



H A R V A R D | B U S I N E S S | S C H O O L

## **Microeconomics of Competitiveness**

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# **Singapore's Higher Education Cluster**

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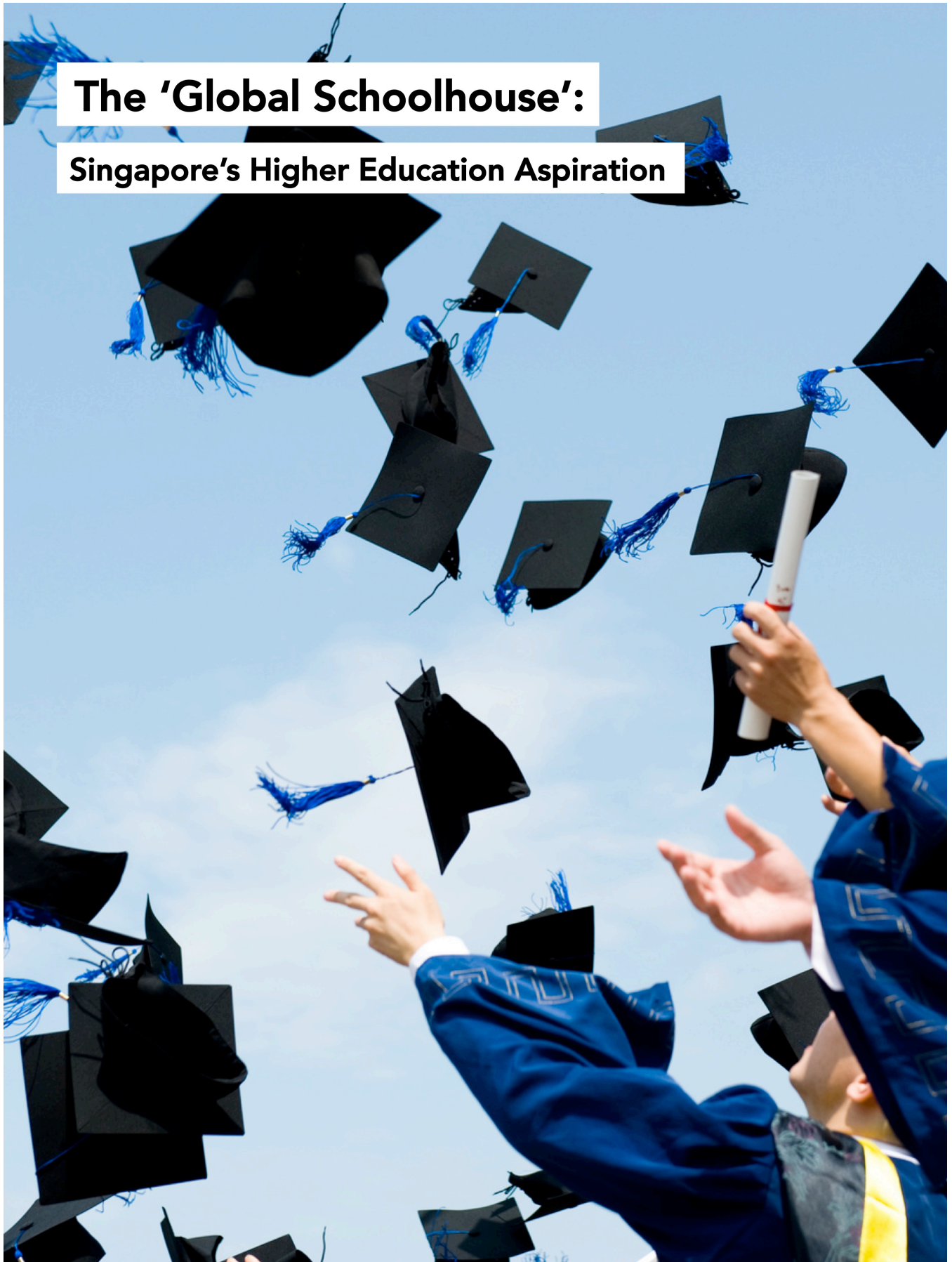
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# The 'Global Schoolhouse':

Singapore's Higher Education Aspiration



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# 1 Executive Summary

By most accounts, Singapore is considered a modern economic miracle. Founded by the British in 1918, Singapore gained full independence in 1965. Today with a population of 5.6 million, Singapore has reached a level of growth and development envied the world over. Since independence, Singapore's GDP grew by an average of 7.7% and Per Capita GDP grew by an average of 5.4%.<sup>i</sup>

Education has been a key driver in Singapore's economic development. The government has made education at all levels a priority and has one of the best performing public school systems in the world whose PISA scores, the OECD's benchmarking test of student ability in math, science, and language, are consistently at the top of world rankings.

Higher education has gained prominence in Singapore over the last two decades, and as a result the number of higher education institutions has tripled during that time. The government aggressively sought to bring big name universities to locate in Singapore through its World Class Universities program in 1997. In 2002 it launched the "Global Schoolhouse Initiative" with the goals of attracting 150,000 foreign students and increasing higher education's contribution to the economy to 5% by 2015.

Singapore has made significant progress in its ambition to be the "Boston of the East" and has firmly established itself as one of the region's premier education hubs, attracting around 75,000 foreign students in 2015. Additionally, more Singaporeans are also choosing to study at home attracted by their now highly ranked local universities, diverse program offerings, and increased government funding.

However, Singapore's higher education cluster has experienced several hindrances to further growth. These include declining fertility rates, exits of foreign university players, increased competition regionally and globally, and heightened anti-foreign sentiment. It is clear that Singapore will have to reevaluate its strategy for the higher education cluster moving forward to spur growth while at the same time satisfy the needs of both its citizens and overall economy.

## 2 Singapore's Competitive Position

### 2.1 Overview

#### 2.1.1 Brief History

Prior to Singapore's founding it had already been an important trading hub populated by a small Chinese community. During World War II Singapore fell into the hands of the Japanese but was later returned to British control after Japan's defeat. Increasing autonomy was afforded to Singapore over the following years, beginning in 1948 when the Constitution of Singapore was amended to allow for some local elections. In 1959, Singapore was given full internal self-government through elections and Lee Kuan Yew of the People's Action Party (PAP) became Singapore's first Prime Minister.

In 1963 the British relinquished control of their colonies and Malaya, Singapore, Sabah and Sarawak combined to form the Federation of Malaysia. This merger fell apart on August 1965 and Singapore officially became a fully independent nation on August 9, 1965.

#### 2.1.2 Political System

Since independence, the PAP has been in power with Lee Kuan Yew remaining as the Prime Minister until 1990. His son, Lee Hsien Loong, currently serves as Prime Minister. Singapore today remains a parliamentary democracy, with general elections held at least every 5 years. Since 1993, Singapore has had a system of an elected President – a previously ceremonial role transformed into one that empowers the President with the authority to control the government's use of the reserves.

Political contestation has grown over the years with alternative parties contesting all seats in the 2015 general election. The 2011 general election marked the first time a party was able to defeat the PAP in a group representative constituency (GRC), and the PAP also suffered their lowest popular mandate in decades – 60%. However, in the 2015 general election the PAP managed to improve their popular vote to 69%.

### 2.1.3 Geography and Size

Singapore is an island located in Southeast Asia. It is spread over 697 square kilometers and has a population of 5.6 million people. This size to population ratio makes Singapore the third densest country in the world, just behind Macau and Monaco, but just slightly denser than Hong Kong.

One of the struggles that Singapore faces is that of low fertility rates which has remained below the replacement rate of 2.0 since 1988. Over the last decade, it has remained below 1.3. This has serious implications for Singapore given that it portends a shrinking workforce – and an ageing population. At the same time the old-age dependency ratio continues to grow.

This has largely prompted an increase in new immigrants and non-immigrant labor. In 2015, 1.6 million non-residents were living and working in Singapore as compared to 800,000 in 2005<sup>ii</sup>. This has placed a

large strain on Singapore’s infrastructure that is struggling to keep up, and also brought about cracks in Singapore’s social fabric, with rising levels of xenophobic sentiments by citizens.

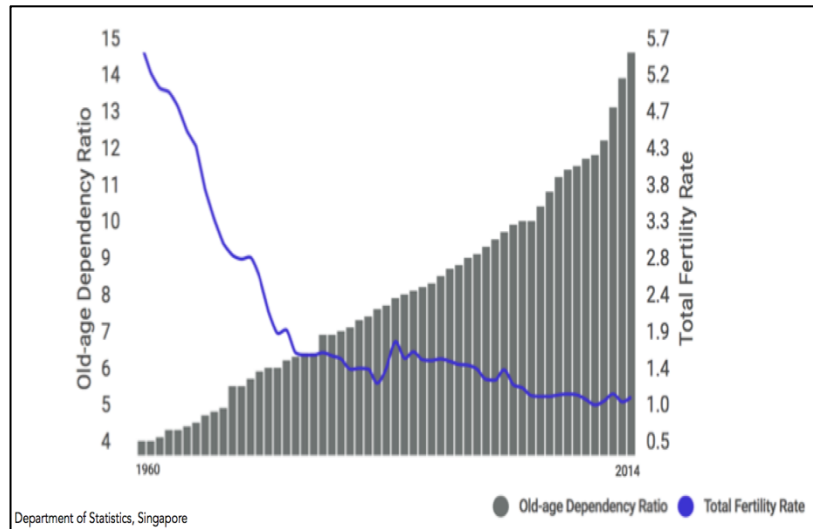


Figure 1: Singapore’s Old Age Dependency Ratio vs Total Fertility Rate (1960 to 2014)

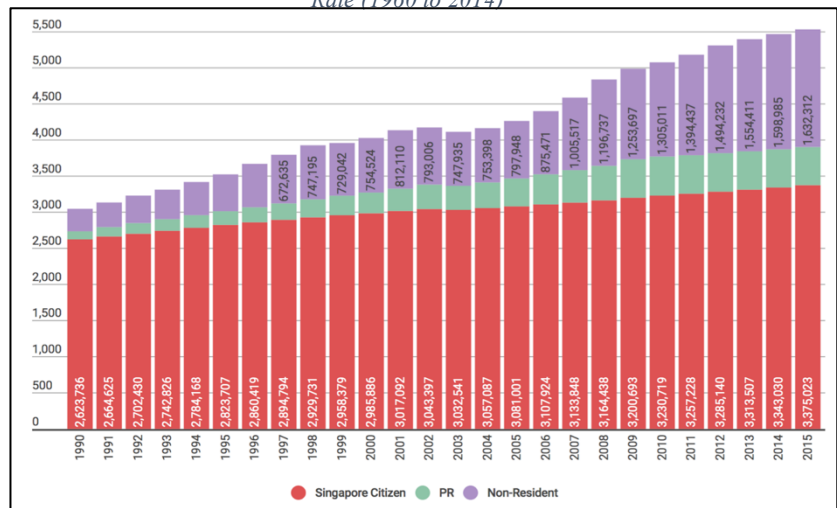


Figure 2: Singapore’s Demographic Change (1990-2015)  
Source: Department of Statistics, Singapore

## 2.2 Overall economic performance

Singapore is one of the most successful and developed countries in the world. Its open, corruption free government and policy, paired with stable macroeconomic conditions have led to its economic prosperity and as one of the highest GDP per capita in the world.<sup>iii</sup> Singapore has quickly and steadily moved from being a low-income country at independence, to being a high-income country today. The

GDP grew with an average of 7.7% since 1965 and Per Capita GDP grew by 5.4%<sup>iv</sup>.

According to the IMF, in the past five years the average GDP real growth rate of Singapore was 3.4%, and the nominal GDP in 2015 was ranked 38<sup>th</sup> in the world at 306.3 US\$ billion (388 S\$ billion). The GDP per capita was 56,000 US\$

(70,900 S\$), which is the 6<sup>th</sup> highest in the world<sup>v</sup>.

Despite its heavy reliance on foreign labor the Singaporean labor market is very strong. Unemployment rates were historically low with an average of 3.5% during the last 20 years and with around 3% in recent years. However, participation rate hasn't increased significantly in the past two

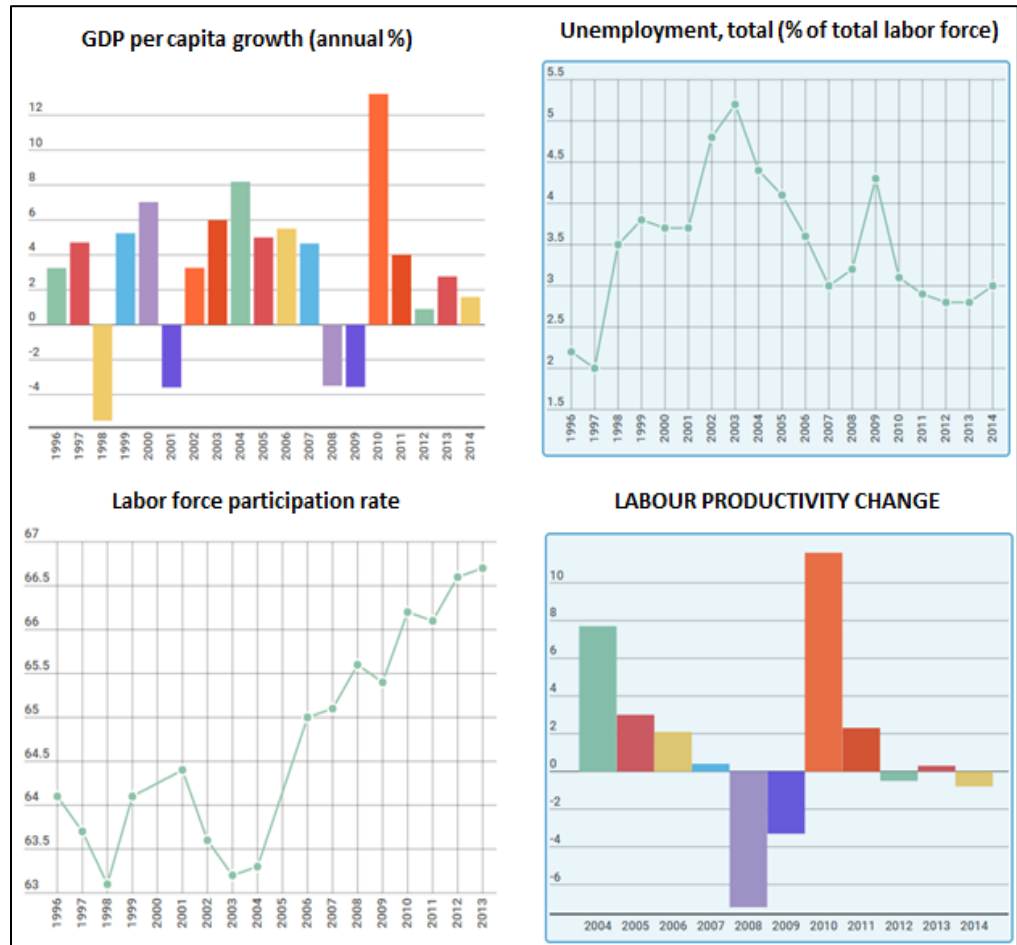


Figure 3: - Key economic indicators  
(Source: Singapore yearbook of manpower statistics, 2015)



decades and stood at 66.7% in 2014 (64.1% in 1996)<sup>vi</sup>. Labor productivity growth has been volatile, and there is a concern that it is slowing down in recent years (-0.8% in 2014).

Regarding social progress, Singapore is ranked relatively high on basic human needs, especially in water and sanitation. However, with regards to the other areas of well-being and opportunity, Singapore is lagging behind western nations as it pertains to personal/individual rights, environmental sustainability and access to advanced education<sup>vii</sup>.

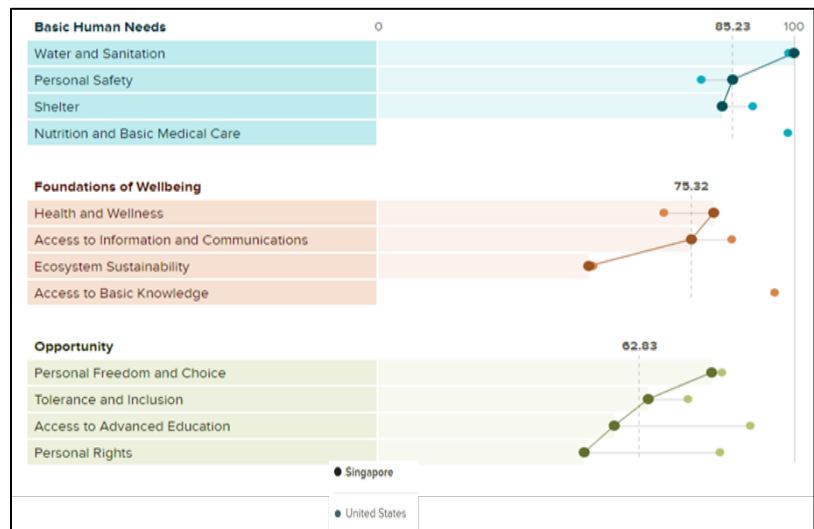


Figure 4: Social progress indicators (Singapore compared with the U.S.) (Source: <http://www.socialprogressimperative.org>)

### 2.3 Composition of the economy

Singapore’s economy relies mainly on a robust manufacturing and services sectors. It is a diverse economy with a focus on high value added activities<sup>viii</sup>. The manufacturing industry was 18.6% of the GDP in 2013, which was driven mainly by the electronics (30.3%) and the chemicals industries (20.5%). The services sector (70.6% of the GDP) was led by wholesale & retail (25.8%), the business services (22.1%) and the finance & insurance services (17.3%)<sup>ix</sup>.

STRUCTURE OF ECONOMY	Nominal Value Added (% Share)	Real Growth (%)
<b>TOTAL</b>	100.0	4.1
<b>Goods Producing Industries</b>	24.5	2.2
Manufacturing	18.6	1.7
Construction	4.4	5.9
Utilities	1.5	2.7
Other Goods Industries	0.0	-3.7
<b>Services Producing Industries</b>	70.6	5.3
Wholesale & Retail Trade	18.2	5.0
Transportation & Storage	7.0	3.0
Accommodation & Food Services	2.5	3.0
Information & Communications	4.0	5.5
Finance & Insurance	12.2	10.6
Business Services	15.6	5.1
Other Services Industries	11.1	1.9
<b>Ownership of Dwellings</b>	4.9	1.3

Figure 5: Composition of the GDP in 2013 (Source: <http://www.mti.gov.sg>)

The economy depends heavily on exports (in 2015 exports were 184.3% of GDP and net exports were 25.7% of GDP), particularly of IT products and on its transportation, business, and financial services sectors<sup>x</sup>. Most significant trade partners in 2014 were China (12.4% of total trade), Malaysia (11.3%), The EU (9.8%), USA (7.8%) and Indonesia (7.4%)<sup>xi</sup>.

Singapore's 2014 cluster map shows that although the information technology cluster is still the biggest cluster in the country with US\$122.4 Billion, its share of the world exports has declined in the past years. The financial services sector is the

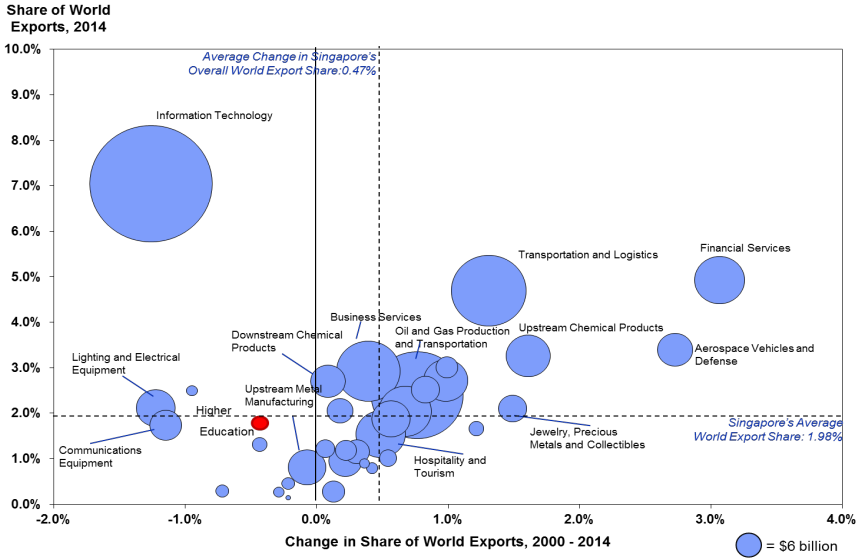


Figure 6: Singapore's cluster map  
 (Source: International Cluster Competitiveness Project, Institute for Strategy and Competitiveness, Harvard Business School; Richard Bryden, Project Director)

fastest growing cluster in terms of world exports during this time (US\$20.5 Billion and more than 3% increase in its share). Higher education cluster - with 75,000 foreign students in 2014 and an average tuition of S\$35,000 the direct exports of the Singaporean higher education cluster in 2014 was roughly 1.9 US\$ Billion<sup>xii</sup>. Since global export data is absent, changes in share of world market were calculated by the number of foreign students worldwide (2002-2012) and by the actual tuition<sup>xiii</sup>.

2.4 Competitiveness

2.4.1 Location and Endowments

Singapore's major endowment is its strategic location on the major sea route between India and China. The exceptional

Index	2015	Change since 2001
New Global Competitiveness Index (GCI)	5	+5
Microeconomic Competitiveness (MICRO)	1	+4
Macroeconomic Competitiveness (MACRO)	8	+6
Social Infrastructure and Political Institutions (SIPI)	7	+1
Monetary and Fiscal Policy (MFP)	38	-4

Figure 7: Competitive index 2015  
 (Source: HBS institute of competitiveness index dataset)

location combined with its superb harbor gives it a good competitive advantage relative to its small size. Other natural resources are limited including a small amount of strategic petroleum reserves.

### 2.4.2 Performance - Macroeconomic Conditions

Singapore is known for its pro-business environment, and is considered one of the most competitive countries in the world. According to the Institute of Competitiveness, in 2015 the country is ranked 5<sup>th</sup> in the GCI index. In terms of microeconomic competitiveness, it is ranked 1<sup>st</sup> in the world and 8<sup>th</sup> in macroeconomic competitiveness. The country's monetary and fiscal stance is less competitive and is ranked only 38<sup>th</sup>, mainly due to high debt to GDP ratio.

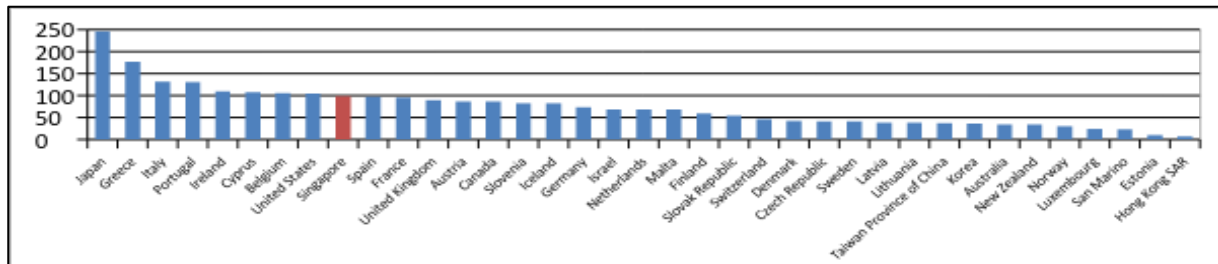


Figure 8: Public debt as a percentage of GDP, 2014  
(Source: <https://www.imf.org/external/pubs/ft/weo/2015/01/weodata/weorept>)

R&D expenditures are mostly made by the private sector. Since the 1990's there was a steady increase in the gross expenditure on R&D as a percentage of GDP, which peaked 2008. Since the world financial crisis the number has dropped to about 2%<sup>xiv</sup> (close to the EU28 average). According to the World

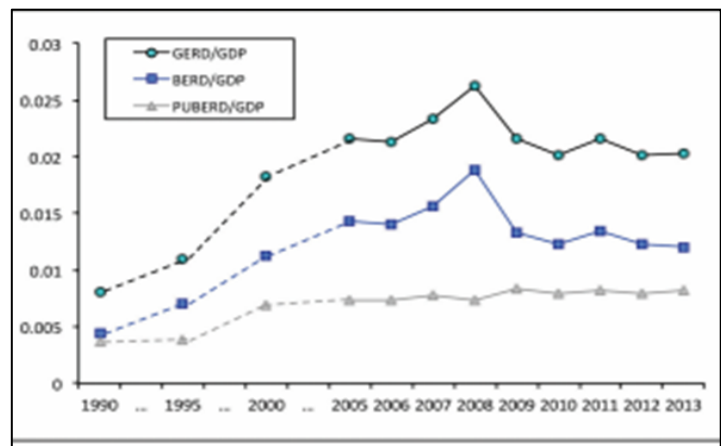
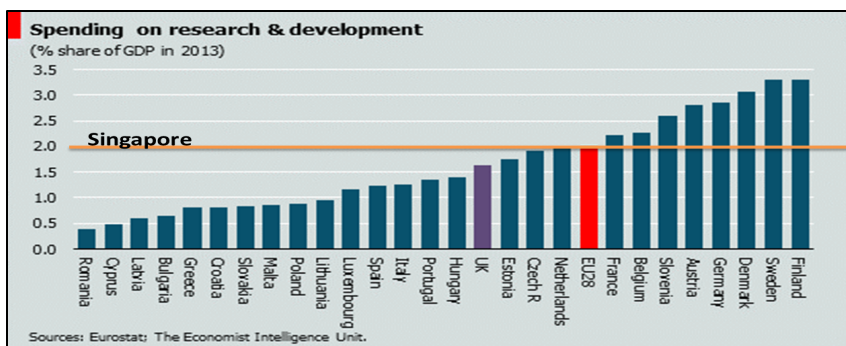


Figure 9: Gross expenditure on R&D, business exp. and public exp. As a percentage of GDP  
(Source: <http://www.a-star.edu.sg>)



Intellectual Property Organization (WIPO) statistics database, Singaporean citizens issued 5,930 patent applications during 2014

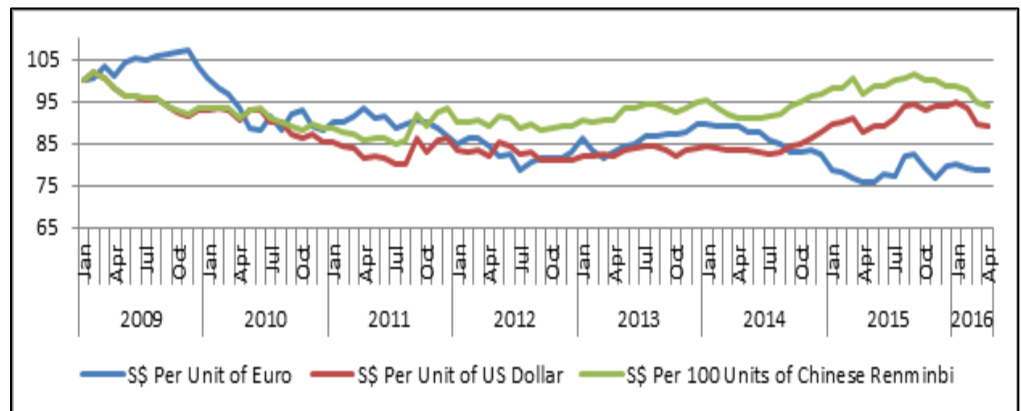
(number 26 in the world), much less than other countries close to its size like Israel (13,437), Finland (14,075), and Denmark (12,547)<sup>xv</sup>.

Basic education in Singapore is considered to be high quality mainly in mathematics<sup>xvi</sup> but when comparing it to other countries with the PISA scores it is far above OECD average in reading and science as well. Singapore scored highest in the PISA 2012 assessment of problem solving, and it had the highest number of top-performing students in that area<sup>xvii</sup>. Literacy rates went up from 91% in 1995 to 96.8% in 2015. Additionally, 70.9% among residents aged 25 years and over have a secondary or higher qualifications and the mean number of schooling years is 10.7<sup>xviii</sup>.

#### 2.4.2.1 Monetary and fiscal policies

Singapore’s monetary policy has been centered on the management of the exchange rate since the early 1980s. According to the Monetary Authority of Singapore (MAS) Act, Singapore’s central bank is in charge of maintaining price stability conducive to sustainable growth of the economy<sup>xix</sup>. Over the past decades inflation has been relatively low, averaging 1.7% per annum from 1985 to 2015 and 2.5% in the last 5 years<sup>xx</sup>.

The current account has been in a surplus continuously since the mid 80’s and that creates competitive challenges.



Since 2009 the Singaporean currency has been significantly appreciated against other currencies such as the US Dollar, the Euro and the Chinese Renminbi<sup>xxi</sup>.

### 2.4.3 Performance – Microeconomic Conditions

#### 2.4.3.1 Cost of Living

Singapore’s cost of living has risen over the years, often ranked among the top in the world. In Mercer’s 2015 Cost of Living survey<sup>xxii</sup>, Singapore ranked 4<sup>th</sup> in the world for most expensive cities to live in for expatriates.

It is important that a distinction be made between cost of living for locals and the cost of living that is felt by expatriates. According to Singapore’s Former Finance Minister the difference is driven by Singapore’s strengthening currency and the particular bucket of goods that are considered in the ranking.<sup>xxiii</sup> The Asia Competitiveness Institute (ACI)<sup>xxiv</sup> released a study that looked at Singapore’s cost of living for expatriates and for locals. In the most recent edition, they found Singapore to be the 4<sup>th</sup> most expensive city for expatriates, but only the 48<sup>th</sup> most expensive for locals. This demonstrates a

clear rift in the cost experience for locals and expatriates, and is suggestive of its implication on the differential in wages necessary to keep Singapore competitive.

#### 2.4.3.2 Wages and productivity

Singapore has experienced high and sustained real wage growth over the last five years. According to Deputy Prime Minister of Singapore, Shanmugaratnam, “since 2010, after the global financial crisis, the median household income in Singapore has grown by 18% in real terms – that is, after adjusting for the increase in the cost of living<sup>xxv</sup>”.

One of the concerns, however, is that nominal wage growth has outpaced productivity growth in Singapore. Singapore has experienced wage growth that exceeded productivity in 8 of the 9 previous years. This may indicate how Singapore’s growth thus far has primarily been driven by manpower

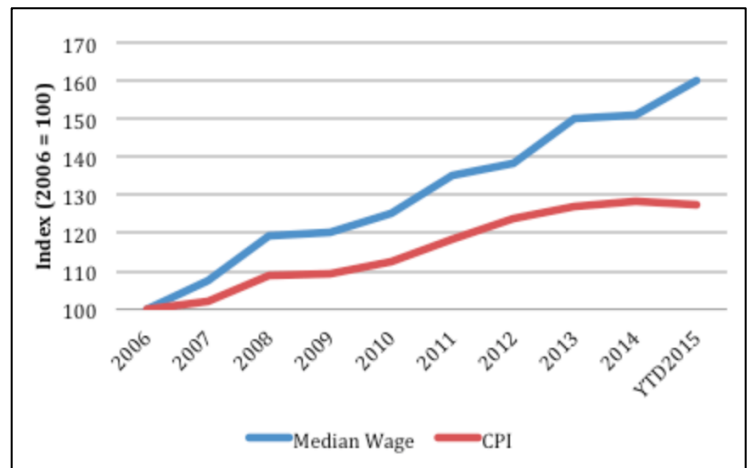
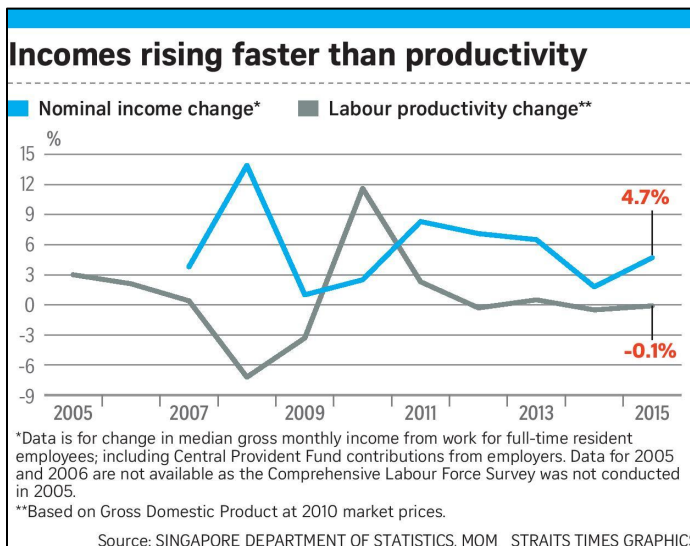


Figure 10: Median wage growth vs. CPI growth in Singapore (Source: Ministry of Manpower and Department of Statistics)



growth. With the shrinking workforce due to low fertility rates and the increasing political pressures to slow the growth of immigrant labor, the lack of productivity growth will lead inevitably to a stagnating growth for the economy.

Hence the government has invested heavily over the last few years on developing

the drive for productivity growth. This will help mitigate the effects of rises in cost of living, and ensure that Singapore remains a competitive location for businesses to operate in.

#### 2.4.3.3 Political Stability and Government Vision

One of the obvious strengths of the Singapore is its government strategy. When the government is on board, or notices a gap, there is a great deal of resources at their disposal to ensure all cards are properly lined up to give Singapore the best chance at succeeding in the development of their chosen sector or industry. The overwhelming stability of the PAP government supports the implementation of their long-term strategy.

Besides the impressive rapid development in the first independence days, some past examples are in the 1980s and 1990s, when it was the government who identified the need for a shift away from labor-intensive to high-technology industries, and who led the recalibration. This resulted to Singapore’s “transformation into the archetype of a global city – home to MNC headquarters, finance and business services, and global talent.”<sup>xxvi</sup>

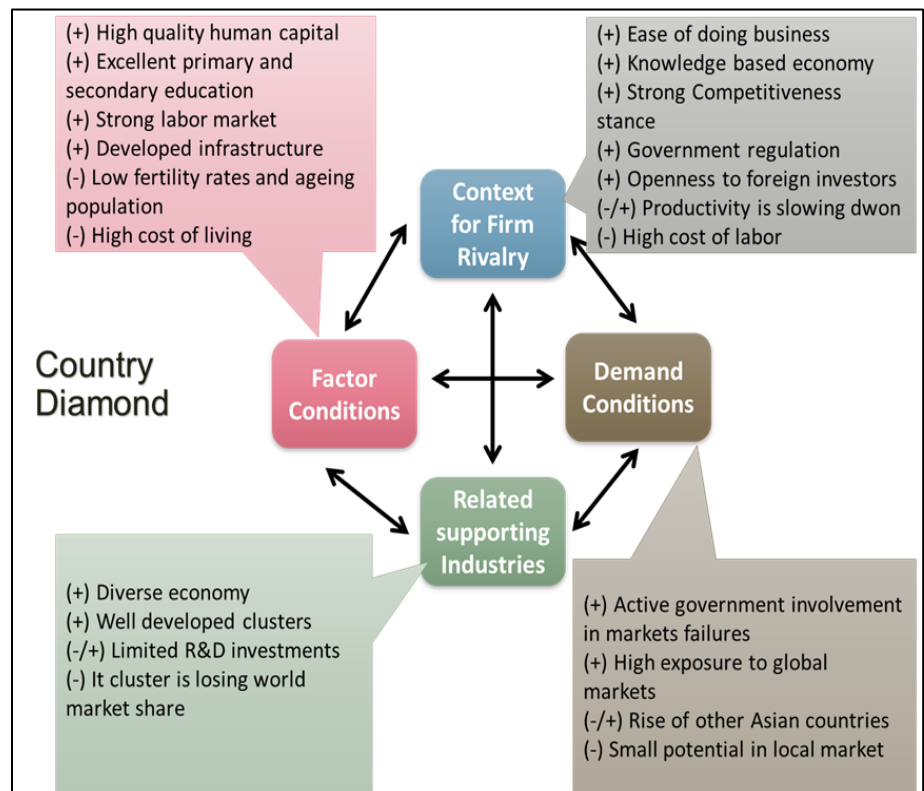
This centralization of vision and execution extends even further. In 2002, the Urban Redevelopment Authority (URA) revised its mission to “Make Singapore a great city to live, work and play in”<sup>xxvii</sup>, staking a clear claim on improving Singapore’s competitiveness among other cities that are in

competition for the smartest and most innovative talents. In fact, a Nightbuzz committee was formed in 2006 with the precise mission of raising Singapore’s “hip quotient”<sup>xxviii</sup>.

The Singapore government has also made a concerted effort to set up strong relationships with workers. They have established a unique tripartite union system where workers, government and corporations work in concert with one another to build beneficial policies for all.

#### 2.4.3.4 Singapore’s national diamond

All of the above can be summed in Michael Porter's National Diamond framework. Singapore’s main strengths lie in its highly developed factor conditions and its high competitiveness stance. Although other aspects of the diamond are also relatively strong, the decline in productivity and the



(Source: Team Analysis)

demographic trends, together with the rise of other neighboring Asian countries are things to take into consideration looking forward.

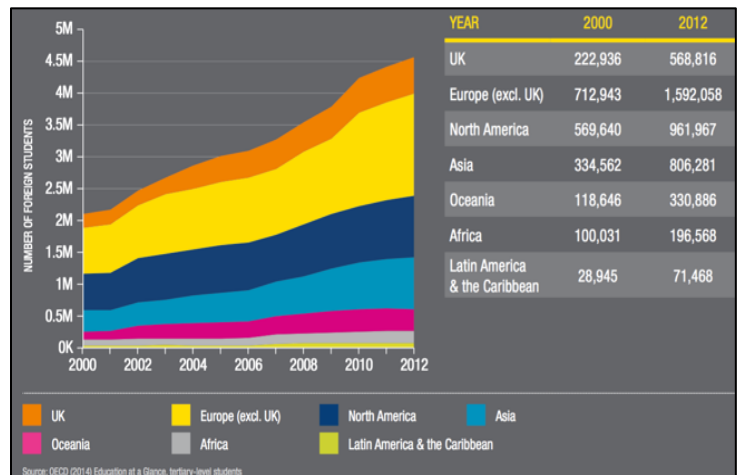
### 3 Singapore's Higher Education Cluster

#### 3.1 The Global Higher Education Market

##### 3.1.1 A Growing Global Market

The global trade in higher education services has become a significant revenue generator for many countries over the last two decades; creating significant income for many developed countries. For instance, the contribution of income from international students to the U.S economy was \$30.8 Billion in 2015 (the fifth largest export field);<sup>xxix</sup> in the U.K it was \$16.1 Billion;<sup>xxx</sup> and in Australia it was \$10.5 Billion<sup>xxxi</sup>. Global competition in higher education has emerged, in which many countries are competing not only to attract large numbers of students because of the tuition economics but also to attract the world's most talented tuition paying students

with the hope that they will stay in the country after graduation and will contribute even more to the local economy. The growth of higher education is significant both within the national populations of each country but also in the number of students who study outside of their country. By 2012 the number of students



studying in another country has doubled from 12 years earlier going from 2.1M students in 2000 to 4.5M students in 2012. Moreover, the OECD projects that this growth will continue at 7% annually over the next decade<sup>xxxii</sup>.

While western countries have been winning the fight for international students they have begun to face a competition from other regions. The primary competition is coming from Asia, which now has several new education hubs. There are efforts to establish and deepen education hubs in Middle East and Latin America as well. However, the five main western players of the U.S., the U.K., Australia,



Germany and France still maintain a cumulative market share of more than 50%. These countries continue to market aggressively to recruit international students<sup>xxxiii</sup>.

### 3.1.2 The Asian Context

Worldwide, today 52% of international students come from Asia. By 2025, this number is expected to grow to 70%<sup>xxxiv</sup>. As Asians increasingly pursue higher education, the demand for higher education in Asia will grow at a faster rate than other parts of the world. In Asia’s emerging higher education industry, Singapore was among the first to identify and seize this global trend of internationalizing education two decades ago, followed by several other Asian countries like Malaysia, Hong-Kong, China and Japan, that created governmental policies and invested tremendous resources to attract international students during the last decade: Malaysia has set a target to double their transnational student number up from 45,000 in 2005 to 100,000 by 2010 (reaching 90,000 in 2014)<sup>xxxv</sup>; China planned 5 years ago to attract 300,000 international students by 2015, and has already surpassed this number (with 377,000 students in 2014<sup>xxxvi</sup>); Japan hopes to more than double its current number of international students to 300,000 by 2025.<sup>xxxvii</sup> In this context, Singapore faces increasing rivalry not only from western countries but also within its own region.

### 3.1.3 The Demand – What do international students want?

There are several key factors that influence where international students choose to study. One of the main factors is the quality of education largely based on the reputation and ranking of the school<sup>xxxviii</sup>. The strong correlation between the rank and reputation of a

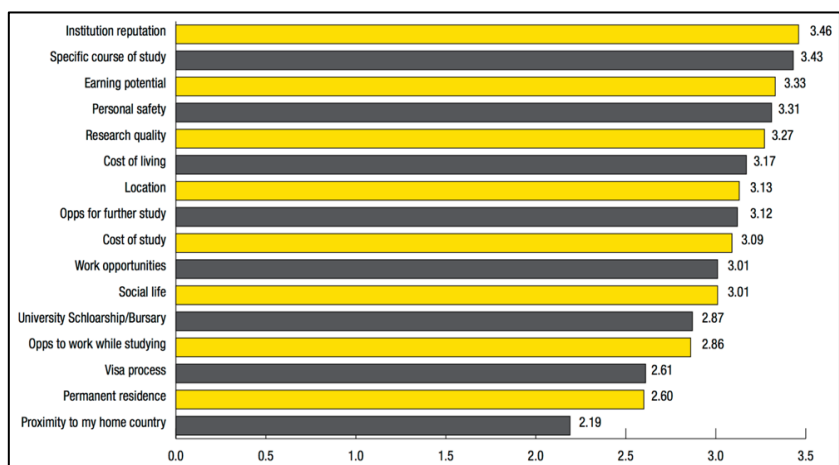


Figure 11: decision factors among international students studying in the UK 2013/2014, on a scale of 0-4  
(Source: UK international higher education unit, 2015)

university and its level of attractiveness among international students<sup>xxxix</sup> draws attention to the increasing importance of quality over other factors like tuition price, visa process and cost of living<sup>xl</sup>.

Because academic reputation takes decades to build, many countries/universities attempt to attract highly regarded western universities to partner with, in an effort to leverage the western university's quality brand locally. By doing so they are able to quickly enhance the reputation of the local university and attract more students.

After institutional reputation, students are most concerned and driven by the specific course of study on offer and the earning potential as graduates. It is a strong connection that students make between the job market in a region/country and the opportunities for higher salaries after graduation in that location, and must be addressed by all the players in their marketing strategies.

### 3.2 Local Higher Education Market

Local demand for higher education in Singapore is robust. HSBC in its review of Singaporean's view of the value of higher education in 2015 found that 91% of parents think that an undergraduate degree is important for their child to achieve their life goals and as such 98% of parents who expect their children to go to college plan to contribute financially<sup>xli</sup>. Despite 41% of parents thinking that most people cannot afford higher education for their children, 30% of parents whose children are in university have taken out a loan or expect to do so<sup>xlii</sup>.

Looking at supply and demand trends, there seems to be a mismatch in the quantity and quality of program offerings and local students. The ICEF Monitor, a market intelligence firm focused on international higher education, estimates that all six local universities in Singapore can accommodate roughly 57,000 undergraduate students, and 70 or so registered private institutions offer around 54,000 undergraduate seats<sup>xliii</sup>. In 2014, the Cohort Participation Rate (CPR), or the percentage of Singaporeans studying in local universities, was 26%<sup>xliv</sup>. The Ministry of Education projects that CPR will rise in the future, given the importance of a college degree in Singapore's knowledge economy. In real terms

61,993 Singaporeans were enrolled in local higher education institutions in 2014, an increase of 2,000 students from 2013<sup>xlv</sup>.

Moreover, four in five parents would consider sending their child to abroad for undergraduate or postgraduate study, believing that international experience could further widen their children’s opportunities<sup>xlvi</sup>. Compounding the issue is the scarce number of university places locally, which led to an inquiry – the Wong Committee recommending to expand number of places for local students and limiting the number of foreign students. Currently, 9% of Singaporeans leave to study abroad due to rising parental aspirations and lack of local university places<sup>xlvii</sup>.

Additionally, Singapore is also experiencing a shrinking secondary education student base (See *Figure 12*<sup>xlviii</sup>), portending decrease the demand for higher education among locals. As such, the government has looked to attracting foreign students to Singapore to boost its higher education market and improve the quality of its local universities.

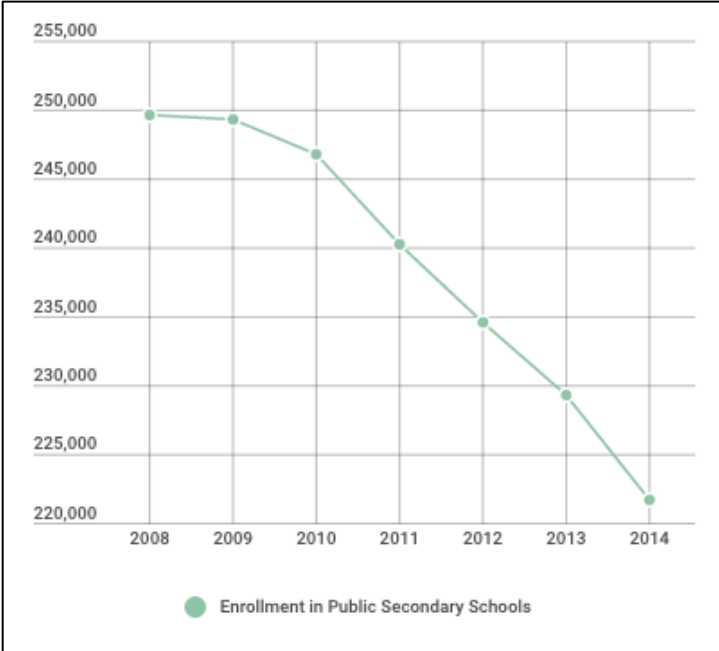


Figure 12: Total enrolment in secondary schools (2008-2014)  
(Source: Ministry of Education Singapore)

### 3.3 Singapore’s Higher Education Cluster Profile

Singapore’s higher education landscape is composed of five types of institutions, both public and private, local and foreign: junior colleges that offer 2-year prep courses for college, polytechnics, institutes of technical education (ITEs), art institutions, and universities.

There are six local universities that offer degree and master’s programs; five are public and one is a private non-profit. Over 95,000 students are enrolled in these local universities. Singapore’s two biggest

universities, i.e. National University of Singapore (NUS) and Nanyang Technological University (NTU) account for over 60,000 students, 33.5% of which are foreign<sup>xlix</sup>, and employed around 18,000 teaching and non-teaching personnel<sup>l</sup>. More than half of Singapore's local universities' students graduated with a business (22.4%), engineering (25%), or humanities and social science (11%) degree<sup>li</sup>.

The Council of Private Education (CPE), a statutory board established in 2009 in charge of regulating the private education sector, reports that there were a total of 319 registered private education institutions (PEIs) in 2014, of which 172 were colleges and universities offering diploma and degree programs. <sup>lii</sup>. There were around 145,337 students enrolled in private post-secondary institutions, of which 56% are foreign<sup>liii</sup>. Almost half of the students that attend PEIs take up business and administration<sup>liv</sup>.

Foreign students pay a premium to study in Singapore. The tuition costs of a higher education degree in Singapore would depend on the type of institution and whether a student is a Singapore national, permanent resident or an international student. In 2015, local students paid tuition of S\$7,920-32,700 (depending on their degree); permanent residents paid S\$11,150-45,800, while international students paid S\$15,900-65,400. Additionally, it is estimated that the monthly cost of living for an international student in Singapore would range from S\$750-2,000<sup>lv</sup>.

To ease the cost pressures of studying in Singapore, the government offers various financial assistance and funding schemes that include scholarships and loans to both local and foreign students<sup>lvi</sup>. Singapore established in 1993 the EduSave Scholarship that helps Singaporeans have access to education from primary to tertiary education<sup>lvii</sup>. There are also scholarships through the local public universities that could cover up to 90% of tuition and fees. Other scholarships for nationals geared towards specific and priority industries include Teaching Scholarships and Singapore-Industry Scholarships. In line with its aim to become a regional education leader and hub, Singapore has scholarships specifically for ASEAN nationals.

Government expenditure on public higher education institutions amounted to S\$4bn in 2014<sup>lviii</sup>, a 33% increase from its 2008 funding level. Recurrent government expenditure per student in 2014 was S\$21,799 in local public universities and S\$15,695 in polytechnics<sup>lix</sup>.

### 3.4 History and Evolution

The higher education cluster started with two universities, the University of Singapore and the Nanyang University. These two universities merged in 1980 to form NUS. In 1991, the Nanyang Technological University was elevated to university status. During the 2000's the number of higher education institutions tripled to six. Adding to the landscape was the Singapore Management University, Singapore University of Technology and Design, Singapore Institute of Technology, and the SIM University. All are autonomous public universities except the SIM University, which is a non-profit.

The Global Schoolhouse Initiative was launched in 2002 in an effort to produce a more skilled and educated society and workforce but also for Singapore to take part in the growth of the global higher education sector valued at US\$2.2 trillion with 70% of the future demand coming from Asia<sup>lx</sup>. Under this initiative, Singapore hoped to become the “Boston of Asia”<sup>lxi</sup>. The goal was to attract 150,000 international students, anticipating various economic spillovers including benefits to retail, tourism, and housing markets, and thus an increase in education's contribution to the economy from 3% to 5% by 2015<sup>lxii</sup>.

To achieve this goal, two key strategies were to be pursued: first was to attract world-class universities and top academics to set up centers of excellence and campuses in Singapore, and second was to improve the quality and diversity of program offerings in local universities and polytechnics.<sup>lxiii</sup>

In terms of attracting world-class universities, Singapore succeeded in bringing in many prestigious universities including INSEAD, University of Chicago Graduate School of Business, the University of Pennsylvania's Wharton School, Massachusetts Institute of Technology, Technische Universiteit Eindhoven, Johns Hopkins University, New York University's Tisch School, University of New South

Wales, and University of Nevada at Las Vegas. In each case the government committed substantial financial support through tax incentives, grants, and loans, which were contingent on enrollment and job creation targets<sup>lxiv</sup>.

Top foreign academics were enticed to work in Singapore through generous research grants and attractive remunerations<sup>lxv</sup>. The government was successful in bringing in Nobel Prize winners and celebrated scholars to conduct research in Singapore. However, research funding had to coincide with national agenda and priority<sup>lxvi</sup>. As such, the question of academic freedom and the pressure to focus on the economic outcomes of research have caused some academics to leave<sup>lxvii</sup> and some universities to decide against locating in Singapore, as in the case of the University of Warwick.

### 3.5 Cluster Performance

Singapore’s local universities improved their offerings and rankings while improving their

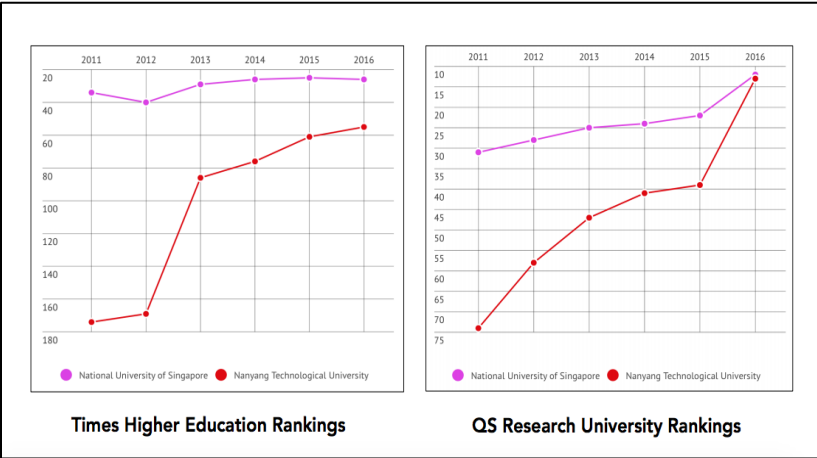


Figure 13: International rankings (Source: NUS and NTU annual reports)

international profile. They also pursued strategic partnerships, including between the Lee Kuan Yew School of Public Policy (NUS) with Columbia University’s School of International and Public Affairs, the London School of Economics and Political Science, Yale and NUS and

many more. Over the years, Singapore’s top two universities have risen significantly in international rankings such as *Times Higher Education* and the *QS World University Rankings* (See Figure 13).

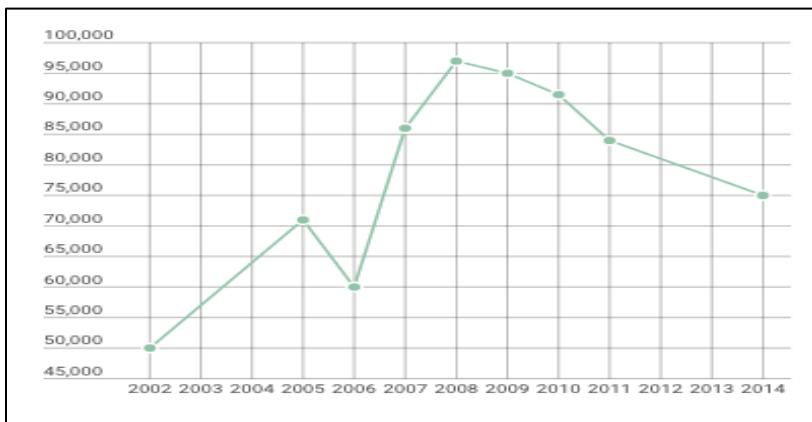


Figure 14: Foreign students in Singapore  
 (Source: <http://www.straitstimes.com/opinion/singapore-may-rue-fall-in-foreign-student-numbers>)

Higher education's contribution to the economy hit its peak in 2007, doubling from 1.9 percent in 2002 to 3.8 percent in 2007.<sup>lxviii</sup> The number of international students in Singapore grew from 50,000 in 2002 to

97,000 in 2008<sup>lxix</sup>. However, international student enrollment declined to 75,000 by 2014. The main factors contributing to Singapore's reduced intake of international students include increasing competition in Asia Pacific, and an anti-foreigner backlash from citizens upset about placements and subsidies going to foreign students instead of Singaporeans.

Moreover, Singapore also experience major setbacks, particularly the exit of big name universities.

The University of New South Wales closed its doors only after one semester of operations in 2007, due to underwhelming enrolment numbers. The New York University's Tisch School for the Arts exited in Singapore in 2015 due to huge financial losses and debt accumulation. The most recent exit was that of the University of Chicago's Graduate School of Business, which relocated to Hong Kong 2015 to be nearer the Chinese market.

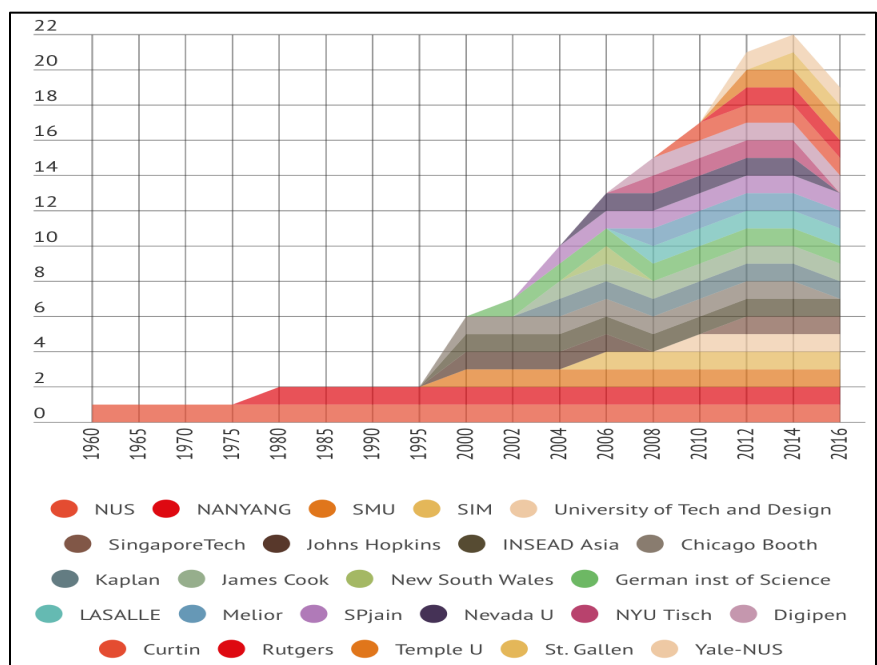


Figure 15: University openings and closings over time  
 (Source: Ministry of Education)

Although not all institutions survived financially, *Figure 15* shows the boom of new universities after the year 2002, including brand names that created room for an increasing number of students in higher education. This rapid increase in the number of institutions however raised the issue of quality and diversity of program offerings. In response, the government, through the Council for Private Education (CPE), has clamped down on private institutions with questionable tuition rates through its EduTrust initiative. Since 2012, private higher education in Singapore has seen a decline in the number of institutions and foreign students<sup>lxx</sup>.

These factors led the government to reevaluate both the GSI as well as its immigration policy to focus more on partnerships between local universities and foreign institutions.<sup>lxxi</sup> Additionally, a “Singaporeans First” policy was adopted that provides more seats and funding to Singaporeans. An ongoing effort is also being made to increase the number of students at the national universities so as to create more seats for local students.

## 4 Singapore’s Higher Education Cluster Competitiveness

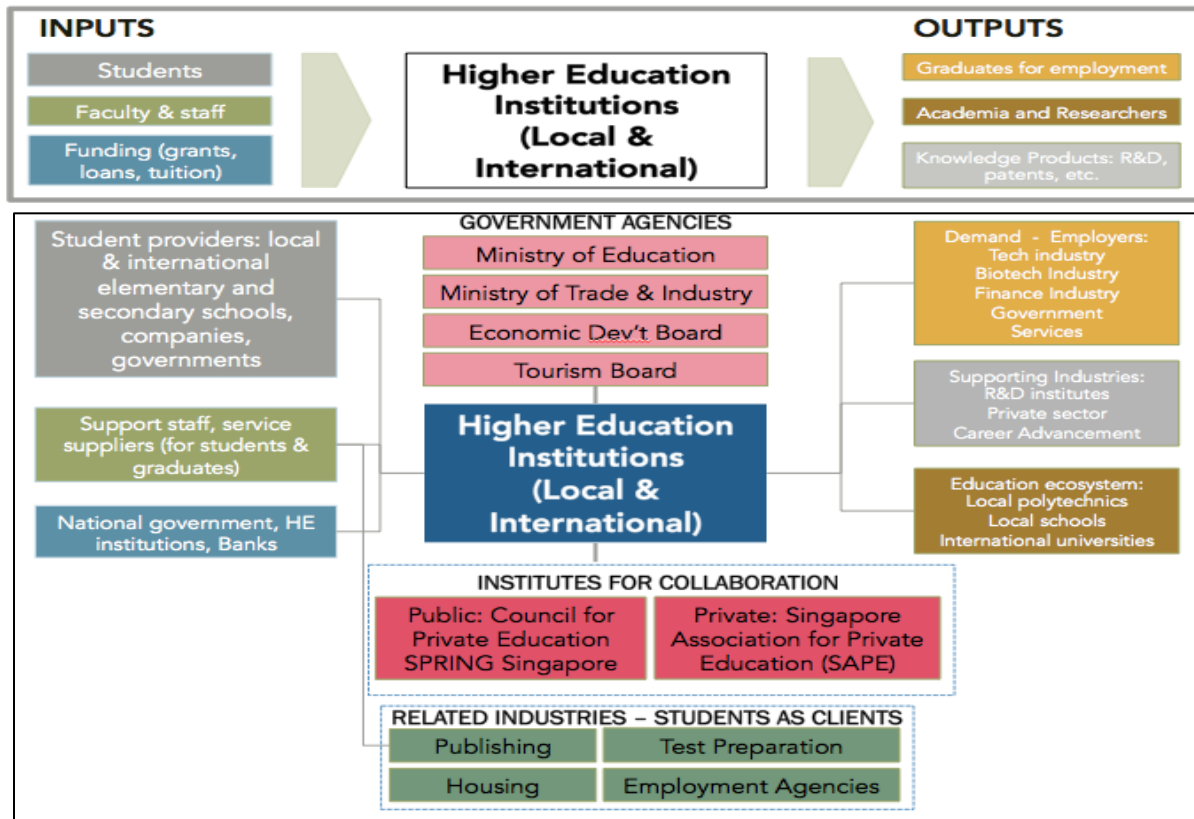
### 4.1 Cluster Map

The cluster map shows the main relationships between actors in the higher education cluster. At the top we see the inputs and outputs of this industry in general: funds and people from the input side, that after a few years turn into graduates and knowledge in the output side. At the bottom, in a more detailed map, we can see some interesting facts: The diversity of the economy in the demand side (many fields for graduates to work in), the related industries that enjoy from the cluster’s high volume of activity and the government’s central role in navigating and incentivizing the entire cluster.

In terms of institutions for collaboration (IFCs), the CPE and SPRING Singapore are government entities that coordinate, actively seek partnerships, and improve the investment climate for the cluster. The Singapore Association for Private Education (SAPE) is the private education industry’s main institute for collaboration, which was established in 2012. According to its website, “SAPE has many of



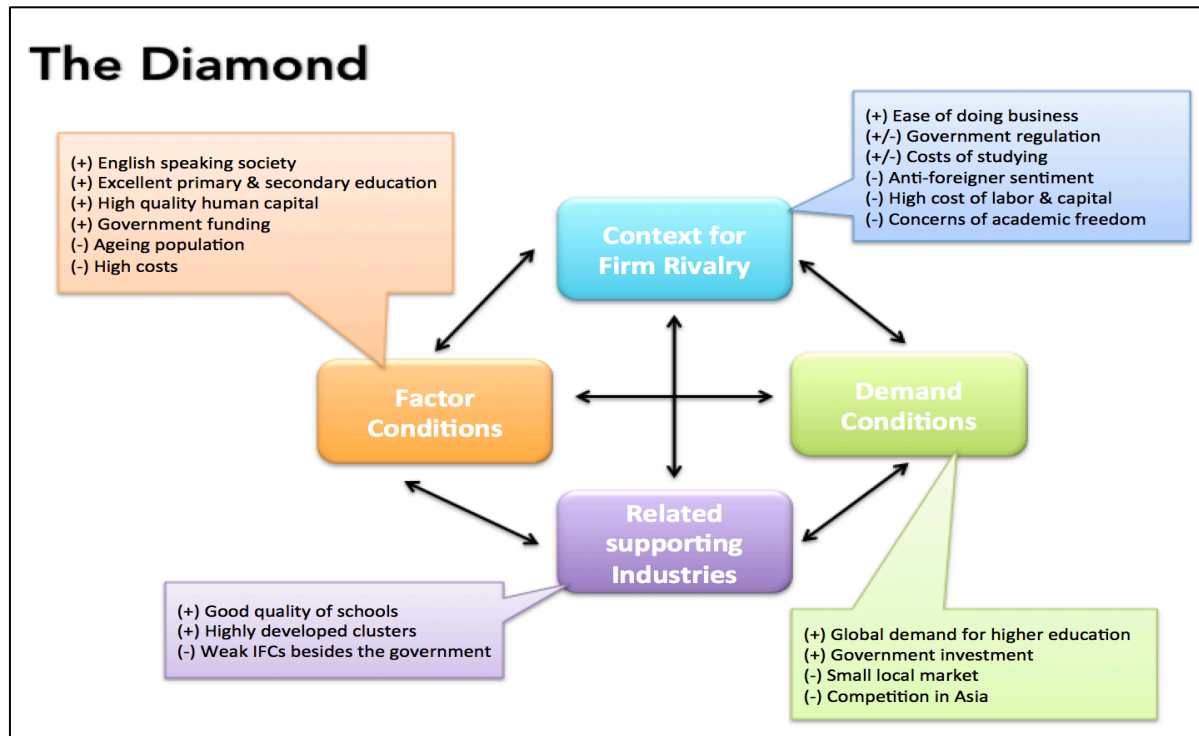
the largest and best-known PEIs as its core members... Combined together, the total student intakes of all our members number about 100,000. Also, there is a growing number of medium-sized and niche PEIs that are joining the Association...<sup>lxviii</sup>. It also enjoys strong support from key education authorities, allowing it to represent the interests of its members in the cluster.



*Singapore Higher Education Cluster Map  
(Source: Team Analysis)*

## 4.2 Diamond Analysis

In order to assess the higher education cluster's competitiveness, we used the Diamond Model:



### 4.2.1 FACTOR CONDITIONS

**English language** - With a well-educated society that speaks English, Singapore has become a very attractive environment for international universities to establish and for international students to study.

**Excellent primary and secondary education systems** - Ranked as one of the best education systems in the world, Singaporean students have PISA scores that consistently rank at the top. This high level of academic aptitude provides Singaporean and international universities with a well-qualified pipeline of students equipped to succeed in higher education.

**High quality human capital** - According to the World Economic Forum's "Human Capital Index"<sup>lxxiii</sup>, Singapore has one of the world's highest levels of human capital. This means Singaporeans are rich in talent, skills, and capabilities enabling and supporting the higher education cluster by providing sufficient human resources for the purpose of staffing a university as well as creating a dynamic economy that can hire graduates.

**Government funding** - The Singaporean government provides significant financial support to its higher education institutions, incentives for international institutions in order to attract them to build a branch in Singapore, support to its citizens to pursue higher education and grants for international students to cover some of their tuition.

**Ageing population** - Negatively affecting the potential growth of the cluster is the declining fertility rate and ageing population. Singapore's decade long low fertility rate ranging between 1.2 and 1.3 produces fewer college age people each year.<sup>lxxiv</sup> Unless more foreigners are allowed to live in Singapore and more student visas offered, Singapore will diminish in its attractiveness to foreign universities that are considering establishing in Singapore.

**High costs** - Singapore consistently ranks as one of the most expensive cities in the world. The general high costs in Singapore negatively impact the cluster in regards to attracting foreign universities. The initial and ongoing capital costs of setting up universities are substantial particularly as it relates to real estate. Universities in Singapore have to recruit more expat professors than universities in other countries because of the small local pool of qualified academics.

#### **4.2.2 CONTEXT FOR FIRM RIVALRY**

**Ease of doing business** - Singapore consistently ranks at the very top of the World Bank's Ease of Doing Business Report.<sup>lxxv</sup> As such, Singapore compares more favorably to other countries that are seeking to attract foreign institutions and international students. This ranking and reputation also helps Singapore attract more international firms to set up an office or regional headquarters locally, which in turn provides a more diverse pool of potential employers for graduates post-graduation.

**Government regulation** - The development of Singapore's higher education sector is both led and coordinated by the national government. This includes attracting foreign universities as well as international students. The government attracts international universities by providing them with substantial funding to minimize costs and reduce risks. The government's leadership position, efforts,

efficiency, together with a strong legal system, business friendly regulations and low corporate tax structure position Singapore very favorably against other countries in the global battle to lure the same international universities to establish or partner locally.

**Costs of studying** - While Singapore is an expensive place to operate, the actual costs of studying is relative. For Singaporeans students the costs are actually quite affordable as nearly all students receive generous government funding and avoid accommodation costs by living at home. The costs for international students is significantly more as they receive a much smaller amount of government funding and have to pay for accommodation, which is expensive. However, that said, the total costs for international students is similar to studying at western universities or in China or Hong Kong.

**Anti-foreigner sentiment** - Singapore has rapidly internationalized over the past 25 years. Today, only 60% of those residing in Singapore are citizens. This demographic change has fostered an anti-immigrant sentiment amongst locals. As such, the government is now making it more difficult for foreigners to work in Singapore and have reduced the number of seats available to foreign students in an effort to appeal to the citizenry.

**High cost of labor and capital** - A negative aspect of Singapore's well-developed economy is the comparatively high cost of labor, especially expatriate professors and senior administrators. Additionally, as real estate is very expensive, capital costs of building or leasing facilities for new school facilities incur significant expenditures. Together, these two large expenses are challenging for new institutions to manage the initial and ongoing capital outflows.

**Concerns of academic freedom** - There are concerns about freedom of expression and academic freedom in Singapore. When Yale was considering the Yale-NUS partnership, many faculty and students at Yale protested the partnership because of Singapore's record on limiting freedom of expression.<sup>lxxvi</sup> The Singaporean government has made assurances to respect academic freedom and to allow for regulated protests on campuses. For the cluster, Singapore's rather modest limitations on

academic freedom are still more favorable than their non-western competitors (U.A.E., Qatar, Malaysia and China).<sup>lxxvii</sup>

### 4.2.3 DEMAND CONDITIONS

**Global demand for higher education** - In spite of a possible population contraction, local demand for higher education will continue to grow and outstrip supply if significant expansions in educational offerings are not realized. Additionally, global demand for higher education services will continue grow strongly for the foreseeable future, especially from within Asia. Both Singaporean and Asian growth is driven by increased economic prosperity and the value that many Asian families place on education.

**Government investment** - The Singaporean government has invested significantly in its public universities in an effort to increase, diversify and improve the higher education cluster helping them move closer to realizing their aspiration of being the “Boston of the East”. Apart from investments in infrastructure and capital projects, Singapore has also invested in students by providing a significant amount funding in the form of scholarships and other subsidies. Lastly, Singapore has invested in faculty by providing financially generous research grants and salaries.

**Small local market** -Local demand for higher education in Singapore will continue to grow as Singaporeans increasingly seek college degrees. However, as a city-state with a population of only 3.9 million citizens and permanent residents, the size of the market is modest, roughly the equivalent size of a major US metro area. However, the large number of international students studying in Singapore has significantly augmented the small local market making it more attractive to international universities. The direction that the government takes on the amount of foreign students allowed in the future will affect the size and attractiveness of the market.

**Competition from other Asian countries** - As the global demand for higher education has grown so has the desire of national governments to establish education hubs to attract foreign students and institutions. The motivations driving the creation of education hubs are generally more economic than

academic. Several Asian and Middle East countries have made efforts to establish an education hub, largely based on the model of attracting highly regarded western universities to establish or partner locally. Qatar, Abu Dhabi, Hong Kong, Shanghai, Beijing have all attracted top tier American higher education institutions to establish locally and help build their education cluster.

#### **4.2.4 RELATED SUPPORTING INDUSTRIES**

**Good quality of schools** – Singapore’s high performing primary and secondary school systems, both public and private, provide citizens with a very high level of academic rigor. As such, Singaporeans, on average, perform at the very top of international rankings in academic achievement. Furthermore, Singaporean’s uniformly well-educated and capable population provides a rich pool of talent for which to staff up a university or a company.

**Highly developed clusters** - Singapore has a well-diversified economy with a wide range of established and growing clusters. These other clusters serve as major employers of university graduates and in some cases provide products and services to the higher education cluster. As Singapore’s economy continues to grow, albeit at a slower pace for the next few years, the diversity of sectors will continue to develop. As Southeast Asia more broadly continues to rapidly develop and grow Singapore’s physical and economic position will entice foreign companies to establish a local presence further adding to the economy and cluster development. This has led to an increasing demand for local talent who are university graduates. As Singapore has the best institutions in ASEAN the employment outlook for graduates of Singaporean universities is comparatively higher than graduates from neighboring countries.

**Weak IFCs besides the government** - Because of heavy government intervention in the higher education cluster, IFCs are practically non-existent, except for the recently established Singapore Association for Private Education (SAPE). It is still unclear how SAPE will influence policy, effectively represent its members, and help the cluster evolve and grow.

## 5 Challenges and Recommendations

### 5.1 Improve the competitive advantage

As the international and regional competitors in the higher education space become more attractive and more sophisticated, Singapore must maintain its own unique value, and create some new added value for new types of demand. We recommend increasing the competitive advantage in several ways:

#### 5.1.1 Recommendation #1: Increase the Value

Instead of subsidizing the opening of more and more universities, Singapore's government must use its higher education budgets to increase and improve its existing national institutions, improving their reputation and gaining more world recognition:

1. Open new programs in national universities to attract world-class talent to their faculties, by giving personal grants, increasing research budgets and allowing more freedom in their research. Establish a talent attraction task force led by MOE and include university representatives, EDB and SAPE representatives. [Responsibility: MOE, Priority: 1st]
2. Create a grant program to attract top-notch high school graduates from all over Asia to Singaporean universities. This will increase the overall level of studies and improve the experience and value for other students. [Responsibility: MOE, Priority: 2nd]
3. Create a government backed internship program to introduce students to various industries while they are in school and use the strong diverse economy to enhance their learning experience. Furthermore, creating partnerships with industry leaders to sponsor innovation centers for student entrepreneurs will also enrich the experience and create opportunities for students and firms alike. [Responsibility: EDB, Priority: 2nd]

#### 5.1.2 Recommendation #2: Decrease the total Cost for students

A governmental task force should be created to find solutions for reducing the costs for international students in all aspects of their lives. For instance, it should try to create a student oasis with subsidized housing to reduce the costs of living and subsidized options for food and extra-curricular

activities. Furthermore, the government should explore creating a discount or subsidiary scheme that allows student to rent rooms in private homes at a discounted rate. [Responsibility: EDB, Priority: 1st]

### **5.1.3 Recommendation #3: Target the rising demand from Asian students**

1. Increase promotion of Singaporean institutions to Asian students, with a special focus on Chinese students: Singapore has long been viewed as a gateway to Asia for western students. Now Singapore can also brand itself as a gateway to the west for Asians, seizing the rising demand in Asia for international education. With high performing international universities in a cosmopolitan English-speaking city Singapore is well positioned to attract Asians who want a western style education and experience but prefer to stay closer to home and still be in an Asian culture. [Responsibility: EDB, Priority: 1st]

## **5.2 Maintain growth while facing the anti-foreigner sentiment**

One of the key challenges today is how to grow the higher education cluster while maintaining political power and the public support yet while bringing in an increasing number of foreign students and faculty.

### **5.2.1 Recommendation #4: Disentangle the connection between anti-foreign sentiment and the higher education cluster**

1. Declare a clear governmental policy about the percentage of foreigners in higher education, to maintain a constant ratio. Any expansion of universities will allow more room for both locals and foreigners according to the ratio. [Responsibility: MOE Priority: 3rd]
2. Regulate work permits for graduating students: today every student that graduates in Singapore can remain in Singapore and work. With increasing numbers of foreigners coming to study, the number of students who are allowed to remain in-country post graduation must be limited according to the need in the labor market. Therefore, a different policy must be designed to apply for work permits upon graduation. [Responsibility: Ministry of manpower Priority: 1st]



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