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Invitation strategy for cutting edge industries through MNCs and global talents: The case of Singapore

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PROMOTING DYNAMIC & INNOVATIVE GROWTH IN ASIA: THE CASES OF SPECIAL ECONOMIC ZONES AND BUSINESS HUBS

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Chapter 5

Invitation Strategy for Cutting Edge Industries through MNCs and Global Talents: The Case of Singapore

Kim Song TAN (Singapore Managemtent University)

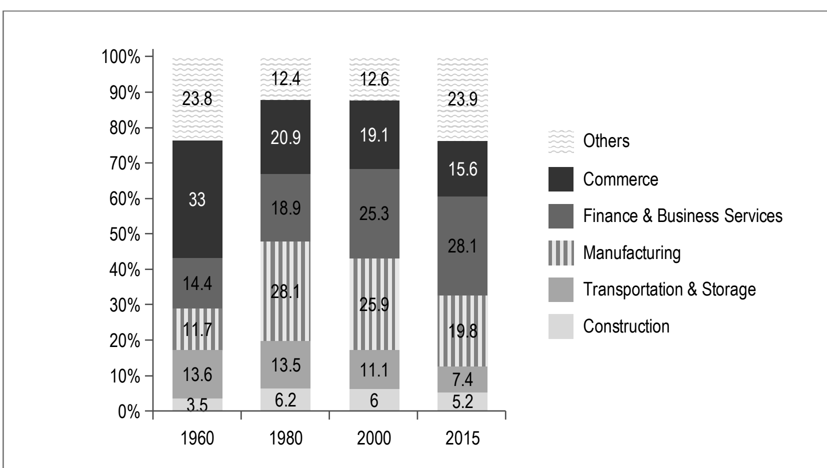
1. Introduction

Singapore presents an interesting case of how a country achieves dynamic economic development and innovation through the “invitation” strategy of a business hub. Despite being a small city-state with limited domestic market size and no meaningful hinterland or natural resources to speak of, Singapore has managed to transform its economy dramatically over the past 50 years by leveraging the strengths of other economies. Specifically, it has been able to attract (or “invite”) various types of productive resources, including foreign capital, foreign technology and foreign workers (both skilled and unskilled) to make up for what it lacks. This has helped Singapore not only achieve sustained growth and development but also enhance its innovative capacity.

Figure 5-1. Singapore’s Strategic Location

At the time of independence in 1965, Singapore had a land area of only 581.5 square kilometers and a population of barely two million people. It had hardly any endowment of natural resources - not even an adequate supply of drinking or industrial water.[1] The main comparative advantage it enjoyed at that time was its strategic geographical location, which made it a natural commercial and trading hub for the region (see Chart 1). The trading hub status in turn helped support a number of associated industries such as logistics, transportation, and financial services. The manufacturing activities at that time were mostly of the labor-intensive, light industries type. As shows in Chart 2, commerce, transportation, and storage accounted for almost 47 percent of GDP in 1960 with trade services alone taking up 23 percent of GDP. Manufacturing accounted for only 11.7 percent of GDP, and financial services for 14.4 percent.

Figure 5-2. Changing Share of Singapore Economy (% of GDP)



Source: Department of Statistics, Singapore (SingStat).

1) Figures taken from http://www.dbs.nus.edu.sg/staff/details/hugh_tan/old/Ch4%20Waste-%20and%20Reclaimed%20Land%20p.%2078.pdf and http://www.populstat.info/Asia/singapoc.htm.

Today, the economy is far more diversified and sophisticated. In 2015 manufacturing contributed close to 20 percent of GDP, while finance and business provided more than 28 percent.[2] Over the past two decades, the manufacturing sector has consistently contributed 20 to 25 percent of GDP, an official target that remains relevant today as the government seeks to maintain a certain degree of diversification in the economy.[3] More importantly, there is much greater depth in the economy. Manufacturing activities have shifted from the labor-intensive to the technology- and the innovation-intensive segments, while a large part of the services sector activities now comes from knowledge-based industries, many of them exportable services.

Singapore has also made significant strides in building up its technological and research capability. The gross expenditure on research and development (GERD) as a percentage of GDP rose from 0.85% in 1990 to 2.25% in 2004. By 2015, it had gone up to 3.5% which put Singapore in the same rank as many developed economies.[4] In 2015, Singapore was placed seventh in the Global Innovation Index, which surveys 141 economies around the world and uses 79 indicators across a range of themes.[5] At US$56,286, Singapore had one of the highest per capita incomes in the world in 2014.[6] In the words of the country's founding prime minister Mr Lee Kuan Yew, Singapore has moved from a "third world" country to a "first world" coun-

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2) Figures are taken from SingStat at http://www.singstat.gov.sg/statistics/visualising-data/charts/share-of-gdp-by-industry.

3) This contrasts with the situation in Hong Kong, where more than 95 percent of the GDP comes from the services sector while manufacturing has virtually been hollowed out.

4) See "National Survey of R&D in Singapore 2013," A*STAR, December 2014; and "Step 2015: Science, Technology and Enterprise Pan 2015," A*STAR, 2015.

5) See Global Innovation Index 2015 by World Intellectual Property Organization, at https://www.globalinnovationindex.org/userfiles/file/reportpdf/GII-2015-v5.pdf (page 32).

6) See World Bank, "World Development Indicators," GDP per capita (current US$). Retrieved from http://data.worldbank.org/indicator/NY.GDP.PCAP.CD.

try in less than 50 years.[7)]

The successful transformation of the economy reflects, to a large extent, the effectiveness of the development strategy that the Singapore government has adopted. Over the past half century, it has positioned the city-state as an efficient and highly livable business hub in the region, thereby allowing it to attract the strategic resources that it needed, such as global capital and global talents. The developmental objectives and the specific strategic resources it was looking for might have shifted over time, but the basic approach of providing an attractive business hub environment to attract these resources remains unchanged.

Broadly speaking, the Singapore economy can be said to have gone through two phases of growth and development. As Tan and Phang (2005) noted, phase I (1960s to late 1990s) could be seen as an "efficiency-driven" growth phase. During this period, the city-state presented itself as an efficient business hub for multinational corporations (MNCs), and foreign direct investment played a critical role in the growth and development of the economy. Helping the MNCs achieve production efficiency was the key focus of economic policy, and a wide variety of policy instruments including massive investment in "efficiency infrastructure" was employed to this end.

Phase II (early 2000s to date) may be termed as an "innovation-driven" growth phase. The country embarked on a journey to transform itself into a "global city", focusing on attracting creative talents to help realize its new vision of having innovation and increase in productivity as the main engine of economic growth. The targeted resources shifted from MNCs to global creative talents and with that, the main policy instruments changed as well. However, the essence of the invitation strategy, that of sourcing for needed strategic resources from abroad (creative talents in this case) by offering Singapore as an attractive business hub remained intact.

The motivation for setting up a business hub is not fundamentally differ-

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7) See Lee Kuan Yew 2000.

ent from that of a special economic zone (SEZ). The SEZs are designed to provide a conducive operational environment to attract businesses (both local and MNCs) that the government (local or national or both) is trying to promote - businesses that are seen as important to industrialization, export growth, employment creation, technology transfer, or other policy objectives. The underlying principle is that locating all the firms in the same area helps to increase efficiency through economies of scale and agglomeration effects. In transitional economies, keeping the SEZs as enclaves could also help shield the rest of the economy from the impact of economic liberalization within the zones.

As Zeng (2016) noted, unlike SEZs, which are usually set up as enclaves, a business hub is a much looser concept and typically involves a wider area including a whole city. Within a large business hub, there could even be mini SEZ-like areas designated for the development of specific industrial clusters. To be effective, a business hub has to be supported by an adequate provision of hard infrastructure and soft infrastructure. Importantly, as Zeng (2016) pointed out, a business hub takes time to develop. Only after a great deal of trust and a high level of confidence have been built, will the business hub be widely accepted by the international business community. This also means that it would be difficult to dislodge and replace a business hub, once it is successfully established - unless it is ravaged by some catastrophic events. In fact, the position of a successful business hub tends to be strengthened over time through agglomeration effects. Hence, regional and international business hubs like London, New York, Singapore, and Hong Kong remain unrivaled today.[8)]

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8) There were such examples in the past. For example, Lebanon's position as the business hub in the Middle East was destroyed by the civil war in the 1970's and its position is now arguably replaced by Dubai. Hong Kong's status as the business hub in Asia was not affected by its return to China in 1997 only because the Chinese government had agreed to a "one country, two systems" policy. Whether Brexit (UK's exit from the European Union) in 2016 would prove to be such a monumental event that could undermine London's global busi-

What makes Singapore different from some other business hubs in the region is that it effectively treats the whole world as its hinterland and positions the whole country as a business hub for the global economy. To overcome its lack of economic space and resources, Singapore decided early in its development to look to the rest of the world not only as the market for the goods and services it produces but also as a source of supply of resources it needs. The small size of the country makes it easy to apply the business hub concept to the whole economy without creating any enclaves. In fact, the success story of the Singapore economy is very much a story of how it effectively uses the invitation strategy and leverages on the strengths of other economies, to enhance its own productive and innovative capacity. When the economy moved from its first growth phase to the second, for example, the government simply fine-tuned certain policy instruments to cater to the needs of creative talents (instead of MNCs) while preserving the broad thrust of the invitation strategy.

Another difference between Singapore and other more conventional business hubs is the pragmatic way with which it manages the economy. A cornerstone of any successful business hub lies in the free market, regulation-light environment it provides, with limited interference from the state. Yet, Singapore is long known for the strong interventionist stance of the government. The intervention takes the form of the usual redistributive policy and industrial policy, plus heavy participation of many "government-linked companies" (or GLCs, companies that are wholly or majority owned by the Singapore government, many of them managed by Temasek Holding, a sovereign wealth fund) that compete directly and aggressively with the private sector firms. As Tan and Bhaskaran (2015) noted, "compared with the other dynamic Asian economies, government intervention in the economy in Singapore is both more intrusive and more extensive."[9] Indeed, the

ness hub status remains to be seen.

9) See Tan and Bhaskaran 2015, 53.

Singapore government takes pride in its ability to make policy changes without being constrained by any ideology. This pragmatic approach has given Singapore flexibility to continually redefine and strengthen its position as a business hub, as it responds to the changing competitive landscapes in the global economy.

This chapter gives an account of how the Singapore economy achieves dynamic growth and development and innovation through the invitation strategy and the adaptation of the business hub concept. In Section 2, we discuss how Singapore as a business hub succeeded in attracting MNCs to help restructure and upgrade the economy and to move up the technological ladder, in the first three decades of its development. In Section 3, we extend the discussion to the period when policy focus shifted to the attraction of creative talents instead of MNCs, as the government tried to improve on the country's indigenous innovative capacity. Section 4 looks at the critical factors that help account for Singapore's success in implementing the invitation strategy and discusses lessons that can be drawn from Singapore's experience. It also addresses some of the downsides that arise from the pursuit of the invitation strategy. Section 5 concludes with some thoughts on the relevance of the invitation strategy for sustained economic growth and development in the long run.

2. Business Hub for MNCs: 1960s to Late 1990s

For close to 150 years, from 1819 to 1965, Singapore thrived as a free port under British colonial rule. The strategic geographical location that it enjoyed gave the city-state an edge over other cities as the trading hub of the region. Entrepot activities together with the transport, logistics, and financial services made up the main pillars of the Singapore economy. To facilitate trading activities, the British colonial government put few trade barriers in place.

There were also few restrictions on the movement of capital and labor.

When Singapore gained independence from British rule, first as part of the Federation of Malaysia from 1963 to 1965, and then as an independent state since August 1965, policy planners realized that being a regional trading hub alone would not be sufficient to provide the depth or the resilience that the economy needed for sustained growth in the long run. Like most other newly independent countries at that time, Singapore decided to go for large-scale industrialization. But unlike many other countries that did so with the help of an import substitution policy, Singapore chose to continue with its free trade tradition, focusing instead on export orientation. In the absence of a large domestic market, the import substitution policy would not have been effective.[10)]

Given the limited resources Singapore had at that time, foreign direct investment through MNCs was seen as a quick and effective way to help the country industrialize.[11)] MNCs brought capital and technology, but importantly they also brought an existing distribution network in the global market. To attract the MNCs, the government tried to turn Singapore into one of the most, if not the most, efficient business environments in the region. By making Singapore a first world city in a third world region, it hoped to provide an oasis for international investors in a region where business operations were often hamstrung by myriad regulatory and administrative hurdles. This quest for efficiency has been a hallmark of the Singapore economy, one that has continued to this day.

A multipronged approach was adopted with a variety of policy instruments being employed to increase Singapore's appeal to the MNCs. The

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10) Singapore did try import substitution policy for a short time (1963-65) when it was part of the Federation of Malaysia comprising Peninsula Malaya, Singapore, Sarawak, and Sabah. The attempt failed when Singapore had to exit the federation abruptly in August 1965.

11) See Goh Keng Swee 2014; Wong and Ng eds. 2001. Indeed, among the four dynamic East Asian economies (the so-called Four Asian Tigers of Hong Kong, Singapore, South Korea, and Taiwan), Singapore is most dependent on MNCs for economic growth. See Lim 2013.

government invested strategically in physical and social infrastructure to help reduce the operating costs of the business environment; it also made sweeping changes to rules and regulation as well as social policy to facilitate the MNCs' operations. In addition, a special government agency, the Economic Development Board (EDB), was set up to market Singapore to MNCs as a choice investment location and then to provide one-stop service for the MNCs, to help them set up operations in as seamless a way as possible.

Strategic Investment in "Efficiency Infrastructure"

Like most other business hubs or SEZs, Singapore put in place a wide range of conventional fiscal and financial benefits as incentives for the MNCs. The Economic Expansion Incentives Act (1967), for instance, granted "pioneer" status to foreign corporations, with tax benefits for up to five years. In most cases, these tax breaks were continually extended in the late 1970s. Understanding that Singapore needed much more than the conventional tax and financial benefits to differentiate itself from other countries wooing the same MNCs, the government invested strategically but heavily in physical and social infrastructure that had a huge impact on the efficiency and operating costs of the MNCs. It undertook heavy investment in such facilities as port, airport, logistics, telecommunications, banking, industrial estates, and shipbuilding and repairs to enhance the regional and global connectivity of the city-state - a crucial consideration in the MNCs' choice of investment locations. Many of these investments were carried out through public sector agencies such as the Port of Singapore Authority, the Public Utilities Board, and the Jurong Town Corporation.

The government also set up numerous government-linked companies to help accelerate the investment in "efficiency infrastructure." The GLCs are state-owned enterprises but are expected to be managed according to the commercial principles in the private sector, with profit generation being the key driving force. GLCs such as Singapore Telecom (SingTel), Singapore Airlines and Neptune Ocean Lines, for example, started out to promote Singapore's connectivity and trade links, while the Development Bank of Singapore (now DBS Bank) was established initially as a financing institution for development. Even the public sector agencies that were in the business of providing public goods or merit goods were encouraged to generate surpluses or at least not to be incurring losses. Many of the GLCs and government agencies were later listed in the Singapore Stock Exchange. Some such as Singtel have remained among the stock exchange's largest listed companies.

In addition, the government invested heavily in social infrastructure to help MNCs overcome some of the operational challenges, with investment in human resource development being among the most important. Various vocational training programs were offered through a number of newly set up polytechnics and vocational institutes, to help equip the workforce with the skills that the MNCs needed. These technical institutes have continued to evolve over time, to cater to the changing needs of the MNCs and of the economy. To ensure a steady supply of skilled workers to serve the needs of the MNCs, the government also leveraged on the training capability of the MNCs and assistance from their home governments, by setting up a large number of joint training institutes with them.[12)]

Changes in Business Rules and Social Policies

In addition to investment in infrastructure, the Singapore government carried out sweeping changes in social policy to help ease the operations of the MNCs. The examples below help illustrate its commitment and determi-

12) These include, for instance, Japan-Singapore Technical Institute, Japan-Singapore Training Centre, Japan-Singapore Institute of Software Technology, French-Singapore Institute, German-Singapore Institute, Philip Government Training Center, Tata-Government Training Center, and Rollei-Government Training Center.

nation to make Singapore a friendly and attractive business hub for MNCs in the 1960s and early 1970s.

Labor Relations

In the 1960s, the militancy of the labor unions and industrial strikes were a key deterrence to MNCs in their investment decisions. The Singapore government moved swiftly to enact the Employment Act (1968) and the Industrial Relations Amendment Bill (1968) to allay the MNCs' concerns. These legislations severely limit the powers of the Industrial Arbitration Court and strengthen management's rights over the hiring, firing, promotion, and transfer of employees. As Tan and Bhaskaran (2015) noted, the new laws cemented government control over the workforce, which became more compliant as a result. At the same time, the People's Action Party (PAP) government took drastic measures to break the back of the independent labor movement and set up a new trade union, the National Trades Union Congress (NTUC), as the only official labor union federation in Singapore. Headed by a cabinet minister, NTUC maintains a close and symbiotic relationship with the government to help ensure industrial peace in the country.

The impact was felt very quickly. Over the period of 1960 to 1967, a total of 1,284,029 man-days were lost as a result of work stoppages. But from 1978 onward, as the symbiotic relationship between the government and the NTUC has continued, there has been virtually no sign of industrial unrest in Singapore.[13] Over the years, with the support of the NTUC, the government has been able to carry out many pro-growth and pro-MNC policies. In the 1985 recession, for example, the labor unions agreed to accept a large wage cut to help businesses restore competitiveness.

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13) See Tan and Bhaskaran 2015.

Land Use Policy

Careful planning on the use of industrial land is another critical component of the social policy carried out to support the invitation strategy. In land-scarce Singapore, land is treated sensitively by the government as a strategic asset. The allocation of land for industrial and commercial use is carefully planned through road maps such as the Concept Plan. First drawn up in 1971 and reviewed every 10 years, the Concept Plan guides the strategic use of land for residential, commercial, and transport purposes. It also provides for industrial clustering to reap increasing returns to scale that could help incentivize MNCs to operate in Singapore.[14)]

Several controversial legislations such as the Land Acquisition Act (1967) were used to support what the government considered efficient use of land including that of building industrial estates. The Act allowed the government to acquire land from individuals at a rate far below the prevailing market prices, once the land had been gazetted for developmental purposes.[15)] To help incentivize the MNCs in the 1960s and 1970s, EDB, working with the Jurong Town Corporation, adopted the "sharing prosperity, sharing misery" principle from Japan in leasing industrial land to MNCs and charging them for the usage. The principle enabled the MNCs to pay relatively little during the first five years of the 30-year land lease and to increase payment in later years when the industrial estates and surrounding areas were fully developed and their value enhanced. The net result is that MNCs were able to channel more of their resources to other operational uses in the initial years.[16)]

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14) See https://www.ura.gov.sg/uol/concept-plan.aspx?p1=View-Concept-Plan&p2=Concept-Plan1971.

15) For many years, the compensation was based on the 1973 market price of land without adjustment to reflect the changing market value. The law was subsequently amended to align the compensation with prevailing market rates.

16) See Ghesquiere 2007.

Fighting Corruption

Recognizing the corroding effects corruption had on MNCs operations in Singapore, the government tried to root out the problem early. The Corrupt Practices Investigation Bureau, a powerful anti-graft agency, was placed directly under the purview of the prime minister's office in the early 1960's to give it even more teeth. Strict rules governing the behaviors of the civil servants were laid down. In a few high-profile cases, cabinet ministers were charged and jailed. These events had a strong deterrent effect on the civil service. Indeed, for years, Singapore has been consistently ranked among the least corrupt countries in the world. In 2014, Singapore was ranked seventh out of 175 countries in Transparency International's Corruption Perception Index. The government also scores well (often in the 99th percentile) in the Control of Corruption Index, which reflects perceptions on whether public power is being used for private gains.[17)]

Language Policy

Another important social policy that the Singapore government introduced in the 1960s was to make English the main official language and medium of instruction in schools. The move helped improve the global competitiveness of the workforce and eased some of the operational pressures for the MNCs. Yet, it was not a move without controversies. About 75 percent of the population in Singapore at that time was ethnic Chinese who did not take well to the dilution in the use of Chinese language in schools, including the closure of a prominent Chinese language university, Nanyang University.

One-Stop Service for MNCs

The designation of one single agency to attract and to provide one-stop service to the MNCs was an important step that the Singapore government

17) See figures by Transparency International, https://www.transparency.org/country/#SGP.

took in the early 1960's. Set up in 1961, the Economic Development Board was tasked to persuade MNCs to invest in the city-state and then to help them clear various regulatory hurdles, provide them with access to resources they needed, and in some cases, grant subsidies to them.18)

As the chief marketing agency for Singapore, EDB maintains offices in major cities in the world that it saw as likely sources of investments targeted by Singapore. The New York and Hong Kong offices were among the first ones set up in the early 1960s. Compared with other public sector agencies, EDB officers are often given more latitude in their marketing campaigns. They were also able to enlist the help of political officeholders to help in the global marketing efforts.

To provide effective and comprehensive one-stop service, EDB often enlisted the help of other government agencies. To get the MNCs to invest in the Jurong Industrial Estate in the 1960's and 1970's and the Jurong Island Petrochemical Hub in the 1990's, for example, it worked closely with the Jurong Town Corporation which took charge of estate development and management. EDB has remained the lead agency dealing with the MNCs and the coordinating body among the government agencies even as the economy evolved over time.

Examples of how the invitation strategy worked in the first growth phase….

The construction of the Jurong Industrial Estate and the Jurong Island Petrochemical Hub provide two examples of how Singapore used the multi-pronged approach to attract MNCs to help achieve growth and development in the first growth phase. The examples also illustrate how the government adjusted its policy instruments as the target shifted from labor-intensive to

18) See Chan 2002. An oft-cited example of the one-stop service was the investment of Texas Instruments in the 1960s. Only 50 days elapsed between making the decision to invest and commencing the production line in Singapore. See Wong and Singh 2011.

capital- and technology-intensive industries over time (See Appendix 5-1 and Appendix 5-2).

3. Business Hub for Global Creative Talents: From Early 2000s to Date

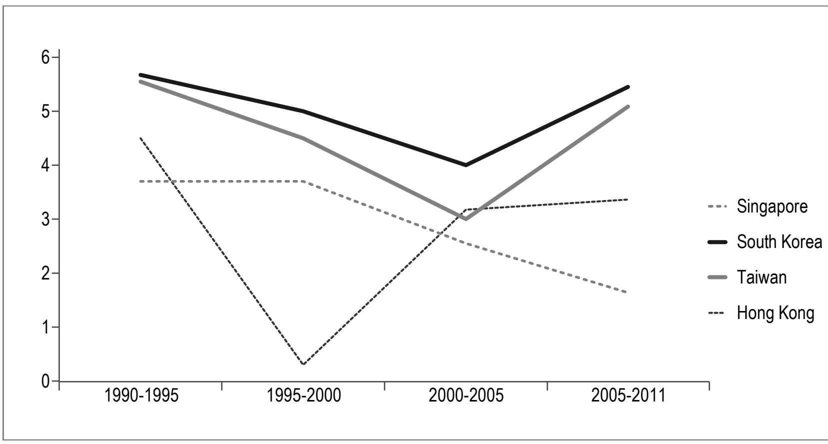
The MNC-driven growth strategy succeeded in helping to transform the Singapore economy from a trading hub in the 1960s into a major manufacturing hub in the region by the 1980s. It also helped resolve the unemployment problem that plagued the economy in the 1960s. By early 1970s, unemployment was no longer an issue. Indeed, except for a few short periods, the labor market in the Singapore economy remained tight for most parts of the next four decades.[19] The benign job market conditions allowed the government to focus on restructuring and upgrading the economy, to build up a base for more sustainable growth in the long run. Indeed, with sustained and committed efforts on education and training, and technology transfer from MNCs, the technical capability of the workforce rose steadily.

While the overall GDP growth rate during this period was impressive, the sources of growth were not as satisfactory. Various economists have suggested that the Singapore economy appeared to have grown “through perspiration rather than inspiration”, and that the bulk of the GDP growth was accounted for by capital and labor inputs, not productivity increases.[20] There have been debates over the actual contribution of productivity growth to the GDP growth in Singapore, with many pointing to a disappointing pic-

19) The average unemployment rate from 1992 to 2015 was about 2.4 percent; see statistics from Ministry of Manpower at http://stats.mom.gov.sg/Pages/UnemploymentTimeSeries.aspx.
20) See for example, Young 1992; Krugman 1994; and Lim 2013.

ture in the city-state when compared with the other dynamic East Asian economies.[21] (See Chart 3)

Figure 5-3. Labor Productivity Growth – Asian Dynamic Economies



Source: Asian Productivity Organization, Productivity Database 2013; Tan and Bhaskaran 2015.

In the early 2000s, the government made a fundamental shift in its growth strategy. Recognizing the continual erosion in the efficiency edge it had previously commanded over other countries in the region and the poor performance of productivity rise as a contributor to GDP growth, it decided to shift the policy emphasis to innovation - making it the main driver of growth - and to target industries characterized by a high rate of innovation and productivity increase. In 2003, the Economic Review Committee (ERC) - a government committee tasked to map out the direction for the economy in the medium term - identified the following innovation-driven industries to be promoted: bioscience, global banking and finance, wealth management, lifestyle industries, arts and culture, media and design, education, and health care. The focus was reaffirmed in the subsequent medium-term economic blueprint, the report of the Economic Strategies Committee (ESC) in 2011.

21) See IMF 2000.

The emphasis on innovation-driven growth remains in place today although what are considered crucial industries would likely change over time. The new Committee on the Future Economy (CFE), set up in December 2015, has been charged with identifying industries that would not only add value to but also create value for the economy. The CFE is expected to release its report at end of 2016 although the new targeted industries would likely include advanced manufacturing, applied health sciences, smart and sustainable urban solutions, logistics, aerospace, and Asian and global financial services - industry clusters that Finance Minister Tharman Shammugaratnam highlighted in his 2015 budget presentation.22)

A critical difference between the first and the second growth phase is that, in the second growth phase, efficiency of the business environment, while necessary, was no longer considered a sufficient condition for the success of the invitation strategy. What was deemed crucial was the presence of a critical mass of creative workers. The implicit assumption seems to be that, in innovation-driven industries, firms and investment would flow to where the creative workers are, rather than the other way around - workers flowing to where the firms are. Thus, instead of equipping the workforce with the skills to serve the needs of existing MNCs, it was felt that the city-state should build up a creative workforce that could act as a magnet for the MNCs and other companies engaging in innovation work. If there was no adequate supply of creative talents in Singapore, the city-state should look outward to the rest of the world. In effect, the invitation strategy was preserved, except that the targeted resource to be wooed had shifted from MNCs to creative talents.23)

As the targeted resource changed, so did the policy instruments used, prompted by an underlying belief that creative talents are driven by motiva-

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22) See Budget Statement, Ministry of Finance, Singapore, 2015. See http://www.singaporebudget.gov.sg/budget_2015/BudgetSpeech.aspx.

23) See Tan and Phang 2005.

tions that are different from those of the professionals and managers working for MNCs. The quality of the living and the working environment matters, as do the lifestyles. To attract these talents, it was thought that Singapore needed to provide not only a conducive environment for innovation work, but also lifestyles that were available in other global cosmopolitan cities such as London, New York, or Boston.[24] Indeed, a consistent theme in both the ERC (2003) and the ESC (2010) reports was the emphasis on making Singapore "a leading global city, a hub of talent, enterprise and innovation" and "the most open and cosmopolitan city in Asia, and one of the best places to live and work in."[25]

Just as it did in the 1960s and 1970s, the government employed a multi-pronged approach to effect the necessary changes. New fiscal incentives were unveiled, while new physical and social investments were made and new rules and social norms adopted to effect the changes. The EDB, together with other government agencies, were tasked to market Singapore to global creative talents and to facilitate their moves to Singapore.

Strategic Investment in "Innovation Infrastructure"

A wide range of fiscal and financial incentives were offered to individuals and firms that were considered parts of the innovation-driven industries. The generous incentives offered to the bioscience and the wealth management industries are two such examples (See Appendix 5-3 and Appendix 5-4). In addition to continued investment in "efficiency infrastructure," the government also started investing heavily in "innovation infrastructure" - physical and social infrastructures that make Singapore a more conducive environment for innovation activities. The intellectual property rights laws were significantly strengthened with the setting up of supporting facilities

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24) The Singapore government's thinking appears to be consistent with what Richard Florida advocated in his thesis on the creative class. See Florida 2002.
25) See Report of the ERC 2003, Chapter 4: 51-60, and Report of the ESC, 2011: 7-10.

such as the IP Academy Singapore.

The government also substantially stepped up the spending on research and development (R&D) to scale up such activities. Between 2003 and 2013, the gross expenditure on research and development (GERD) rose by a compound annual growth rate of 8.2 percent, from $3.4 billion to $7.6 billion. Meanwhile, the R&D Manpower (including researchers, postgraduate students, technicians and support staff) grew from 28,825 persons to 47,275 persons, whereas the number of researchers (excluding postgraduate students) increased from 19,448 to 34,373 during the same decade.[26]

Rules and regulations related to starting up and doing business in Singapore were relaxed. For example, the Land Intensification Allowance implemented in 2010 gives recipients tax allowances to facilitate the intensification of industrial land use toward more efficient and higher value-adding activities. The Headquarters Programme provides incentives that encourage companies to set up regional bases in Singapore.[27] These measures have helped make Singapore one of the easiest places to do business in the world. (See Table 5-1)

Table 5-1. WEF Competitiveness and World Bank Ease of Doing Business Rankings (Top 10 Economies, 2015-16)

Country	WEF "Overall Competitiveness"	WEF "Infrastructure Competitiveness"	World Bank "Ease of Doing Business"
Singapore	**2**	**2**	**1**
Switzerland	1	6	20
United States	3	11	7
Germany	4	7	14
Netherlands	5	3	27

26) See "National Survey of R&D in Singapore 2013," A*STAR, December 2014.

27) See https://www.edb.gov.sg/content/edb/en/why-singapore/ready-to-invest/incentives-for-businesses.html.

Table 5-1. Continued

Country	WEF "Overall Competitiveness"	WEF "Infrastructure Competitiveness"	World Bank "Ease of Doing Business"
Japan	6	5	19
Hong Kong SAR	7	1	3
Finland	8	25	9
Sweden	9	20	11
United Kingdom	10	9	8

Source: World Economic Forum Global Competitiveness Index 2015-16; World Bank "Ease of Doing Business;" 2015.

The education and training system was twisted to place more emphasis on creativity and innovation. A new university, the Singapore Management University (in collaboration with the Wharton School in the United States) was set up in early 2000s to offer a more innovative pedagogical approach than those at the other two established universities. A fourth university, the Singapore University of Technology and Design (SUTD, in collaboration with the Massachusetts Institute of Technology and Zhejiang University) was founded in 2009 to provide more creativity- and innovation-based programs. Greater emphasis was also placed on the education of the arts, away from the traditional focus on science and engineering. A new high school, School of the Arts, was set up, with considerable state subsidies, to produce artists and graduates who could contribute to the arts and the media businesses. Foreign universities such as the Tisch School of the Arts were invited to set up campuses to provide tertiary education programs that were not available in Singapore.

The economic impetus of these shifts may be seen in the following statement from the former Prime Minister, Mr Goh Chok Tong. In an interview with the Asia News Network in May 2002, he noted, "For many years, we concentrated on the economic side. But if you want the economic side to flourish, you need more entrepreneurs, you need more creativity. So, you must also look at the arts. The two must go together". [28)]

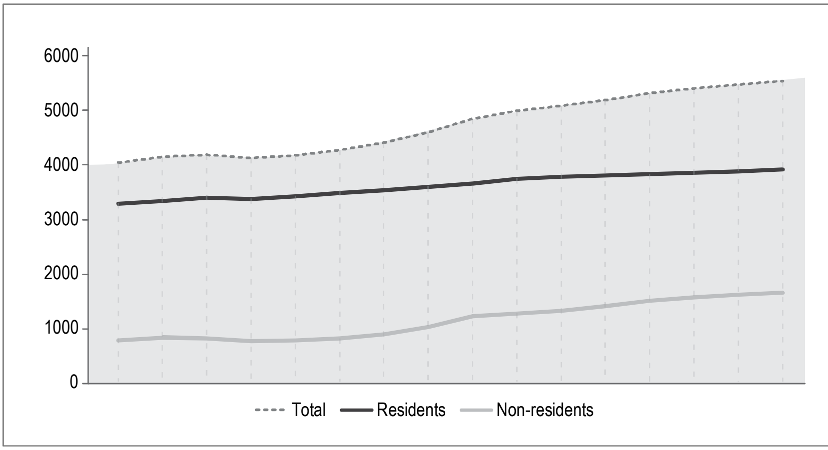
Changes in Business Rules and Social Policies

One of the biggest policy changes to support the new growth strategy - a change whose repercussion is still being felt in the economy today - was the massive relaxation of rules on immigration and foreign workers, to help bring in a large number of creative talents, entrepreneurs, and high-income professionals who would fit in with the innovation-driven growth vision. A new class of employment pass, the S-Pass, was introduced to bring in foreigners who were deemed to have entrepreneurial potential. New incentives were also rolled out to attract high-net-worth individuals, who were seen as important for wealth-creating activities in the economy. The result was immediate. Between 2005 and 2013, the size of the non-resident workforce rose 101.6 percent while the population rose more than 20 percent to over five million - a staggering change in a small city-state of about 719 square kilometers.[29)] (See Chart 4)

28) See Chapter 1, Report of the ERCt, 2003. https://www.mti.gov.sg/ResearchRoom/Documents/.../ERC_SVS_CRE_Chapter1.pdf.

29) Source: SingStat.

Figure 5-4. Singapore Population Size (thousands)



Source: SingStat.

From the early 2000s onward, foreigners were increasingly appointed to senior positions in the government and the GLCs, including positions that were previously considered "sensitive" such as the deputy managing director of the central bank; CEO of the Singapore Stock Exchange; CEO of DBS, one of the largest banks in Singapore and CEO of Neptune Orient Lines, the national shipping line.

Attempts were also made to bring back talented Singaporeans who were working and living abroad. Initiatives such as "Singapore Connect" and "Majulah Singapura" were launched to connect overseas Singaporeans with entities in Singapore. An annual "Singapore Day" event was started in major cities to bring Singaporeans living in these cities together and to help showcase Singapore as a choice location for work and residence.

There were also attempts to promote entrepreneurship among Singaporeans. The government set up various investment funds to encourage venture capital and private equity investments such as a US$1 billion Technopreneurship Investment Fund in the late 1990s. A junior minister was tasked to lead a number of campaigns in the early 2000's to encourage more Singaporeans to become entrepreneurs although many of these campaigns appear to have fallen flat.[30)]

In an effort to change the "nanny state" image of Singapore, the government also tried to allow for a freer and more diverse lifestyle and to make the city-state a more exciting place.[31)] Large amount of public funds were expended to "make over" the city, to offer lifestyles similar to those in other global cities. These include an extensive facelift for the urban landscape and construction of various iconic projects including the Esplanade (a state-of-the-art performing center), Gardens by the Bay (a large seaside tropical garden), two Integrated Resorts (casinos), and other cultural landmarks. The city also started aggressively to bid for the rights to host global entertainment events such as F1 (night car racing), sports events (major tennis and golf tournaments), and world-class arts and entertainment performances.

One-Stop Service

Working with different government agencies, the EDB continued to play the role of marketing agent and one-stop service provider, to attract creative talents (and firms) working in innovation-driven industries. For example, in the Global Schoolhouse and the World Class University programs - initiatives aimed at transforming Singapore into an educational hub - EDB teamed up with Singapore Tourism Board, Spring Singapore (the agency in charge of developing enterprises especially the small and medium-sized enterprises, or SMEs, within Singapore), IE Singapore (the agency tasked with helping Singapore companies to expand overseas), and the Ministry of

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30) See, for example, various initiatives of business networks launched in early 2000s by the then minister of state for trade and industry.

31) There were attempts, for example, to allow for a more relaxed approach toward the LGBT community even in the civil service. A Speaker's Corner was set up for Singaporeans to air their views on political and social issues, in the same fashion as the Hyde Park in London; there were debates about allowances for bar-top dancing and so forth.

Education. (See Appendix 5-5: Global Schoolhouse Program)

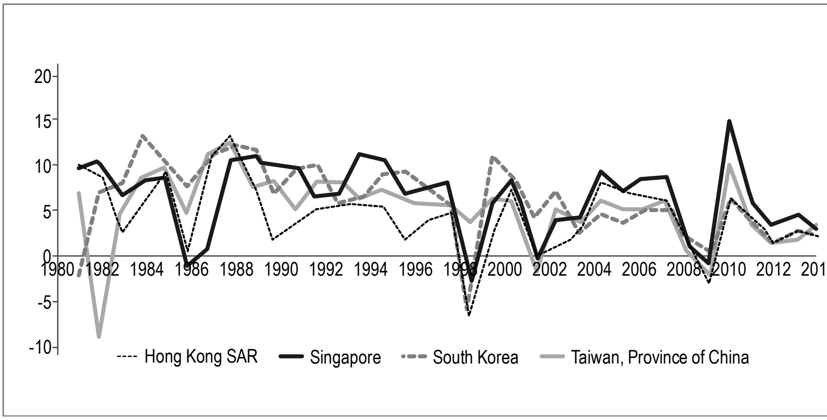
Examples of invitation strategy in the second growth phase…

The bioscience and the wealth management industries are two examples of the innovation-driven industries that the government tried to promote in the second growth phase. The rapid growth of these two industries was in large part a result of the multipronged approach that the government employed. Both cases show that while the broad thrust of the invitation strategy had been retained in the second growth phase, the policy instruments used were different, targeted at individual workers rather than firms. (See Appendix 5-3 and Appendix 5-4)

4. The Singapore Experience: Success Factors and Lessons

By positioning the city-state as an attractive business hub and relying on the inflows of external resources such as MNCs and global creative talents to drive the growth and development of the economy, the invitation strategy seems to have worked well for Singapore over the past 50 years. In the first growth phase, the presence of MNCs helped transform the economy, upgrade the production structure, and raise the income level of the workforce. This allowed the economy to grow at a much faster pace than the other three Asian Tigers (Hong Kong, South Korea, and Taiwan). The creative talent driven growth strategy over the past 15 years appears to have been successful too, at least at the macro level. The economy grew on average by 5.4 percent a year from 2000 to 2014, an impressive record for a mature economy. (See Chart 5)

Figure 5-5. GDP Growth in Asian Tiger Economies 1980-2014 (% yoy)



Source: IMF World Economic Outlook Database, April 2016.

The policy has also significantly changed the country's industry landscape, generally in line with the government's vision. The contribution of the services sector rose to 67 percent of GDP in 2014 compared with 61 percent in 2000, a significant part of it being in exportable services. New industries that the government set out to promote such as pharmaceuticals (and life sciences in particular), education, health care, engineering services, logistics industries have significantly increased their presence in the economy. Together some of these "developing" industries now account for close to 20% of GDP. (See Table 5-2) The new growth strategy has also changed the face of the Singapore society. The city in 2016 is much more cosmopolitan, and offers a much more diverse lifestyle than in 2000.[32]

32) While detail statistics on the population profile are not available, anecdotal evidence points to a much more diverse society, racially and culturally, today than 15 years ago. For example, according to the Philippines census data, the number of Filipinos working in Singapore over the decade 2003-13 tripled to about 167,000.

Table 5-2. Changing GDP Contributions of New Industries

	GDP Contribution (%)				
Industry Sector	2009	2010	2011	2012	2013
Biomedical and Healthcare Services	3.9	3.3	4.1	4.7	3
Chemical	0.9	0.9	0.8	0.8	1.2
Clean Technology	0.4	0.3	0.3	0.3	0.4
Education	0.7	0.6	0.6	0.7	0.8
Electronics	1.4	1.8	1.5	1.5	1.4
Engineering Services	1.8	1.8	1.7	1.7	1.7
Food and Beverage	0.8	0.7	0.8	0.8	0.8
Food Manufacturing	0.7	0.6	0.6	0.6	0.7
Logistics	5.1	5	4.8	5	5.2
Marine and Offshore Engineering	2	1.8	1.6	1.6	1.7
Precision Engineering	2.1	2.2	2.5	2.2	2.2

Note: Chemical industry cluster as defined by SPRING excludes Petroleum & Petrochemicals Educati on industry cluster as defined by SPRING, excludes Non-Profit Organisations, includes child care services for pre-school children Electronics cluster as defined by SPRING excludes Data Storage and Semiconductor Manufacturing.

Success Factors for Singapore

Singapore's experience has validated a number of conventional wisdoms about the preconditions needed for a successful business hub. As Zeng (2016a) noted, such preconditions include, among others, a strategic geographical location that offers global connectivity; an adequate provision of infrastructure that helps facilitate business operations within the hub; supportive government policies and regulations for businesses and individuals including the provision of one-stop services for new and existing businesses; a business-friendly culture embracing international best practices; and an adequate supply of the required manpower. Singapore was able to meet these preconditions effectively early in its development.

What makes Singapore different from other successful business hubs in the world such as London and Hong Kong is the heavy involvement of the government in fulfilling these preconditions. The Singapore government is intimately involved in designing and managing the business hub. Not only does it set the broad direction for the growth and development of the business hub and build the necessary infrastructures to support such development; it also intervenes directly through industrial policy to shape the production structure within the business hub. As we discuss below, the government's hands were visible in almost every aspect of the endeavours to build up and maintain Singapore as a regional business hub.

Global Connectivity

The importance of a strategic geographical location and global connectivity cannot be overemphasized. Singapore is situated at the heart of Southeast Asia and the crossroads between Indian Ocean and the Pacific Ocean, right at the tip of the Strait of Malacca, one of the world's busiest transport and trading routes. What is more important, however, is Singapore's ability to build on the natural geographical advantage to maintain and enhance its global connectivity. This is accomplished through continuous investment over the years, largely by the government, in strategic infrastructure such as telecommunications; the transport system including sea, air, and land transport; the logistics and distribution network; and the financial service facilities. For many years, Singapore has continued to rank highly in efficient infrastructure provision globally. (See Table 5-1 above)

Singapore also benefited from the long tradition of free trade and free movement of capital and labor it had under British colonial rule. The culture of openness helped ease the implementation of many policies aimed at attracting foreign investment and foreign workers. This advantage was reinforced over the years by a careful and pragmatic approach toward foreign relations policy. As Tan and Bhaskaran (2015) noted, to ensure continued access to its "global hinterland," Singapore has to maintain a close and yet neutral tie with as many countries as possible. Often this calls for delicate balancing in dealing with its major economic partners. Singapore's handling of China and the United States, two rival powers contending for influence in Asia, is a good example. The city-state's ability to reach free trade agreements with so many countries is in part a testament of its success in managing international diplomacy.[33]

Provision of Strategic Infrastructure

To maintain Singapore's business hub status, the government has continued to invest heavily in both soft and hard infrastructures that matter to the resources it tries to attract and retain. More importantly, it is willing and able to adjust its investment instruments as its policy objectives and the type of strategic resources it needs change. In the second growth phase, for example, in addition to continuing the investment in efficiency infrastructure, it substantially stepped up investment in numerous innovation infrastructures. It also shifted the policy focus to cater more to the needs of individual creative workers than those of MNCs per se. This shift took place across the whole spectrum of government policy including changes in business rules and regulations, in education and employment policies and in incentive structures for new targeted industries.

Supply of Relevant Human Resources

A pro-active and forward-looking manpower and education policy, together with a very liberal policy on foreign worker inflows, contribute significantly to the success of the invitation strategy. Education consistently makes up the second largest spending in the annual budget, after defense,

33) As of the end of 2015, Singapore has signed 20 free trade agreements with 31 countries, with seven more still being negotiated, making it one of the most active countries in the pursuit of free trade. Singapore also plays an important role in promoting region wide free trade agreements such as the ASEAN Free Trade Agreement), the Trans-Pacific Partnership and the Regional Comprehensive Economic Partnership

amounting to $12.8billion (or 18.71% of the budget) in 2016. The education system (mainly public education) by and large has been able to respond to the changing demands for skills. Meanwhile, the liberal policy on foreign worker inflows helps plug many of the remaining skills gaps in the economy.

In the first growth phase, for example, the education system, with its strong emphasis on science, engineering, technical and vocational training, was geared towards supplying the MNCs with the skilled labor they needed. As the economy moved into the innovation-driven growth phase, the government began to redesign the education programs at the tertiary level, and increasingly at the primary and secondary level as well, to develop a mindset of creativity, adaptability and agility. The massive liberalization of the rules on immigration and foreign workers in the mid-2000's brought in the required manpower that the education system was not able to produce in time.

Pro-active manpower planning remains an essential component of the invitation strategy. In 2015, for instance, the government set up a number of sectoral tripartite committees (STC), one for each key sector in the economy, to help map out the sectoral manpower plans (SMP) for these sectors. In addition to projecting the sectors' future growth paths, the SMPs are to identify the manpower and skills needs of the sectors, as well as policy measures needed to provide an adequate supply of skilled workers in each sector.[34] To help ensure the relevance of the plans, key stakeholders in each sector have been invited to participate in the planning exercises: each STC is chaired by a government agency assigned to champion the sector and supported by employers and workers' unions.

Livability of the Business Hub

A critical success factor for Singapore as a business hub is its ability to maintain the city-state's position not only as a choice location for work but

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34) See http://business.asiaone.com/news/first-industries-get-sectoral-manpower-plans-identified.

also as a desirable place of residence. This was an essential part of the invitation strategy from the beginning, and it took on even greater importance in the second growth phase when policy measures were targeted increasingly at individual workers. The underlying premise here appears to be that the livability of a city has a significant bearing on a company's decision to stay in or to move out of the city. Thus even in the 1960s and 1970s, the government made conscious efforts to present Singapore as an "oasis" to work and live in. For many years, the prime minister led the greening of the city campaign with an annual tree planting day and took personal interests in the work of the National Parks Board, which took charge of the construction and maintenance of parks and gardens. Efforts were also made to provide other social and recreational amenities seen as important to the expatriate community, including allocating a significant amount of land to build golf courses in a severely land-scarce city.

Livability became a paramount concern for policy makers as Singapore shifted into the second growth phase and positioned itself to be a global city. In addition to the emphasis on the livability of the physical environment, the government tried to change the social and cultural milieu to increase Singapore's appeal to the global creative talents. It also tried to appeal to the sense of belonging and ownership among the foreign talents working in Singapore. Regular attempts were made to persuade them to take up permanent residence or citizenship in the country while senior managers of MNCs were often included in national committees set up to chart new directions for the economy or the society.

Close Coordination among Government Agencies to Provide One-Stop Service

Close coordination among different government agencies is another factor that contributes to Singapore's success in attracting and providing one-stop service to the MNCs and global creative talents. While EDB has been the lead agency in this regard, it is not the only one. Depending on the industry being promoted, other agencies would be roped in to help. For example, JTC played a major role in the development of the Jurong Industrial Estate and the Jurong Island Petrochemical Hub. In the One North project, EDB worked closely with both JTC and A*STAR. In the Global Schoolhouse program, a number of other agencies including Singapore Tourism Board, IE Singapore, Spring Singapore and the Ministry of Education were involved.

In the late 1980's and 1990's, close inter-agency coordination also helped bring MNCs to industrial estates that Singapore had built offshore with other host countries including the Growth Triangle (comprising Singapore, Indonesia and Malaysia) and the Suzhou Industrial Park in China. These efforts were aimed at building an external wing for the Singapore economy and cementing Singapore's position as a regional headquarters and business hub for MNCs that invest in the Asia-Pacific region.

"Winner Picking" to Shape the Industry Landscape in the Business Hub

Recognizing that the value of a business hub depends to large extent on the value added of the industries that it serves, the Singapore government has been actively engaging in "picking winners," identifying and promoting what it considers to be promising growth industries. Indeed, a major task of the various national economic strategy committees mentioned above (such as the ERC, the ESC and the CFE) is to help review and redefine Singapore's comparative advantage and to recommend new growth industries for the city-state. Once identified, these industries usually receive strong support from the government, which acts not only as a facilitator (providing specific conditions to help the industries succeed) but often as a funder or direct investor as well, through investments carried out by the statutory boards or the GLCs.

To ensure the relevance of the chosen industries and other policy initiatives, the Singapore government has over the years established various mechanisms, at industry level, to facilitate regular consultations between the government and the private sector. The national economic strategy committees, for example, typically include representatives from the government, the private sector, labor unions, and other stakeholders in the economy. In addition, the government often includes representatives from the MNCs as well as individual foreigners in these committees, so that their voices and concerns are represented.

Lessons from Singapore's Experience

The main lesson from Singapore's experience is not that it has helped validate a number of conventional wisdoms about the preconditions needed in a successful business. It is that the government can be the key driving force in satisfying these preconditions. As Zeng (2016b) pointed out, a successful business hub is not built overnight. It needs to demonstrate its credibility and win the confidence of the businesses over time. This requires a sustained period of policy rationality and consistency on the part of the government. Singapore's experience shows that this can be done.

Many commentators have likened the government's management of the economy to that of running a corporate enterprise, with the bottom line (the GDP growth rate in this case) and the strategy (attraction of MNCs and creative talents) clearly defined.[35)] Indeed, this corporate-like approach to managing the economy and the business hub has been a major reason accounting for the government's effectiveness in implementing the invitation strategy. The MNCs and the global creative talents are treated by the government almost like "business clients" to be won over. Other developmental objectives are often subordinated to the pursuit of MNCs and global talents.

35) Reflecting such a corporate orientation in managing the economy, the prime minister and the cabinet ministers appear to liken themselves to the chief executive and senior executives in a corporate entity, with their remunerations (including a large component of yearly bonus) determined partly by the achievement of the bottom-line (the GDP growth rate) and pegged to the top earners in the private sector. See Tan and Bhaskaran 2015.

Furthermore, as discussed in Sections 2 and 3 above, other economic and noneconomic policies often have to be adjusted to accommodate the pursuit of MNCs and global talents. Discussion of distributive equity issues such as the relative shares of GDP between employers and employees, between MNCs and local firms, and so on, is generally encouraged as it could distract the government from the pursuit of GDP growth. Likewise, advocacy of issues such as labor rights, a minimum wage law, or job protection for Singaporeans over foreigners is often frown upon as it is seen to have the potential of deterring the inflows of MNCs and foreign talents and slow GDP growth.

If the government takes a relentless approach in pursuing the bottom line, there is nevertheless a large element of pragmatism and flexibility in its management of the business hub and the economy. In fact, the Singapore government takes pride in its ability to respond to external changes without being bounded by any ideology. A good example is the government's decision in the early 2000s to allow casinos to be set up, after many years of strong objection. The two casinos, to be built as part of the "integrated resorts" that offer a wide range of MICE facilities (for meetings, incentives, conferences, and exhibitions) were seen not only as an important source of GDP growth, but more importantly, as a critical element of the effort to re-brand Singapore as a global city. In the government's calculation, the potential economic contribution of the casinos outweighed their potential adverse social impact. Meanwhile, to help mitigate the adverse social impact, a number of practical measures were implemented: an agency was set up to provide counseling to gambling addicts, and, as a form of deterrence, a fee of S$100 was imposed on any Singaporean who visits the casinos. This pragmatic openness to new ideas and new policy instruments has helped the city-state maintain its business hub status over the years.

Can the Singapore experience be replicated in other cities? The answer is at most a qualified yes. Singapore's chosen approach is a reflection of its unique economic circumstances which may not be shared by other business hubs. The heavy and active government intervention in designing and managing the business hub stems in part from the fact that there is no distinction between Singapore the business hub and Singapore the economy. The whole economy is managed as a business hub, unlike other business hubs that might exist either as an enclave or as a city with a large hinterland. Failure of the business hub means failure of the whole economy. Viewed from that perspective, it is not surprising that the Singapore government felt the need to have a strong influence over the direction and pace of development of the business hub as the outcome affects the entire population.

Singapore also differs from other business hubs in that it appears to run the business hub mainly to attract foreign resources (MNCs and global talents). This is the essence of the invitation strategy. For many years, the government has paid relatively less attention to the needs of local companies, especially the SMEs. Among the Four Asian Tigers, Singapore has been the most dependent on MNCs and foreign workers to drive its economic growth. This focus on foreign resources allows the government to design policy without being distracted by the conflicting interests between the local and the foreign businesses or workers. That is a luxury that business hubs elsewhere may not enjoy.

Ultimately what allows the Singapore government to pursue the invitation strategy with such single-mindedness is the strong political mandate it enjoys and the implicit social contract it seems to be able to maintain with the people over the years. In return for strong economic growth and rising living standards, Singaporeans appear to be willing to accept the near complete dominance of the ruling People's Action Party in parliament, giving it a free hand in managing the economy. Since the early 1970s, the PAP has consistently won over 60 percent of the popular votes in every election. Under the Westminster first-past-the-post election system, the opposition has been able to secure only a handful of seats in the parliament despite the nearly 40 percent of popular support it receives at the polls. In the current parliament, the opposition occupies only six of the 89 seats. The near monopoly of the ruling party allows it to adopt policy measures that it deems to be in the long-term interest of the economy, even if they are unpopular in the short run. It also allows the government to put the attraction of MNCs and foreign workers above other developmental objectives even if this results in unhappiness among some segments of Singaporeans.

To be sure, the government does take a calibrated approach in managing such social contracts--another manifestation of its pragmatism. At times when the level of unhappiness appears to be high, the government has shown itself willing to step back somewhat from the relentless pursuit of GDP growth, to accommodate the dissenting voices. This could be seen, for example, in its response to the setback it suffered in the 2011 general election. The decline in the popular support it received then was widely attributed to the massive influx of new immigrants and foreign workers - a key component of the innovation-driven growth strategy - which was in turn seen to be the main cause of a number of social and economic problems such as wage and income stagnation, congestion and increased social tensions. Immediately after the election, the government began to moderate the pace of foreign worker inflows. Indeed, while the total number of the non-resident workers continued to grow, the growth rate dropped from an average of 11.1% per annum in 2006-2010 to 1.7% per annum in 2010-2015.[36]

Challenges for Singapore

Though successful in many ways, the Singapore approach is not without problems. If a large part of Singapore's success as a business hub could be attributed to the government's policy, so could many of the problems that it

36) See statistics from the Ministry of Manpower in http://stats.mom.gov.sg/Pages/Labour-Force-In-Singapore-2015.aspx.

faced over the years. As the city-state moves to the next stage of its development, the limits of the invitation strategy and the challenges confronting Singapore are becoming more obvious. In fact, the root causes of many of these challenges can be traced to the invitation strategy that Singapore has pursued over the past 50 years.

As noted earlier, "picking winners" is an integral part of the invitation strategy: the government decides which industries to promote and therefore what types of MNCs and global talents to invite. The success of these industries in turn could determine the success of Singapore as a business hub. But, as in any winner-picking strategy, there would be both successes and disappointments. The promotion of the petrochemical industry and the wealth management industry, for example, has been viewed as success stories. But the same may not be said of other initiatives such as the Global Schoolhouse program. A number of earlier attempts by the government to build up an external wing for the economy by investing in similar business hubs "offshore" did not turn out well either. Views about the success of the Singapore-Suzhou Industrial Park, a large-scale industrial cum residential estate in China, for instance, remain mixed at best.[37]

Two challenges that Singapore faces today, the absence of an adequate indigenous production capacity and the weak innovative capacity, are proving to be particularly daunting. Both challenges could be attributed directly to the pursuit of the invitation strategy.

Weak Indigenous Production Capacity

Years of heavy reliance on the MNCs has contributed to a lack of adequate indigenous production capacity in Singapore. Singapore's indigenous GDP (percentage of GDP accruing to resident citizens and PRs, and local companies) has been falling consistently over the past three decades, from over 70% in late 1980's to less than 60% by 2010.[38] In particular, SMEs

37) See Zeng 2016a.

have not been able to play as vital a role in the innovation and growth of the economy as those in other dynamic East Asian economies or industrialized economies such as Germany, Japan, Switzerland, and Scandinavia. Policy support and government incentives are seen to have favored heavily the MNCs (and the GLCs to some extent) in the past.

As various commentators have pointed out, Singapore has for decades suffered from a two-track economic structure: a competitive export-oriented sector dominated by MNCs and a less competitive domestically oriented sector comprising mainly SMEs.[39] As Tan and Bhaskaran (2015) noted, Singapore's export-oriented manufacturing ecosystem consists largely of foreign-owned MNCs with local SMEs making up only the supporting industry. Few Singaporean SMEs, whether in manufacturing or services, have been able to grow to become globally competitive giants. The failure to tap into the opportunities provided by the region, including the 10-member Association of Southeast Asian Nations (ASEAN) grouping that collectively presents a bigger market than India, is particularly glaring.

While such a lack of indigenous production capacity is not necessarily inconsistent with the pursuit of the invitation strategy - the business hub status is not affected by the ownership structure of the companies based in Singapore - it nevertheless points to a worrying trend in the long run. Given the mobility of many MNCs and foreign talents, it is not clear how sustainable Singapore's position as a regional business hub can be without a sufficiently large core of local production capacity.

To be sure, the government in recent years has begun to address these issues. A number of new schemes, including financing schemes, have been rolled out to help increase the competitiveness and the regional reach of the

38) See Manu Bhaskaran, "Singapore: Economic Outlook – Challenges to the Economic Model," presentation at the Lee Kuan Yew School of Public Policy, Mar 31, 2015 in http://lkyspp.nus.edu.sg/wp-content/uploads/2015/06/Productivity-challenges-in-Singapore-Part-4.pdf.

39) See Hawyee Auyong 2015.

SMEs.[40] Significantly, the EDB appears to be signalling a change in its strategy as well. Instead of focusing primarily on attracting MNCs and creative talents to Singapore, it has indicated a shift towards helping Singapore-based companies to grow by tapping into the regional markets, with the goal of transforming some of them into billion-dollar businesses.[41]

Weak Indigenous Innovative Capacity

Despite the massive efforts to rebalance the composition of growth and to make innovation and productivity increase the major source of GDP growth in Singapore - it being the primary policy objective of the innovation-driven growth phase over the past 15 years - the results have not been encouraging. Productivity growth in the city-state in recent years has performed poorly when compared with other dynamic East Asian economies. (See Chart 2 above) In some years, the contribution to GDP growth was actually negative.[42] The poor performance in productivity growth suffers from the two-tier economic structure noted earlier - productivity growth of the domestically oriented local companies (which employ more than 60% of the workforce) generally lags that of the export-oriented MNCs. This could in turn be explained in part by the insufficient attention paid to the state of indigenous innovation over the decades.[43]

Singapore did not have a comprehensive national policy to promote indigenous innovation until the late 1990s. As Wong and Singh (2011) noted, from 1960s until the late 1980s, the government policy mainly focused on technology transfer from MNCs to local supporting industries and technology deepening of the latter. The first National Technology Plan was formulated as recently as 1990 with the establishment of the National Science and Technology Board (later renamed A*STAR, for Agency for Science,

40) See Tan and Gan 2012.
41) See "EDB's new job: Create billion-dollar businesses," *Straits Times*, May 28, 2016.
42) See discussion in Tan and Bhaskaran 2015.
43) See Auyong Hawyee 2015.

Technology, and Research). The plan, however, targeted mostly applied R&D to support MNCs in critical industrial clusters and made little effort to build up an indigenous R&D system and basic research.

More serious efforts to promote indigenous innovation and R&D in targeted industries started only in the early 2000s as the economy shifted into the second growth phase. Policy makers began to look into the possibilities of developing innovative capabilities of SMEs, promoting basic R&D capabilities, technology commercialization, and high-tech entrepreneurship. The government also made substantial investments in R&D in a few selected industries such as life sciences, environmental and water technology, and interactive and digital media technology. In 2006, the National Research Foundation was set up to coordinate major R&D activities in the country including funding, enhancing linkages between R&D and commercialization, and the like. Furthermore, as part of its efforts to promote entrepreneurship, the government started to relax rules and regulations governing the business environment including rules on start-up businesses, bankruptcy, and stock market listing requirements. It also tried to promote the growth of venture capital and private equity funds and to strengthen the intellectual property rights with new legislations and the establishment of the IP Academy.

The government has persisted in its efforts to boost innovation and productivity growth in recent years. There is also increased emphasis on the participation of local firms and local talents. Over the past two years, for instance, a number of new major projects have been launched to raise the productivity at work places and to enhance the quality of life through greater use of ICT technology (The Smart Nation Initiative and the Industry Transformation Programme), to support R&D and innovation in some priority industry clusters like advanced manufacturing and engineering, health and biomedical sciences, urban solutions and sustainability, and services and digital economy (The Research Innovation Enterprise 2020 Plan), and to raise the productivity in selected sectors like health care, construction, manufacturing, and logistics sectors.[44]

The efforts over the past 15 year have helped raise Singapore's profile in innovation. As Auyong (2015) noted, Singapore's GERD adjusted for the size of the GDP is now consistent with that of the developed economies. In 2015, Singapore ranked 7th overall in the Global Innovation Index. What is disconcerting, however, is the seeming inability of the city-state to convert the large inputs into actual innovation. In the Global Innovation Index 2014, Singapore was placed 110th out of 143 economies in "Innovation Efficiency",[45] while a separate Asia-centric study ranked Singapore 8th out of 22 Asian economies in "Creative Productivity." Specifically Singapore's use of creative inputs has been found to be inefficient relative to countries like Japan, Hong Kong, China and New Zealand.[46] The less than satisfactory performance in innovation and productivity growth points to the need to re-examine the relevance of the policy instruments used not only for the enhancement of indigenous innovative capacity, but also fir the pursuit of the innovation-driven growth strategy. More fundamentally, it calls for a critical review of the appropriate role for the government in promoting innovation vis-à-vis efficiency.

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44) See the Singapore 2016 Budget Speech, http://www.singaporebudget.gov.sg/data/budget_2016/download/FY2016_Budget_Statement.pdf; and reports in http://www.channelnewsasia.com/news/business/singapore/govt-commits-s-19b-to-new/2409426.html.
45) See World Innovation Index 2014, WIPO, pg xxiv.
46) See Creative Productivity Index: Analysing creativity nd innovation in Asia, EIU, August 2014, pg 5 cited in Auyong, 2015.

5. Conclusion

Singapore's experience over the past 50 years has shown that a small city-state without any meaningful hinterland or natural resources could succeed in achieving sustained and robust economic growth while continually transforming and upgrading its industry structure. By positioning the city-state as an efficient business hub, first for MNCs and later for creative talents, Singapore has been able to leverage the resources of other countries to ride on the waves of various growth industries over time. It has provided a unique case study of the invitation strategy for economic growth and development.

While Singapore's experience has validated a number of conventional wisdoms about what makes a successful business hub and the preconditions required for such success, it has above all highlighted the important role that government could play in bringing about such success. The Singapore government has been at the forefront of providing the preconditions that the city-state needs to succeed as a business hub: global connectivity, availability of hard and soft infrastructures, an adequate supply of relevant manpower, business-friendly regulations, and openness to international best practices, among others. Its effectiveness in delivering such preconditions stems largely from a pragmatic yet bottom-line-driven approach in policy making and governance. While relentless in its pursuit of the invitation strategy, it is nevertheless willing to adjust its policy instruments as external circumstances change. The consistency with which it has adopted the approach has allowed Singapore to win the confidence of international investors and businesses and help secure its position as a major business hub in the world.

Singapore's success is also very much an outcome of its unique political system. The near parliamentary monopoly that the ruling party has been able to maintain over the past half century allowed it to run the whole economy much like a corporate entity, focusing on GDP growth rate for the whole economy, without having to be much distracted by equity and other domestic political concerns. The strong political mandate it commands helps explain its ability to cater to the needs of the MNCs and foreign creative talents without strong resistance from domestic enterprises or domestic workers. It is not clear, however, if governments in other cities or business hubs would have the same luxury of pursuing the invitation strategy in the same single-minded manner.

At the same time, Singapore's experience has exposed the possible downsides of the invitation strategy. The overwhelming focus on serving the interests of the MNCs and foreign talents has contributed to an inadequate indigenous production capacity and indigenous innovative capacity. Without a sufficiently strong core of indigenous production and innovative capacity, the sustainability of the city-state's business hub status could be in doubt, given the increasing footlooseness of the MNCs and foreign talents. These challenges point to the limit of the invitation strategy. More fundamentally, it calls for a rethink about the appropriate role that the government should play in promoting innovation vis-à-vis efficiency.

In some sense, whether Singapore is able to overcome these two challenges will determine the success of the invitation strategy ultimately. When it first adopted the invitation strategy in the 1960's, Singapore was hoping to move away from being a mere "middleman" economy through its position as a trading hub in the region, and to avoid the vulnerability that afflicts a middleman economy. Through the MNCs and later the global talents that it brought in, Singapore has managed to build up a production base with a wide range of manufacturing and services industries over the years. However, the economy's strong reliance on MNCs and foreign talents, and the lack of an adequate local production capacity and local innovative capacity, suggests that Singapore might not have completely escaped such vulnerability. The ownership of the production capacity within the business hub might not be so critical an issue if the business hub is only part of a larger economy with a meaningful hinterland. But for a small city-state like Singapore where there is no clear distinction between the business hub and the economy, efforts should be made at an early stage of development to provide sufficient room for the domestic enterprises and the domestic work force to grow. An invitation strategy aimed only at attracting foreign resources may not prove to be sustainable in the long run.

Appendix

Appendix 5-1. Jurong Industrial Estate

The Jurong Industrial Estate (JIE) is Singapore's first industrial zone. Built on 69 square kilometers of mangrove swamp land, the construction marked the start of Singapore's industrialization program recommended by Albert Winsemius, a Dutch economist who first led the United Nations Expanded Programme for Technical Assistance (EPTA) team to Singapore in 1960 and became the chief economic adviser to Singapore in 1961. The foundation stone for the first factory in JIE, the National Iron & Steel Mills (known as NatSteel today), was laid in September 1962. The company started operations in 1963. By 1968, more than 300 factories were operating in JIE, employing 21,000 workers. JIE played a large role in bringing down the unemployment rate in Singapore from 14 percent in 1966 to about 4.5 percent by 1975. It also helped account for the sharp rise in the manufacturing sector from 12.2 percent of GDP in 1960 to 20.8 percent in 1973.

The JIE project was initially driven by the EDB, which was set up in 1960 to help provide one-stop service to the MNCs investing in the estate. However, it soon became obvious that the task of managing industrial estates would become more challenging and complex.[47] In 1968, a new statutory board, the Jurong Town Corporation (JTC), was set up to manage JIE while freeing EDB to concentrate on marketing the estate to MNCs. Beyond management and development of the industrial estate, JTC was entrusted with the task of providing facilities to improve the well-being of the people working and living in the estate.[48] New amenities such as Jurong Bird Park,

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47) "Goh tells of Govt plans to speed up economic growth," *Straits Times*, April 17, 1968, p. 8. Retrieved from NewspaperSG.

48) Singapore. Parliament. Parliamentary Debates: Official Report. (May 21, 1968). Second Reading of the Jurong Town Corporation Bill (Vol. 27). Singapore: [s.n], cols 357–359. (Call no.: RCLOS 328.5957 SIN); "Better amenities for Jurong residents," *Straits Times*,

Chinese Garden, Japanese Garden, Jurong Park, a town center with shopping and commercial facilities, a drive-in cinema, and new executive flats for residents were constructed in the ensuing years.[49] The residential estate, known as Jurong Town, evolved over time into a self-contained town for its estimated 32,000 residents.

The changing composition of the industries within JIE reflected the evolution of Singapore's industrial structure. JIE started with labor-intensive, export-oriented industries such as textiles, toys, wood products, furniture, and hair wigs, and it moved steadily to higher value-added industries such as electronics, shipyard, petrochemical, precision engineering, and aerospace.[50] To accommodate the needs of the new industries, the government continued to upgrade the infrastructures and make changes to business rules. Substantial land reclamation was carried out. There were also considerable re-zoning, changes in land use rules, and redevelopment of old sites within JIE.

Over time, JIE was not only expanded, but it also was also re-designated into various specialized industrial parks, to achieve agglomeration effects for different industrial clusters. These include the Science Park that focused on research and development in the 1980s, the International Business Park located in Jurong East as Singapore's pioneer business park in 1992 and the Jurong Island Petrochemical Hub. Reflecting the dynamic development of JIE, the government announced in 2016 that the western part of the estate will be converted into the Jurong Innovation District.[51] Billed as the "Industrial Estate of the Future," the district will comprise Nanyang

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May 22, 1968, p. 5. Retrieved from NewspaperSG.

49) Jurong Town Corporation 1969, Annual Report. Singapore: Author, p. 9. (Call no.: 352.0072 JTCAR); "Garden town to have 100,000 people: Woon," *Straits Times*, December 14, 1968, p. 9. Retrieved from NewspaperSG.

50) See https://www.edb.gov.sg/content/edb/en/about-edb/company-information/our-history.html.

51) See Budget 2016, announced by Finance Minister Heng Swee Keat in the Singapore 2016 Budget Speech, http://www.singaporebudget.gov.sg/data/budget_2016/download/FY2016_Budget_Statement.pdf.

Technological University, Clean Tech Park, and other areas. It will be another work-live-play zone for innovation industries (like the One North Estate in Appendix 5-3) that can accommodate more than 100,000 people. The first phase is expected to be completed by 2020.

Figure A5-1. Jurong Industrial Estate in the 1970s

Source: roots.sg.

Appendix 5-2: Jurong Island Petrochemical Hub

The construction and development of the Jurong Island Petrochemical Hub provides a good example of how a determined, multipronged approach has helped Singapore succeed in maintaining its position as a regional business hub for MNCs in targeted industries. In the late 1970s, with three major oil refinery companies (Esso, Mobil, and SPC) operating on three adjacent south western islands, Singapore was already a major refining center in the world.[52] However, the government recognized that, to maintain its global

52) "The making of Jurong Island: The right chemistry," Jurong Town Corporation, Singapore, 2000, p. 17. (Call no.: RSING 711.5524095957 MAK); "Realising Jurong Island's potential," *Business Times*, December 1, 2009, p. 31. Retrieved from NewspaperSG.

competitive position, it would need to aggressively expand and integrate the petroleum and petrochemical industries, to form a hub for the petrochemical and specialty chemical industries. A key challenge it faced then was the scarcity of industrial land in that area. To overcome the challenge, the government decided to carry out an ambitious and massive land reclamation project to join seven islands into a single Jurong Island. JTC was appointed as the agent to manage the project. Reclamation work began in 1995 and was completed in 2009. It increased the total land area from 991 hectares to 3,000 hectares, at a cost of $7 billion.[53)]

Today, Jurong Island serves as the operational base for more than 100 companies (up from five in 1995) including global companies like DuPont, ExxonMobil, and Chevron. The output of the oil refining industry reached 1.5 million barrels per day in 2014, compared with 1.17 million barrels a day in 1995. Output of refined petroleum products, too, has seen a tremendous uptick after 2000 when Jurong Island was officially opened, reaching a peak of S$59.6 billion in 2008 (up from about S$20.0 billion in 2000).

By locating all the related companies together within close and interconnected vicinity, Jurong Island helps facilitate the agglomeration effect: companies are able to share facilities, common corridors, and centralized logistics, thereby reducing capital investment and minimizing operational costs. The output of some firms can serve as inputs for others on the island, reducing feedstock costs. The network for feedstock, logistics, and utilities also means that new businesses could be set up quickly and operated efficiently. Indeed, investment on the island rose rapidly. By 2015, total investments on Jurong Island had exceeded S$47 billion (including more than S$4 billion by ExxonMobil alone).[54)]

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53) "Jurong Island, 20 years ahead of schedule," *Today*, September 26, 2009, p. 24. Retrieved from NewspaperSG.

54) See NLB source as follows – http://eresources.nlb.gov.sg/infopedia/articles/SIP_505_2004-12-17.html.

Phase Two of Jurong Island's expansion and development was announced in 2010 after the initial phase was completed way ahead of schedule in 2009. Improvements are under way in the areas of energy, logistics and transportation, feedstock, environment, and water supply. To stay ahead of competitors, the government is planning to raise the capacity for liquefied natural gas terminals; increase infrastructure investment to help existing companies keep a competitive edge (for example, S$100 million to help ExxonMobil build a second plant) and set up downstream production in specialty chemicals. It is also trying to diversify the production structure on the island by including efforts to tap wasted "cold" energy from the LNG terminals to power a new sea water desalination plant. In 2012, US management consultancy McKinsey & Company set up a green campus on the island to offer training in sustainable development and energy efficiency.

The success of Juring Island reflects in part the tight coordination among the government agencies involved in the project. In 1992, EDB encountered great difficulty when it first started actively marketing the island to major MNCs in the petrochemical and oil industries because reclamation works had not yet begun and the companies could not see the benefits of integration and amalgamation.[55] JTC then worked with EDB to help the companies visualize and establish their plants on the island. Various incentives and assistance were provided. JTC took an equity stake in some companies to share the business risks with them. It also shared with them certain manpower training costs and helped them identify suitable third-party service providers.[56]

55) "The making of Jurong Island: The right chemistry."

56) For example, a GLC, SembCorp Utilities and Terminals, was brought in to provide chemical companies with utilities and other related services.

Figure A5-2. Jurong Island Petrochemical Hub

Source: untouristsingapore.wordpress.com.

Appendix 5-3: One North Estate

A cluster development for R&D and innovation managed by JTC and A*STAR, One North is often billed as the type of industrial estate that will bring the Singapore economy into the future. It houses a number of industry clusters seen to be innovation-driven: bioscience, ICT, and media production among them. By putting researchers, entrepreneurs, business operators, and even venture capital fund managers within the same "enclave," One North Estate was designed to provide sufficient space for agglomeration effects as well as strong linkages between local companies and MNCs.

A few notable hubs currently exist within the Estate: Biopolis, which is a biomedical R&D hub; Fusionopolis, an R&D hub for infocomm technology, media, physical sciences and engineering industries; Mediapolis, a self-contained digital media cluster; and Block 71 and 79 of Ayer Rajah Industrial Estate, which house a number of digital start-ups and venture capital funds.

Various tax and non-tax incentives have been provided to companies to set up operations within One North. These include lower rental costs, grants, and investment allowances. The government has substantially stepped up spending on R&D especially in biomedical science. It has also (either directly or through GLCs) taken up equity stakes in various enterprises to help spur their growth. One North's close proximity to prominent educational and research institutions in Singapore adds to its attractiveness. These institutions include the Singapore Science Park, the National University of Singapore (NUS), the National University Hospital, and the Singapore Polytechnic, as well as the Asia-Pacific campus of INSEAD. The large concentration of intellectual, research, and scientific talents, together with the various possibilities of shared facilities, has played a critical role in promoting collaboration between researchers in private and public sectors.

Another key attractiveness of One North is the wide range of recreational amenities that the government has built up within or near the Estate to make it a highly livable area. One North is considered not just a place for work but one for play as well, and it is evolving into a mini-city. As noted in Section 3, this is seen as an important consideration for global creative talents in their relocation decisions.

Since it started in 200l, One North has made much progress. Today more than 250 leading companies and global institutions conduct R&D there and more than 600 start-ups are in the Estate. These include Abbott, GSK (GlaxoSmithKline), Lilly, Novartis, Schering-Plough, and Takeda within Biopolis; Vesta, Seiko Instruments, Solaris, and Starupbootcamp Fintech within Fusionopolis; and Discovery and AMX Audiophiles in Mediapolis. More than 24,000 people, including over 2,000 scientists from around the world, now work in One North.[57] Within the biomedical science cluster, the manufacturing output has risen from S$6 billion in 2000 to S$29.4 billion in 2012. By 2014, the number of people employed in the cluster had increased to more than 16,800 (from 6,000 in 2000).

57) See One-North comes to life for business and retail. The Straitstimes (http://www.straitstimes.com/lifestyle/one-north-comes-to-life-for-business-and-retail).

Figure A5-3. One North Estate

Source: untouristsingapore.wordpress.com.

Appendix 5-4: Wealth Management Industry

In its report released in 2003, the Economic Review Committee (ERC) identified wealth management as one of the four areas in the financial services sector where Singapore could develop strong competitiveness in the region, considering the fast changing landscape in the sector, the decline in the traditional financial services and the increasingly more intense competition from other regional financial centres such as Hong Kong, Shanghai and Sydney.[58)]

A slew of policy changes and new incentives were put in place soon after that to help develop and grow the industry in Singapore. Changes were made in the legal and regulatory framework to render it more business- and tax-friendly for wealth managers, private banks, and high net worth individuals. Various exemptions were granted to simplify the license applica-

58) See https://www.mti.gov.sg/ResearchRoom/Documents/app.mti.gov.sg/data/pages/507/doc/12%20ERC_Services_Financial.pdf.

tion process for financial institutions engaging in fund management. To accelerate the increase in the supply of relevant professionals, the government, in addition to allowing for a greater inflow of foreign fund managers, expanded fund management training programs at the higher learning institutions including setting up the Wealth Management Institute which was supported by equity participation of the two sovereign wealth funds, the Government of Singapore Investment Corporation and Temasek Holdings.

Over the years, the Monetary Authority of Singapore (MAS), as the key promoting agency of the wealth management industry, has continued to improve the market infrastructure to maintain Singapore's strength in the industry. In 2014, for example, it signed on to two fund pass-porting schemes (ASEAN CIS and Asia Regional Funds Passport) to increase Singapore-based fund managers' access to the region. It has also been building on Singapore's position as the second largest offshore Renminbi centre in the world, to enhance the business opportunities for fund managers in the China. Working with the higher learning institutions and specialist training institutions like the Institute of Banking and Finance, it tries to ensure a sufficient flow of qualified manpower to support the growth of the industry. In 2015, it also unveiled major initiatives to keep pace with and to manage the impact of the latest developments in financial sector technology (FinTech).[59)]

The wealth management industry in Singapore has grown rapidly over the past 15 years. By 2014, the assets under management (AUM) in Singapore had reached S$2.36 trillion, an almost 10-fold rise from S$276.2 billion in 2000 (and twice the AUM of S$1.2 trillion in 2009). Its share of the value-added of the whole finance and insurance sector rose from 8.5% in 2010 to 11.4% in 2015. In 2015, it continued to post the fastest growth rate among the sub-segments within the Finance and Insurance sector. (See Table 5-3) Importantly, a number of reputable private banks and fund managers have

59) See MAS 2015.

substantially enlarged their operations in Singapore or even shifted their global headquarters to Singapore, including those from Switzerland, reflecting the increased importance of the city-state as a global wealth management hub.[60] Comparative studies on major wealth management hubs in the world have also pointed to the stronger growth potential of Singapore relative to Switzerland and Hong Kong in the coming years.[61]

Table A5-1. Share of Value Added in Finance & Insurance Sector (2015)

	Share of Sector's Value Added (Nominal)	Real Growth Rate 2015 (% yoy)
Finance & Insurance	100.0%	5.3%
Banking	47.5%	2.4%
Security Dealing	2.5%	6.3%
Fund Management	**11.4%**	**12.9%**
Insurance	15.2%	8.4%
Others	23.3%	6.9%

Source: Ministry of Trade and Industry, Singapore.

Appendix 5-5: Global Schoolhouse Program

The Global Schoolhouse program seeks to increase Singapore's export of educational services by transforming the city-state into a regional education hub. The industry is seen as an essential part of the efforts to build up a critical mass of high-skill, creative workers that was crucial to the success of the innovation-driven growth strategy. Not only is education considered an innovation-driven industry on its own, it is also viewed as an enabler of the other key targeted industries. As the then Education Minister Teo Chee

60) Julius Baer Private Bank from Switzerland being on such example.
61) See for example, Credit Suisse, Report on "Switzerland as a Financial Center," September 2012.

Hean noted in 2000, Singapore aspired to be the "Boston of the East," so as to "create an oasis of talent in Singapore: a knowledge hub, an ideas exchange, a confluence of people and idea streams and an incubator for inspiration."[62] Four areas of focus were chosen based on their perceived high-growth potential: tertiary education, corporate training and executive education, private commercial and specialty schools, and preparatory and boarding schools.

A multipronged approach was used to promote the industry, both on the supply side and the demand side. On the supply side, through the World Class Universities initiative, the government tried to increase the number of university (both local and foreign), and other private tertiary education providers. Specifically, a target of having 10 world-class universities of excellence in Singapore was set. Generous incentives were given to foreign universities to set up campuses in Singapore, including subsidies for land cost and research grants as well as tax and other financial incentives. Efficient processing schemes were provided for visa and employment pass applications to bring in the staff needed to support the universities.

On the demand side, the EDB, working with Singapore Tourism Board, Spring Singapore, IE Singapore and the Ministry of Education, was tasked to increasing the number of foreign students (at all levels of education) to 150,000 by 2015 (from 50,000 in 2002). To support these efforts, various incentives were unveiled including tuition grant schemes for foreign students, streamlined student visa requirements and processing, increased supply of student housing, expanded facilities for student financing, and enhanced em-

62) Teo noted that "Boston is not just Harvard or MIT. The Greater Boston area boasts over 200 universities, colleges, research institutes and thousands of companies. It is a focal point of creative energy, a hive of intellectual, commercial and social activities. We want to create an oasis of talent in Singapore: a knowledge hub, an ideas exchange, a confluence of people and idea streams, an incubator for inspiration." See "Education Towards the 21st Century: Singapore's Universities of Tomorrow," the Alumni International Singapore (AIS) Lecture, 7 Jan 2000, in https://www.moe.gov.sg/media/speeches/2000/sp10012000.htm.

ployment opportunities for foreign students and graduates. The Private Education Act (2009) sought to provide quality assurance for educational services provided in Singapore, to allay foreign student concerns about the educational investment they undertake (this came about after a series of complaints about unsatisfactory and fraudulent practices by a number of private educational services providers in Singapore).

The outcome for the Global Schoolhouse program has been mixed so far however. The number of educational establishment rose steadily 4,411 in 2009 to 6,182 by 2013. The value added of the industry increased from S1.7 billion to S2.5 billion. However, as a percentage of GDP, the contribution has gone up only from 0.7% to 0.8% during this period. (See Table 5-4) The number of foreign students in Singapore reached about 90,000 in 2011 (from 50,000 in 2002) but fell to 75,000 in 2014. This was still far from the target of 150,000 (by 2015).[63)]

The outcome on the actual presence of reputable foreign universities is also mixed. There are a few successful partnerships such as Yale-NUS, Wharton-SMU, Duke-NUS (medical school), SUTD (with MIT and Zhejiang University). But a number of universities that came into Singapore under the World Class University program had to exit within a short period of time. These include University of New South Wales from Australia, the Tisch School of the Arts at New York University, and the University of Las Vegas. Reasons for such failures vary but disagreement on the funding models between the universities and the Singapore government has been cited as one of the key reasons.[64)]

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63) See statistics provided by Spring Singapore in http://www.spring.gov.sg/Developing-Industries/EDU/Pages/education-statistics.aspx.

64) See for example, Pak Tee Ng and Charlene Tan, 2010, "The Singapore Global Schoolhouse, An analysis of the development of the tertiary education landscape in Singapore," *International Journal of Educational Management,* Vol 24, No 3, 2010.

Table A5-2. Education Services Industry in Singapore

Indicators	2009	2010	2011	2012	2013
No. of Establishments	4,411	4,557	5,109	5,953	6,182
Operating Receipts ($b)	3	3.3	3.7	4.3	4.7
Value-added ($b)	1.7	1.9	2.1	2.5	2.7
GDP Contribution (%)	0.7	0.6	0.6	0.7	0.8

Notes: Industry cluster as defined by SPRING, excludes Non-Profit Organisations, includes child care services for pre-school children.

Source: Department of Statistics & SPRING Singapore.