our universities, Singapore is somewhere slightly lower than the US and slightly higher than the UK at about 35%.

I noted that the senior university representatives are participating in this Forum, so I will leave it to them to share more with you about their talent strategy.

Suffice to say that we are going beyond attracting the most eminent scientists or scientific leaders.

Increasingly, we are also attracting students from around the world especially those from beyond Asia as we already attract significant number of Asian students.

Over time, with the return of these students back to their home countries, we hope to develop new connections with even more research communities around the world.

Likewise, we are also targeting efforts through generous fellowships for post-docs to attract some of the most promising young scientists to build their academic and research careers in Singapore.

Conclusion

To conclude, all these changes are beginning to add up.

Today, Singapore is ranked 7th on the Global Innovation Index, the only Asian nation in the Top 10 together with Hong Kong (ranked 10th)⁴.

Our AUs are consistently ranked among the top universities globally – The Times Higher Education World University Rankings ranked NUS and NTU at 25th and 61st position respectively⁵.

There is still a lot of work for the universities to do to stay on a sustainable path towards excellence.

There is also a continuing need for strong and steady government support.

⁴ The Global Innovation Index 2014

⁵ The Times Higher Education World University Rankings 2014-2015

However, many of the building blocks of a sustainable and robust RIE system are already in place and the system will continue to evolve.

In the words of Prime Minister Lee Hsien Loong highlighting Singapore's commitment to R&D, he said that, "Singapore's long term aim is to be one of the most research-intensive, innovative and entrepreneurial economies in the world in order to create high-value jobs and prosperity for Singaporeans. Research and innovation underpin the competitiveness of our industries, catalyse new growth areas and transform our economy."

The university sector will have a pivotal role to play in this vision.

With that, I wish all of you a productive forum.

Thank you.