

Transformation in the Singapore Economy: Course and Causes*

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Has there been an economic miracle in Singapore? How do we measure this miracle? Is it measurable? How and why has this miracle taken place in Singapore for the last 43 years after Independence in 1965? What structural changes have taken place in the economy? What special institutions have been created to engineer this transformation? What is the critical role of the State in this transformation process, particularly in terms of its effects on investment in human capital, physical capital and social capital? The focus of this chapter is on the course and causes of the rapid transformation in income and wealth creation, with the support of some interesting stylized facts and photographs since Independence in 1965 through 2008.

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THE ECONOMIC MIRACLE

Per Capital GDP Growth

(a) In US Dollar

In 1965, when Singapore became a fully independent Republic, the per capita GDP was typical of that of developing countries at US\$512 per annum. Today, 43 years later, as per 2007 figures, the per capita GDP went up by 63.7 times to US\$32,624 per annum, typical of that of the First World. These figures are in nominal US dollars.

(b) In Singapore Dollar

Because of the secular appreciation of the Singapore dollar *vis-a-vis* the US dollar between 1965 and 2007, in Singapore dollar terms, the nominal per capita GDP went up from S\$1,567 in 1965 to S\$49,182 in 2007, a reduced increase of 31.4 times as against 63.7 times in US dollar terms.

Growth in GDP Sizes

Below are two figures showing the size of the economy in 1965 compare to its size today, one in real and the other in nominal terms.

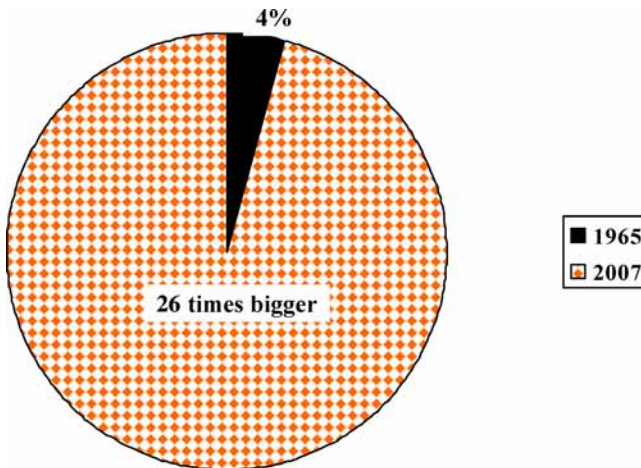


Figure 1: Metamorphosis in real GDP sizes (S\$)

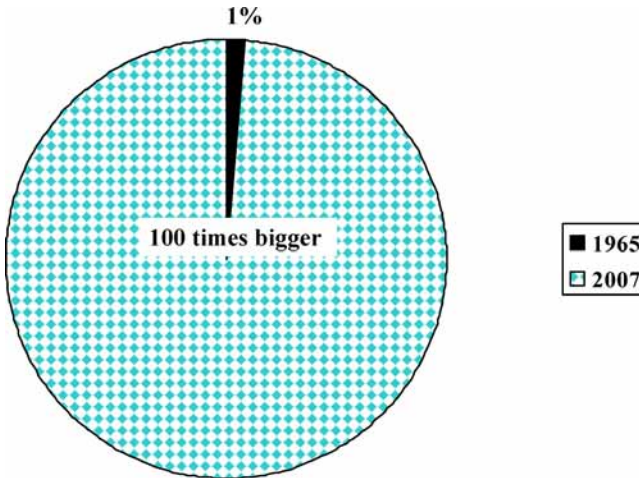


Figure 2: Metamorphosis in nominal GDP sizes (S\$)

Of note is that Singapore's real GDP in 1965 was only 4% of today's GDP. When nominal GDP figures are compared, in 1965, it was only 1% of the present GDP.

Growth in Real GDP Rates

In terms of long-term real growth rate, the average per annum was 7.4% in US dollars and 5.6% in Singapore dollars. These are spectacular average compound real per capita growth rates over a period of 43 years. The speed of growth in Singapore has been about 3 to 4 times the growth rate of developed economies, with the steady and rapid convergence with the developed economies over time. The year to year real growth rates from 1961 through 2007 are given in the table below.

Note the gyrations in real growth rates over time, with a low of -1.4% in 1985 to a high of 13.7% in 1970. The average compound growth rate for 43 years is 8.1%.

Standards of Living

As shown in Fig. 3, Singapore's real per capita GDP grew from S\$4,668 in 1965 to S\$48,158 in 2007 i.e., an increase of 10.3 times. In other

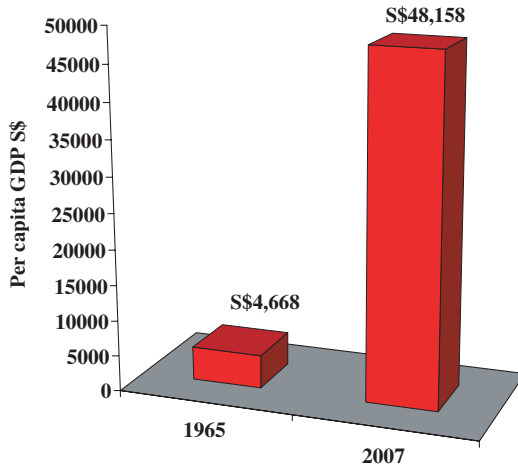
Table 1: Singapore's Real GDP Growth Rates, 2000 Market Prices (1961–2007)

Year	Growth	Year	Growth	Year	Growth	Year	Growth	Year	Growth
1961	8.0	1971	12.0	1981	9.7	1991	6.6	2001	-2.4
1962	7.0	1972	13.4	1982	7.1	1992	6.3	2002	4.2
1963	9.9	1973	11.1	1983	8.5	1993	11.7	2003	3.1
1964	-3.8	1974	6.1	1984	8.3	1994	11.6	2004	8.8
1965	7.5	1975	4.1	1985	-1.4	1995	8.1	2005	6.6
1966	10.8	1976	7.1	1986	2.1	1996	7.8	2006	7.9
1967	12.2	1977	7.8	1987	9.8	1997	8.3	2007	7.7
1968	13.6	1978	8.5	1988	11.5	1998	-1.4	—	—
1969	13.6	1979	9.4	1989	10.0	1999	7.2	—	—
1970	13.7	1980	9.7	1990	9.2	2000	10.1	—	—
Average	9.3	Average	8.9	Average	7.5	Average	7.6	Average	5.1

Source: www.singstat.gov.sg

Note: 1965–2007 = 8.1%

World Average (1980–1999) = 2.8% (*own estimate*)



Note: Real capita GDP increased by 10.3 times.

Figure 3: Singapore's real per capita GDP in S\$

words, deflating for inflation rates to real terms, *the general standards of living in Singapore increased by about 10 times between 1965 and 2007*. This is an average figure. It roughly means that half of the families in Singapore had their standards of living raised by more than 10 times and the other half by less than 10 times, between 1965 and 2007.

Employment Creation

Concomitant with the spectacular GDP expansion, about 2 million new jobs have been added to the economy by 2007, when compared to 1965. Besides, the jobs today fetch higher pay than in 1965; some are more than 10 times higher today and some less than 10 times. There has been a spectacular increase in the variety and range of jobs available in 2008, when compared to 1965. There is a very close correlation between job creation and GDP expansion.

An Economic Miracle

By the growth measures mentioned above, the economic transformation in Singapore between 1965 and 2007 was remarkable,

extraordinary, and very impressive by any standard, whether it be inter-temporal or international.

How did this extra-ordinary income and wealth creation after Independence in 1965 come about? This is considered, by the World Bank, as an economic miracle.

As a result of this economic metamorphosis, the red-spot on the map called Singapore, now has a GDP in US dollar terms that is surprisingly 87% bigger than five of our rapidly growing beloved neighbors, and some much bigger neighbors, namely Vietnam, Myanmar, Cambodia, and Laos combined. Singapore's total GDP is US\$125.3 billion.¹ The combined GDP of the four important neighboring countries mentioned above is US\$67.0 billion.¹ This is an unbelievable feat Singapore has accomplished. Its transformation may be compared to a caterpillar metamorphosing into a butterfly, or as per the S Curve Theory, from a turtle economy to an elephant economy, a nascent elephant economy (Lim, 2004) or, in more common parlance, from the Third World to the First.

STRUCTURAL TRANSFORMATION

Structurally, the economy was heavily dependent on two pillars at the time of Independence: the entrepot trade of primary products, principally of rubber and tin; as a British military base, East of Suez. After Independence, outward-looking industrialization was bud-grafted into the old economic framework. As a part of the outward-looking industrialization process, Singapore successfully established itself as an important oil-refinery center; as a center for electronic and pharmaceutic products and a center for maritime products such as oil-rigs. Rapid industrialization was soon to be accompanied by three other important developments: (1) Singapore as an international transportation and logistic hub; (2) as a financial entrepot; and (3) as a center for international tourism. Later, two more pillars were added: (1) Singapore as a regional educational center and (2) as a regional center for health care and medical services. The last five

¹ As per 2006 statistics.

pillars are still, in varying degrees, in the rapid expansion phase, whilst outward-looking industrialization and the old entrepot trade underwent and still continue to go through important restructuring and upgrading process.

In entrepot trade, rubber and tin faded into the horizon, to be substituted by petrol-chemicals, electronics, pharmaceuticals, and other manufactured goods.

In manufacturing, as in other sectors, the restructuring process also took the form of more higher valued-added goods in place of labor-intensive, low value-added products. For example, Singapore today builds and exports as much as 75% of the oil-rigs in the world, whereas in the beginning of the industrialization process, low-end and low-valued added consumer goods like ordinary soaps, soap powder, mosquito coils, rubber slippers, toothbrushes, toothpastes, and saw-milling were the important job-providers.

On tourism, at the commencement of the rapid development process, the pessimism for development was so great that it was rightly thought that only drunken sailors would visit Singapore as tourists, contrasting with some 10 million international visitors a year today. With the introduction of the two integrated international resorts, the numbers are expected to show further increases.

On the financial side, because of our political and social instability at that time, there was more fear of money outflow than money inflow as is happening today. As it is, Singapore's financial center today can boast of numerous world-class banks and other world-class financial institutions. Foreign exchange transactions alone in a day amount to some US\$159 billion and a monthly turnover of US\$3.3 trillion.

Of course, the growth of Singapore as a high value-added, outward-looking manufacturing base, an international tourism hub, a financial emporium, a regional educational center, a regional health-care center, and a super trading emporium must go hand in hand with Singapore emerging as an international shipping center as well as an international aviation center. The equally rapid upgrading in domestic transportation, including the MRT, and communications including computer suaveness and ubiquitous usage, are all integral

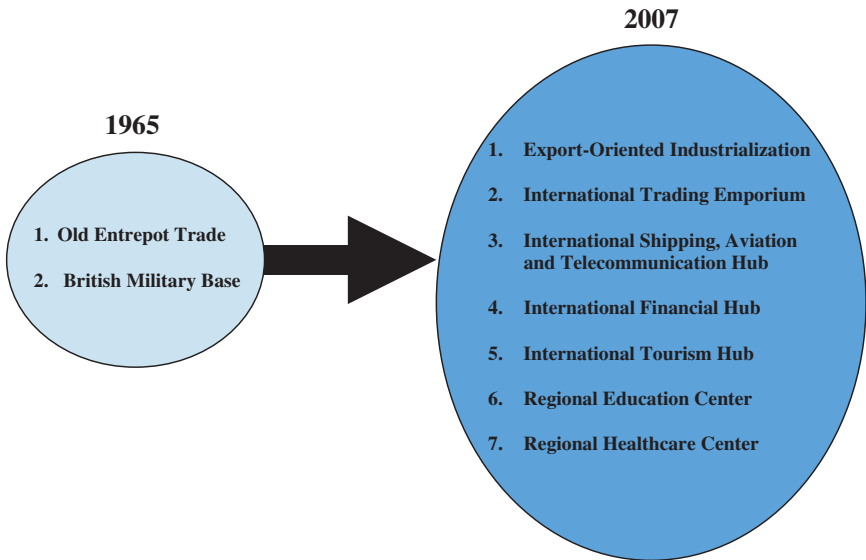


Figure 4: Economic structural transformation

parts of the overall economic transformation process. Each development builds on the other developments in a circular cumulative upward surge.

Singapore's miraculous structural transformation is shown in Fig. 4.

In other words, Singapore's overall economic pie expanded in real GDP terms by an average compound rate of 8.1% per year for the last 43 years. This is a very impressive, record-breaking achievement by any standard. More than that, Singapore's rapid rate of growth in income and wealth has been achieved with price stability, huge accumulation of foreign exchange reserves, a stable and strong Singapore dollar, full employment for most of the 43 years, a very high savings function and the most enviable balance of payments surpluses. Singapore's unemployment rate is 2.7%, one of the very lowest in the world. Germany, for example, which is the biggest economy and one of the most dynamic countries in Europe, has an unemployment rate of 8.1% and France also has an unemployment rate of 8.1%. Singapore has been transformed from a low value-added, labor

intensive old economy to a much higher value-added, knowledge-based and technology-based new economy.

METAMORPHOSIS IN EXTERNAL BALANCE

Some countries, including the USA, have recently achieved a very high standard of living partly through the accumulation of foreign debts. This is not the case in Singapore. Singapore has become very much a creditor nation, than a debtor country. Again, some countries, including the USA, have achieved a very high standard of living but have serious balance of payments deficit. Again this is not the case in Singapore. Singapore has one of the highest balance of payments surpluses on current account in the world, reaching 25.5% of GDP in 2007. Incidentally, not many of us are aware that from 1965 up to 1987, Singapore normally ran a sizable balance of payments deficit on current account, culminating at 32.2% of GDP in 1971.

METAMORPHOSIS IN SAVINGS FUNCTION

Singapore has one of the highest savings rates in the world, constituting 46.3% of GDP in 2006. However, not many of us are aware that at one time, Singapore had a negative savings function. In 1960, for example, our savings rate was minus 2.4% of GDP. At times, I come across the claim that Singapore has a high average and marginal propensity to save, because of its compulsory savings system under its very important CPF scheme. This claim is erroneous. It is just another statistical fallacy. CPF compulsory savings constitute only 11% of GDP. The rest, the other savings, constitute 89% of GDP. The other savings take the form of the enviable private sector company surpluses, public sector surpluses, GLC surpluses, and surpluses in individual and household accounts (Hsieh, 2002). Incidentally, it is this very high accumulation of savings that has enabled the Singapore Government to contribute importantly to global welfare by lending to world famous financial institutions caught in the prevailing sub-prime crisis. These world famous financial institutions in difficulty include UBS, the Citigroup and Merrill Lynch.

GROWTH ACCOUNTING

Earlier, we mentioned that about 2 million new jobs were added to the economy between 1965 and 2007. However, this impressive expansion in labor input may reflect only quantitative expansion. The quantitative expansion includes more housewives going out to work and more foreign workers being employed. There was, however, important qualitative expansion as well, not apparent from the figures. According to my own research estimate, 78% of Singapore's miraculous economic expansion could be attributed to increase in labor productivity and only 22% to the increase in labor input (Lim and Lee, 2002).

Gauti Eggertsson of the IMF, who made a special study on Singapore's growth prospects, reported in 2004 that, between 1990 and 2003, the Total Factor Productivity (TFP) accounted for 26% of the actual growth of GDP in Singapore, compared with the corresponding average of 20% for the Industrial Countries. The rest of the growth in Singapore was contributed by Labor (19%), Capital (41%) and Education (13%) (Eggertsson, 2004; Ghesquiere, 2007). Dr Eggertsson's figures and Professor Hsieh's seminal research paper (Hsieh, 2002) both contradict earlier publications of very negligible or no TFP growth for Singapore (Lall *et al.*, 1996).

VISUAL GLIMPSES

We are living in an audio-visual age. I have thus far only share with you some important macro-economic statistics, to show the reality and extent of our economic transformation. Perhaps now, I should share with you some photographs on a few other facets of the transformation.

Exhibit 1 shows small attap huts before transformation. There was no electricity or potable water supply. Toilet facilities are best left undescribed.

Exhibit 2 shows Singaporeans shifting from their attap houses to HDB flats, carrying all their precious belongings along.



Exhibit 1: How Singaporeans lived — A glimpse (*before transformation*)

Source: National Archives.

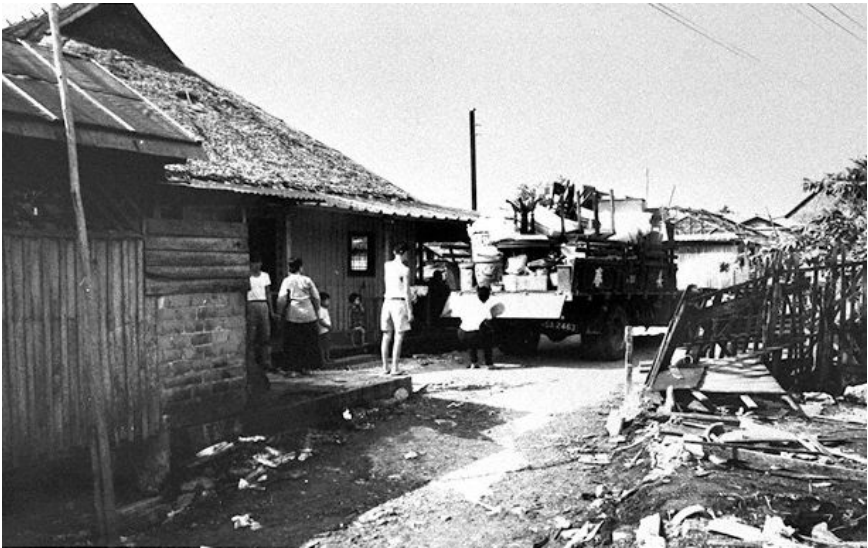


Exhibit 2: Singaporeans on the move to better dwelling places (*Note the furniture, the mud road and the debris before transformation*)

Source: National Archives.

Exhibit 3 shows, by way of contrast, the modern public housing in Singapore. Incidentally, today most Singaporeans, more than 90%, own their own homes. There are no more frightening ubiquitous slums that existed before. Shenton Way, for example, was a slum area. Today, it is one of the most expensive pieces of real estate in Southeast Asia.

Exhibit 4 shows traffic congestion by small bump-boats (*tongkangs*), at the mouth of the Singapore River.

Exhibit 5 shows coolies laboring hard for a living, transporting gunny-sacks of rice. This was the usual sight at the mouth of the Singapore River. Incidentally, I can still recall, that I had the honor and privilege of supervising a BA Hons economic thesis on this tongkang trade and tongkang workers of one student who later became a famous and well-accomplished Permanent Secretary in Singapore.

Exhibits 6 & 7 show the metamorphosis in the landscape and skyline at the mouth of the Singapore River. Singapore's port, has become one of the busiest and biggest in the world, certainly



Exhibit 3: Present public housing in Singapore

Source: Postcard, Photo by R. Ian Lloyd.



Exhibit 4: Congestion at Singapore river (*before transformation*)

Source: National Archives.



Exhibit 5: Coolie-dependent river transport system (*before transformation*)

Source: National Archives.



Exhibit 6: Present landscape at Singapore river

Source: National Archives.



Exhibit 7: Another snapshot just outside Singapore river

Source: *The Business Times*, 10 April 2007.

the most important container port in the world. Incidentally, half of the world's oil, a third of the world's foreign trade and over 50,000 ocean-going ships per year use the narrow Straits of Singapore today.

THREE CRITICAL OPTIONS

What basic policy alternatives have Singapore adopted to enhance its international competitiveness? What basic policy options have Singapore pursued to bring about the economic transformation miracle? These two closely related questions will be briefly discussed under three broad headings:

- (1) the option for a market-oriented, outward-looking economic policy;
- (2) the option for the most impressive investment in physical capital, human capital and social capital; and
- (3) the most important one, the option for and the active promotion of an able, stable, people-oriented, development-oriented, corruption-free, innovative Government and bureaucracy.

(1) Market-Orientation

A market-oriented outward-looking policy is critical for Singapore's transformation, if the alternative is a command or a completely state-managed economy or economic autarky. Market orientation ensures the optimum use of scarce resources in the production and exchange of goods and services. Outward-lookingness ensures Singapore operates and competes in the global environment. The price mechanism, or the invisible hand, equilibrates supply and demand. Production is for the market, global market. Price is determined by supply and demand. High prices are signals of shortages, and low prices are signals of over-supply.

Thus, Singapore's enormous external visible trade is surprisingly even much higher, some 88% higher, than that of all the countries in the Indian Sub-Continent combined. This huge complex multi-lateral

trading system cannot take place and could not have taken place without the invisible hand and the outward-orientation of the economy. External trade has been handled almost exclusively by the private sector. Even when only Singapore's domestic exports are considered, surprisingly, they still exceed the gross exports of the important countries in the vast fast-expanding Indian Sub-Continent combined. Incidentally, trade, including international trade, takes place on a willing-buyer and willing-seller basis, and both parties benefit in the exchange. International trade, both visible and invisible trade, reflects one of Singapore's most important roles in the regional and global economy. Nor could the other important facets of the Singaporean economy develop without the whole-hearted commitment in the pursuit of the outward-looking, and market-orientation policy and strategy.

The ubiquitous Government-linked Corporations (GLCs) could not have played such a critical role in Singapore's economic transformation process, had they remained purely as Government Departments or Statutory Boards. The Singapore Government-created GLCs are subject to the economic calculus of market forces, and guided by the invisible hand. Like other private sector corporations, they operate under the Companies Act and the Singapore Exchange Listing Rules, including having their own independent board of directors, internal and external audit checking system, own nomination, remuneration and audit committees. The GLCs also report directly to their shareholders with quarterly, half-yearly and yearly reports published for all to see and evaluate. They too pay the usual company taxes and their employees, the usual personal income tax and other taxes. Besides, the anxiety of GLCs to relocate to other countries in an economic downturn is zero. Their assets to the extent that their shares are state-owned, continue to belong to the State, or Singaporeans. Also, Singaporeans and others are free to own their shares, and prosper with the GLCs, as they fly high in the economic firmament in and outside Singapore.

The virtues of the GLCs are deliberately paraded because, they are Singapore-created growth agencies and are often denigrated by some *laissez-fairists* both inside and outside Singapore. The IMF, for

example, wants to know more about the GLCs in Singapore. They commissioned two economists to investigate and report on them. The two economists express the view that GLCs in Singapore are very successful, viable, profit-making commercial organizations, without the need for State subsidy for their operation and success. They vindicated our GLCs as very successful market-oriented state capitalism (Ramirez and Tan, 2003). Incidentally, GLCs include listed iconic-companies like SIA, SINGTEL, DBS, NOL, Keppel Corporation, Sembawang Corporation, Keppel Land, Capital Land, and the unlisted one, PSA. Indeed, many GLCs qualify, from the extent of their regional and global operations, as Singapore's MNCs. SIA, SINGTEL, Keppel Corporation, Sembawang Corporation, and ST Engineering are cases in point.

Similarly, without market-orientation and outward-orientation, foreign MNCs, which also play a critical role in Singapore's rapid transformation, particularly in the industrial sector, would not have a place in the Singapore economy. In short, without outward-looking market-orientation, neither the foreign MNCs nor the home-grown GLCs could have flourished. Singapore's domestic market is small. That however, can also become an asset. Any company established in Singapore has to face the full blast of international competition straight away. SIA, a GLC, is often cited as an example. Internal commercial flight by high-speed jet commercial planes such as from Changi to Tuas is not economical, even if technically possible. Keppel FELS and Sembawang Marine, both GLCs, for example, build, *inter-alia*, oil rigs for exports only; there being no oil wells in Singapore for oil rigs.

(2) Investment, Investment and Investment

The economic system needs a progressive increase in investment: human capital investment, physical capital investment and social capital investment. The need for appropriate physical capital investment is well-known, including in the supporting public sector, such as the MRT, the road system, the seaports and the airports. The need for human capital investment is less obvious, partly because of the longer gestation period required. But for sustained and sustainable

development, human capital investment is a *sine qua non* to success. More than that, its appropriate human capital investment mix is also critical. Singapore has done very well indeed both in physical capital investment and in human capital investment both in quantity as well as in quality and in the capital mix. Together, the physical and human capital investments have enabled the transformation, or the metamorphosis, in Singapore to take place.

More investment means more job opportunities, more income and more savings. They in turn bring in more investments and more employment creation in an upward circular cumulative causation process.

Quantitatively, in 1965, the total value of Singapore's capital stock is estimated by Dr Sng Hui Ying, when she was my Ph.D student, as S\$21 billion. Singapore's capital stock went up to S\$795 billion by 2004 (Sng, 2007). The enormous increase in capital input explains the enormous increase in income output. Investment can in turn be decomposed into domestic private investment, foreign direct investment (FDI) and public investment. All three parameters have gone up by leaps and bounds. All three, particularly domestic private investment and foreign investment, have reacted to the outward-looking, market-oriented policy and strategy in Singapore.

Singapore's human capital stock has also metamorphosed. The very narrow domestic talent pyramid at the apex has also become very much broader, with about 70% of the school cohorts opting for higher education today, compared to 6% in 1965.

Social capital here refers to institutional building, such as the promotion of ethnic harmony, religious respect, tripartism among the unions, the employers and the Government, and the common pursuit of meritocracy. Together, they contribute critically to the building of a favorable economic climate for investment to flourish. One should quickly add that a good investment climate also includes fundamental prerequisites like the rule of law, equal protection before the law, protection of property rights and an effective, impartial and non-corrupt judicial system.

Two other important policy options that have important growth-enhancing and growth-promoting side effects need to be mentioned

here: (1) the institution of national service following Independence. If a small, new nation, a city state, is not prepared to defend itself, defend its newly-won sovereignty, its people and its property, investor confidence in that nation will decline, particularly in a not-that-stable Southeast Asian political environment. (2) the choice of using English as the working language in administration, in the courts and in institutions of learning. The wide-spread mastery of the English language gives Singapore and Singaporeans an important edge in the globalised world; in trade, commerce, industry, knowledge acquisition and global social connectivity. Bilingualism, however, gives us an important cultural ballast, particularly as an Asian nation in Asia.

(3) Good Public Governance

Earlier, we spoke of the importance of the invisible hand in the transformation process. Now, we should speak of the equal importance of a good supporting visible hand. If the two hands clap in unison, they produce effective joyful sound. Alone, they are useless. The ying and the yang must not just be side by side. They must be like opposites that complement. They must support each other in a symbiotic relationship. In Singapore, both hands work together. Both ying and yang complement, each re-enforcing the other in a virtuous cycle of job creation, poverty eradication and more and greater affluence. Working together, the economy surges forward. The nature, the extent, and above all, the quality of State intervention, is critical. Markets are made for man and not man for the markets. A market-only policy can often create more problems than what a modern civilized society can handle. Market failures and market imperfections often justify State interventions and State initiatives.

At the apex of the human determinants of development is the Government and its accompanying and supporting bureaucracy. Government decides on the policy options, whether to have MNCs, GLCs, government agencies like EDB, NWC, SDF, HDB, and CPF, free trade, outward-looking market orientation, meritocracy, employment creation, or none of these. It is also the Government that decides on

the type of monetary system, the exchange rate regime, the fiscal policy, the meritocratic practice, the welfare and workforce system.

It is the Government that decides on all important creations and operations of the Government of Singapore Investment Corporation Pte Ltd (GIC) and the Temasek Holdings (Private) Limited. They are today referred to as sovereign wealth funds (SWFs). Because of the success of our GLC, China has also set up a similar body called Chinese Investment Corporation (CIC). If the Chinese character for human, “人”, can be used as an analogy, Government is at the apex or head, without which there is no functioning society, like a human without a head. The society could function only like a headless chicken, and the headless chicken could go nowhere, maybe round and round before collapse. Thus, the aptitude and attitude of the Government, particularly its integrity and management ability, is critical in the transformation process. A corrupt and incompetent Government would be unable to lead the economy out of poverty and low-level equilibrium trap. Some years ago, going against the trend in economic literature, in a book called *Development and Underdevelopment*, I postulated that “*Government, good Government often holds the key to rapid economic development*”, particularly in developing economies (Lim, 1991). Many, many years later, I still hold firmly to the same view. The world, in particular the World Bank, appears to increasingly share this perception and approach.

In other words, a stable, able and development-oriented Government is critical in the rapid developmental process. However, the people, particularly the businessmen, merchants, industrialists, entrepreneurs, unions, and the workers too each have their important role to play in the process of economic upliftment. Nonetheless, labor and capital must work together not against, their legitimate elected Government to create the economic miracle. In Singapore, this togetherness among the three social partners is often referred to as tripartism. This tripartite symbiotic relationship, partnership, is critical to the metamorphosis of the Singapore economy from Third World to First, from a basket-case to a show-case state, from a per capita income of US\$512 per annum in 1965 to US\$32,624 per annum in 2007, and from the old economy to the new economy.

To conclude, Singapore has been succeeding miraculously against all odds for the last 43 years since Independence, because throughout the 43 years Singapore has had and is still having an able, stable, non-corrupt, development-oriented Government, and has been choosing the road of an outward-looking, market-based, meritocratic economy and society, besides being populated with a hard-working, pragmatic and achievement-oriented people in a strategic location in South-East Asia and in the world.

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