Present(ing) Futures #1: What are the limitations and challenges facing Singapore's current growth model? What changes and reforms do you think necessary, particularly in terms of raising productivity and the innovation capacity of the Singaporean economy?

SUMMARY

This paper attempts to surface the issues which in the author's opinion are the main obstacles to the Singapore economy's growth sustainability. Firstly the lack of a sustainable anchor industrial base hinders the growth of science and engineering activities. Secondly the lack of a hinterland as an extension to the limited land and labor situation, limits the growth potential of the Singaporean economy and results in the economy operating at higher risk and lower efficiency levels. Lastly the shortage of traineeship positions in the newly developed fields coupled with the continuous restructuring of the existing industries hinder the development of the Singaporean workforce.

Three solutions addressing the above mentioned issues were presented. Firstly the identification of the choice industrial base to cultivate requires Singapore to deploy a carefully planned industrial policy to capitalize on her neutrality and non-partisan stance to be the choice investment centre and through "Growing A Second Wing" growth model, in niche industry fields in the intersection of the eastern and western economies. Secondly, discussions on the necessary

conditions to cultivate a hinterland for Singapore by drawing learning lessons from Hong Kong and Israel by looking at the construct of their hinterland arrangements. Lastly, raising the need to sensitize the younger workforce the realities of the global economic situation and convincing them to embrace the global science and technology job opportunities.

1. LIMITATIONS AND CHALLENGES FACING SINGAPORE'S CURRENT GROWTH MODEL?

1.1 Industrial Policy – Lack of a sustainable anchor industrial base

Till date, Singapore has approximately 40 years of industrialization experience, however the early part of this 20 years were made up of less technologically advanced capabilities, and the subsequent 20 years were fraught with lots of restructuring activities which caused the loss of innovation capital and capabilities that were already built, and Singapore is currently in the early stages of agglomerating innovation capital and capabilities in technology sectors that are new to Singapore. Unlike for larger countries like China and Korea, where such economies are able to domesticate the "Flying geese paradigm" by shifting their lower value-add industries to regions that are less developed, while continuing to pursue higher value-chain innovation activities and leveraging on their existing industrial base, Singapore does not have that luxury due to limitations in land and labor. This resulted to a loss of industrial capabilities and infrastructure which are necessary for applied science and engineering activities to be conducted.

1.2 Land, Labor and Capital – Lack of a hinterland

Despite lacking a large industrial sector and manufacturing base in Hong Kong and Israel, these economies managed to do well. Looking deeper into the structure of these economies, both have hinterlands to enable them to extend their capabilities. A hinterland with a much bigger land area and population, preferably with a large manufacturing base, large market, and successful global businesses, would provide the businesses in the smaller economic region easier access to the industrial facilities and marketing channels. A hinterland is able to provide businesses in the

smaller economic region access to capabilities and infrastructure by leveraging on the manufacturing base already present within the hinterland. Such hinterlands with successful global businesses are also powerful marketing channels to assist the businesses within the smaller economic region to efficiently scale up and commercialize high value-add innovations to compete with the incumbent market players.

For example, Hong Kong being a part of China taps on China's manufacturing facilities, manpower and markets as an extension for economic growth, while also retaining the attribute of being a highly competitive economic region when benchmarked at the international arena. Another example, Israel having close commercial and social links with the USA is also able to leverage on the capital in USA, both physical and innovation, to fund continuing research and innovation within Israel. USA also availed manufacturing facilities, capabilities and markets as an extension for Israel's innovations. The deep intertwined social networks reduce the barriers to entry and facilitate business collaborations between the small economic region and its respective hinterland.

In the early days before the industrialization of Singapore, Singapore has always leveraged on the network of western markets identified during the colonial era as Singapore's hinterland. Singapore acted as the transshipment port for raw materials produced within the South-east Asia region and shipped it to the markets in the west. As Singapore moved up the value-chain, intra-regional trade within the Asia manufacturing powerhouse dominated the bulk of the exports from Singapore. At the current moment, there is no clearly defined hinterland for Singapore and this could possibly explain Singapore's vulnerability.

Without such access and social networks, Singapore businesses would have an uphill journey to gain access to these facilities and channels. Such high barriers to entry increase the risk and

reduce the incentive for Singapore businesses to pursue innovative activities as the failure rate is much higher, and Singapore businesses are therefore more likely to pursue old economy business activities which are less sustainable and much lower in productivity leading to the dual economy phenomenon in Singapore's enterprise scene.

1.3 Manpower and Capability Development – Practicing experience makes a difference

On-job-training, application and coaching is of absolute necessity when it comes to building a new skill. Industries should be ready to take on a freshly trained individual from an education institution, be it a fresh graduate or a mid-career executive, into the role as a trainee. Although Singapore is a well-established education hub with highly ranked universities and a plethora of continuing education institutions to assist the workforce to build new skills and capabilities, to build a skill through classroom instruction, it is only effective up to a limited extent.

However, it may not be easy to secure such traineeship opportunities when the industry is consistently restructuring and pursuing novel fields. Singapore has been undergoing restructuring of its industries since the 1990s and embracing higher value chain activities, advancing in new industries and technological fields. Such capabilities usually do not reside within Singapore therefore there is a need to recruit middle to senior-level foreign talents to establish the organization. Foreign companies that established such niche fields within Singapore would leverage on the open labor policies to bring in their specialists, and may not be incentivized to provide an opportunity to transfer their knowhow to the local workforce.

No doubt the availability of funding for basic and continuing education is good, but without a quality environment for the deployment of such skills under the mentorship of a seasoned practitioner over a period of several years, the training will not be recognized as a practical skill.

With this understanding, the workforce have to be prepared that there may not be sufficient opportunities for graduates to gain practicing experience to further their craft within Singapore due to the dearth of entry level roles. This might have been the factor why the younger workforce choose job roles that are not related to their field of study, as positions that are related to their field of study may not be available, may not appear to have good job prospects within Singapore or may require them to pursue a job opportunity overseas in order to practice their newly acquired skills. In addition, the younger generation may deem certain fields of study like science and engineering as sunset industries in Singapore, by utilizing wage and career development markers as indicators, and beginning to change their choice of careers away from science and engineering fields further accelerate the talent drain.

2. CHANGES AND REFORMS NECESSARY TO RAISE PRODUCTIVITY AND THE INNOVATION CAPACITY OF THE SINGAPOREAN ECONOMY?

2.1 Industrial Policy – Building an investment centre to control niche industrial bases

Singapore continuously restructures the economy to move up the technological value-chain and thereby availing its domestic workforce and land resources for higher value-chain activities. During this process, uncompetitive activities either have to be optimized or outsourced to other countries. With Singapore as an Investment Centre, extending the 'Second Wing' could assist the country to increase its economic space by situating industries outside Singapore while maintaining a certain degree of control over those assets.

However, Singapore should be pragmatic in her selection of the industrial bases to cultivate. Pragmatically speaking, Singapore will not be able to compete with China in the mainstream industries, given China's access to the vast land, talents, natural resources, and the upcoming "One Belt One Road" connectivity to markets. Recognizing that the western countries will also continue to be industry leaders in innovation and industry, Singapore could leverage on the structural and ideological differences that is persisting between two big economies to build her choice industries, positioning herself as a neutral channel to facilitate the transmutation and transfer of innovation across both giant economies, with a non-partisan view towards either economies. Such manufacturing and production establishments should command high value add in the global economy.

This is not without challenges, over the past decade, China has been acquiring overseas businesses to build their very own 'Second Wing'. China could modernize their legal regime and therefore giving foreign companies' confidence to operate in certain parts of China. To establish

Singapore as a hotpot for the transmutation and transfer of innovation between east and west could lead to rapid shifts in the domain capabilities required and it may not be easy to prepare the next-generation workforce to forecast the area of specialization to partake on.

2.2 Land, Labor and Capital – Cultivating a hinterland

Singapore could consider cultivating a hinterland and actively creating such social networks to enable Singapore companies to gain access to the manufacturing base and marketing channels. Singapore has to delve deeper to explore how such hinterlands are formed, including the mutual dependency with each other, and the challenges that Singapore would possibly face to create such social networks.

The mutual dependency in the Israel example is formed by the presence of successful Jewish industrialists in US, leveraging on the ingenuity and the intellectual capability of the Israel's workforce to generate cutting-edge innovations. This social relationship and reliance, attributing to the Jewish people's religious affiliation with Israel, gradually changed into a commercial one when the competitiveness of their innovations were proven and benefits are realized, which would be realized in the form of cross asset ownership and the desire for business sustainability. The mutual dependency in the Hong Kong example comes more naturally since both economic regions have been deeply intertwined in a mixture of social, cultural and commercial relationship, especially after the return of Hong Kong to China in 1997.

Israel is particularly effective at leveraging on the domestic workforce's ingenuity and chutzpah and is a model that is worthwhile for Singapore to explore. The average Israel population has greater awareness aware of the realities in life and the economy, and the fact that their country is consistently under threat. Since their independence, they have deployed much resource into

research and innovation, leveraging on a small defense force to protect them against a larger nation. Technology spillover from the military contributed to the advent of many cutting-edge commercial innovations when such specialists are released into the labor force. The Israelis are also drafted into military service at a tender age, and the flat military structure confers great responsibilities and power to every single individual on the battlefield. The Israel culture also encourages a flat structure where it is common for the individual to voice out their views which may not be aligned with that of a senior member. These qualities have allowed entrepreneurship to coexist with industrial development.

However, it is debatable whether Singapore embodies the necessary conditions to embark on Israel's model of productivity at the enterprise level of the Singapore economy, given that the workforce, society, networks and capabilities are fundamentally different at this point in time. More efforts would have to be injected to prime the younger generation to embrace challenges such ingenuity and chutzpah like the Israel community.

2.3 Manpower and Capability Development – The world is your oyster

The above sections indicated that the ingenuity, motivation and flexibility of the workforce would have a huge bearing on Singapore's success. It is a common knowledge that human capital is Singapore's only resource. It is also widely recognized that the industrial sector is more resilient and stable as compared to the business and financial services industry. It is with this view in mind Singapore's focus on industrialization cannot falter.

How should we then prepare our younger generations for science and engineering roles within our economy when a sufficiently large and sustainable industrial sector does not exist? How should our existing professionals, managers, executives and technicians manage the transition of

the industry after having spent a few decades being specialists in those industries? How do we manage the dearth of trainee positions within newly targeted industries to prepare the domestic workforce to be leaders within those newly targeted industries?

The domestic workforce, especially the science and technology professionals, would have to embrace the idea of working and living overseas and embrace an international perspective when searching for employment opportunities due to the flexible and fast changing shifts in technology focus within Singapore. They would need to seek for a practicing opportunity in an overseas country the moment the opportunity within Singapore dries up. However, at this point in time the younger generations in Singapore may not be comfortable to the idea of pursuing global job opportunities.

(1979 words)

Thank you for your time, I welcome your views and comments.

--- ---