

IPS-Nathan Lectures

Singapore: The Next Fifty Years Lecture II: Economy and Business

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Introduction

Good evening and welcome to the second lecture in the IPS - SR Nathan Lecture Series, which will deal with the Singapore economy in the next 50 years.

Economists can overlay standard boom--to--bust business cycles on traditional forecasts, and extrapolate currently foreseeable trends into different scenarios where long term means 10 years. This is dealing with known knowns and accounts for perhaps up to 90% of forecasting models.

Then there is the crystal-ball gazing bordering on futurology, with notions like artificial intelligence, space travel, stem cell organ regeneration, global viral epidemics, Armageddon-like climate change, and umpteen other neat stuff in the realm of science fiction movies. These are unknown unknowns.

In between is the biggest challenge for think-tank tenants or wanna-be academic fellows like me: that's the realm of the known unknowns, a nether-world between predictive forecasting and irresponsible speculation, where perhaps the probability of events occurring is a pretty even 50:50.

The biggest known unknown facing us in the next 50 years, is figuring out the impact to Singapore of what is already clearly going to be the most disruptive economic change in the past two hundred years.

That event can be summarised by a very short quote in the Economist magazine:

"The modern digital revolution – with its hallmarks of computer power, connectivity, and data ubiquity... is disrupting and dividing the world of work on a scale not seen for more than a century. Vast wealth is being created without many workers, and for all but an elite few, work no longer guarantees a rising income."

It is like a massive tsunami originating in the middle of the ocean and hurtling towards all coastal countries. How it will impact each country is still unknown, but every country that sees the tsunami coming towards it, better be prepared.

We do know from history, that every technological disruption displaces some jobs but after a short, painful transition, it creates more jobs by either increasing consumer power or, through ancillary employment from the initial technology, it enables everyone to be better off.

Lower-productivity jobs and lower value-added enterprises give way to those higher on the skills and value-added ladder, in an ongoing process which the economist Joseph Schumpeter called "creative destruction". This is a concept that I think most of us are familiar with.

We went through this once in the mid-1980's and we are right in the middle of another economic restructuring now.

But, is it different this time round? What is alarming governments and academics alike is that the pace of the digital revolution is so fast that it is displacing workers in

far larger numbers than before, across the entire spectrum of the economy; and in a supreme irony, rendering some low-paid jobs more viable than higher-skilled ones.

Previous technological change was linear in speed; digital disruption is exponential in acceleration. Previous technological change automated manual work; digital change automates both cognitive and manual work. Any kind of routinized work, even of high cognitive order, can be done by computers, robotics and artificial intelligence. Ironically, the job of the office cleaner is more assured than that of the insurance claim adjuster or IT call centre consultant, both back-office jobs which may require university degrees but are routinized.

The job destroying power of the digital revolution is frightening: a recent Oxford university study¹ analysed 700 occupations and concluded that 47% can be computerised and gotten rid of. Another study² projects that up to half of the types of jobs available today will have been destroyed in ten years.

Singapore is particularly exposed to the digital revolution, with our disproportionately high dependence, compared to other Asean economies, on foreign MNC's engaged in precisely those businesses which can be digitally disrupted. Government is exhorting everyone to increase our productivity to justify higher wages, but the danger is that automation may leapfrog us and render that higher skilled job obsolete before we've trained the worker – or more ominously, ourselves.

Labour markets are hollowing out and polarising between highest skilled and lowest skilled jobs, with very little employment in the middle. This known unknown is one of the biggest challenges for Singapore in the next half-century, not only in terms of its ramifications for employment but also worsening income inequality. I saw a clipping in TODAY newspaper³ where it talked about the so-called unhappiness of Singapore workers. What was most interesting was that the occupations where people were most unhappy were the people working in MNCs, banks and in precisely those businesses which are in the middle of being disrupted. And they found that in fact the lower skilled occupations had a higher happiness index, and I wonder whether we are beginning to see the impact of this change.

I will ask two questions of our known unknowns:

First, has the strategy which enabled Singapore to rise from Third to First World in one generation run out of steam in the New Economy and must be radically altered or even replaced? For example, does the digital economy dictate that hitherto key economic pillars such as manufacturing, be replaced by a pure services economy?

¹ Frey, C., & Osborne, M. (2013, September 17). THE FUTURE OF EMPLOYMENT: HOW SUSCEPTIBLE ARE JOBS TO COMPUTERISATION? Retrieved November 13, 2014, from http://www.futuretech.ox.ac.uk/sites/futuretech.ox.ac.uk/files/The_Future_of_Employment_OMS_Working_Paper_1.pdf

² Frey, T. (2012, February 3). FuturistSpeaker.com – A Study of Future Trends and Predictions by Futurist Thomas Frey » Blog Archive » 2 Billion Jobs to Disappear by 2030. Retrieved November 13, 2014, from <http://www.futuristspeaker.com/2012/02/2-billion-jobs-to-disappear-by-2030/>

³ What the National Workplace Happiness Survey found. (2014, November 13). TODAY. Retrieved November 13, 2014, from <http://www.todayonline.com/singapore/what-national-workplace-happiness-survey-found?singlepage=true>

Second, what adjustments to the fundamentals of our strategy may be required in the light of *known unknowns*?

SECTION ONE – THE STRATEGY

The Three L's

Let me turn to my first question, that of strategy. Singapore is the only fully sovereign and independent nation with such disproportion between its land mass and population size: like a dwarf with an oversized head. Monaco, Lichtenstein, Macau, and even Hong Kong – itself double the size of Singapore – don't count, as they are essentially protectorates with no sovereign foreign policy nor military capability, nor broad economic capabilities.

And yet, despite the absence of a hinterland, Singapore has chosen a path of economic development which is *unprecedented* elsewhere. And that is to replicate a comprehensively multi-sectoral, developed economy comprising different manufacturing industries as well as different service sectors, on a land mass marginally larger than the resort island of Phuket and with a total GDP larger than Malaysia with a population 4 times larger.

I suppose that is the power of necessity. What Singapore's leaders did immediately upon an independence more thrust upon them than actually desired, was to embark on what I will call the "*Three L's Strategy*":

- First, Location: Building upon Singapore's historic choke point between East Asia and Europe to ensure that it remained the maritime trading centre between these two worlds, and then leveraging off its location to be the regional aviation hub and finance center.
- Second, Land: Intentional intervention against free-market principles for allocation of scarce land to achieve very purposeful and targeted national objectives, ranging from affordable public housing to industrial estates for foreign manufacturers.
- Third, Labour: Liberal policy towards foreign workers to keep costs low, while continually upgrading skills and productivity of Singaporeans to ensure competitiveness against neighbouring countries.

What are the threats to each of the 3 "L"s of the strategy, and what are the possible responses?

The first L is Location.

Is our hub status declining into irrelevance as global trends create new hubs or even renders the whole notion obsolete? Climate change has opened a year-round, ice-free Arctic passage between the massive economies of Northeast Asia and Europe which may eventually bypass Singapore.

Massive investments in rail and road networks will allow every part of China to access ports in the Indian Ocean, or carry cargo across Russia and Central Asia to Europe directly, without passing through the Straits of Malacca.

Changi airport and Singapore Airlines are challenged by the rise of Middle Eastern airports and airlines, which have siphoned away much of the so-called Kangaroo route between the UK and Australia. And the rise of numerous world-class airports in China has resulted in direct flights between the rest of the world and Chinese cities, bypassing Singapore.

Another hub-based business activity is financial services. The rise of China has created a strong North East Asian financial cluster comprising Shanghai, Hong Kong, Tokyo and Seoul. Further westwards, Dubai, Doha, and Abu Dhabi effectively service South and Central Asia, and Africa. And with Sydney servicing Australasia, that leaves Singapore as the financial services centre for only South East Asia.

But even that circle is shrinking: Bangkok will be the center for Myanmar and the Indochina of old: Vietnam, Laos, Cambodia. With Indonesia's new-found dynamism and confidence, will Jakarta still see Singapore as its New York or develop its own?

Certainly, if capital markets are anything to go by, Singapore's Stock Exchange has in the past decade fallen considerably behind other centres like Hong Kong.

These challenges will not result in any sudden and dramatic decline in Singapore's strategic role. Instead, it may be a long, slow slide. The history of Venice, always touted as the Renaissance global city which Singapore should emulate, has its less-popularized dark side.

We all know how Venice rose to be the hub of East-West trade, with its terminus of the overland Silk Road on one hand, and on the other, its maritime opening into the Mediterranean world, which was the centre of Western civilisation at that time.

What we may remember less, is how the slow decline of Venice began with new shipbuilding technologies which enabled the Atlantic-facing seafaring nations like England, Spain, France and Portugal to discover the New World. This irrevocably led to the decline of the Mediterranean as the centre of the Western world, but it was slow enough that only backward looking historians have noticed it.

If we fast forward a few hundred years, will a similar strategic vulnerability affect Singapore? Has it already begun, but we remain happily ignorant, like the proverbial frog nonchalantly cooking to death without so much as a croak because the water temperature rises so slowly that it doesn't know it's dying, festooned with its many medals for competitiveness and being number one in this and that?

As for the second L: Land, are we simply running out of it despite ceaseless reclamation? And is its high cost making manufacturing so unviable that we should simply get out of it? Is it also making affordable home ownership an unachievable goal for future generations?

The two countries most similar to Singapore in size of population, are Denmark and Finland. They are also similar in gross economic output, with Denmark slightly larger and Finland slightly smaller, than Singapore. But Denmark's land mass is 60 times larger, and Finland is 485 times larger than Singapore. The term Little Red Dot, intended as an insult, is a reality.

The whole point of having a large landmass is to benefit from a symbiotic metropolis-hinterland development strategy. But Singapore is the only independent nation in the Wikipedia list of over 200 nations, with a metropolis but not the slightest hinterland. Attempts to create proxy hinterlands in Southern Johor, the Riau islands, or China, have not blossomed to become the "Growth Triangles" which they were touted to be some 10-15 years ago. They may be profitable ventures and attract tenants but a proxy hinterland not governed by the same set of laws or the same government, is not a true hinterland.

So, if we are running out of land, should we not focus on high value-added services and abandon a manufacturing strategy? Hong Kong and Singapore some two decades ago had roughly the same 20% percent of their GDP devoted to manufacturing. Hong Kong has abandoned manufacturing totally for the services route while Singapore on the other hand, has consistently kept manufacturing to about 20% of its economic output. Is this a misplaced commitment?

The other big issue involving land scarcity is its impact on the price of public housing. To the extent that worsening wealth inequality is a growing economic and social problem, is our land pricing policy serving the needs of our people? What indeed is the value of a rising per capita GDP if the cost of our homes per capita is rising even faster?

The Singapore housing landscape comprises three distinct markets: the HDB first-home market; the HDB re-sale market, and the private property market.

The globalisation of residential property ownership in recent years has driven Singapore private home prices close to London and New York levels.

The HDB re-sale market, de-regulated in the past decade to enable public housing owners to enjoy asset enhancement, has largely moved in tandem.

But the results were paradoxical. HDB owners do not feel richer as research has found. Unlike large countries with hinterlands where urban home-owners could monetize their homes and move to the city outskirts, or to say, retirement communities in scenic but inexpensive locales, Singaporeans are not able to monetize their homes unless they emigrate or downgrade – which has not been popular. And they certainly don't feel richer simply because their homes are now more valuable – economists have not detected any positive wealth effect on consumption.

This was not the case twenty years ago when homeowners could upgrade without the same cost as today. But since resale deregulation, rising home prices have only benefitted the already rich private property owners. Studies have concluded that rising prices actually channel income distribution away from own-use buyers,

whether first-time or up-graders, towards developers, banks, property investors and speculators.

As two NUS economists Tilak Abeysinghe and Wong Yan Hao noted in a research paper,

“it is this re-distributional aspect of rising property prices that could add to the widening income gaps”.

Exactly how affordable is housing in Singapore? The 10th Demographia International Housing Affordability Survey, conducted just a year ago, uses an index which takes into account the average sale price of housing versus average annual income of a household.

If housing costs exceed three times the annual household incomes, warning bells should ring. Singapore’s rating of 5.1 put it in the “severely unaffordable” category, but Demographia data is not encompassing of the spectrum of housing markets here, and used only HDB resale prices and not entry-level prices for their data. Demographia has also recognised that in comparison to other metropolitan cities like Hong Kong, Vancouver, San Francisco, San Jose, Sydney, Melbourne, Auckland, and London, Singapore’s results have been “stellar”. Compared to Hong Kong, we would be at least three to four times more affordable. Incidentally, we are still more expensive than Tokyo and Osaka, but that might be more a reflection of how their economies have stagnated than as to how expensive we are. Very recently, the Government enhanced measures such as the Special CPF Housing Grant, which will help lower and middle income families buy their first subsidised home. But the whole issue of housing affordability in Singapore is not entirely clear, and it’s going to be a very important issue going into the next 50 years, precisely because we are not a country with a hinterland where you essentially move from rising prices in New York, you move to Florida, rising prices in London, you move to places outside London. There’s not many places you can move out of in Singapore and with an improving economy, and with totally finite land, housing affordability is an issue.

As for the last L: Labour, The same doubts plague this resource as with Land, but is more intractable because it involves human lives.

Whereas the dilemma of land scarcity is largely one of pricing and allocation priority, labour scarcity, cost, and productivity are related in complex and sometimes contradictory ways. Add in foreign versus local labour, and the issues are very intertwined.

SECTION TWO – THE RESPONSE

My second task is to identify possible changes to the Three L’s of the basic strategy if it is to remain relevant for another 50 years. Let me start by saying that I believe the first L: Location is a challenge more easily surmounted with adroit rebalancing. The second L: Land may require a more fundamental re-think about how to ensure home affordability, and a possible new role for the Housing Development Board, or

HDB, my little giraffe in the room, which I will touch on later. The third L: Labour, may justify relooking immigration and educational policies.

The first L is Location.

How do we maintain our competitiveness as Singapore's strategic location declines?

I believe that the answer is in creating several critical eco-systems of business activity which are so elaborately inter-related that they cannot be reconstructed by competitors; is the result of continual incremental improvements over decades; and can stand their own in global competitiveness regardless of geography.

Let me highlight a few examples of such eco-systems which we have been building over 20 years.

Aviation is one. Changi airport and Singapore Airlines may decline in importance. But if we add to our early start as an aviation hub, global capability in aviation leasing, financing and insurance; if we have the top engine repair and maintenance facilities here manned by very skilled technicians; if we attract the most sophisticated avionics and small precision components manufacturers here; if we create a support environment of local SME's which can service their outsourced needs; and if we add to all that, cutting-edge research in our universities on the digital technologies related to the future of aviation ...

If we do all that, there will be perhaps only one or two other global competitors to Singapore in this domain. And it won't be Dubai, Abu Dhabi, Shanghai, or anywhere else, even though the aviation traffic going through Dubai, Abu Dhabi, Shanghai may be easily overtaking Singapore's.

The same is true in the life sciences. There are diseases more prevalent amongst East Asian racial groups, or in our climatic zones. The eco-system required to have a cutting-edge life sciences eco-system includes not only our universities but also our hospitals; it requires technicians and scientists, and a host of supporting services which again can provide opportunities to our SME's.

And the same is also true in other knowledge-intensive, creative industries such as information and communications technology.

Even the oldest heavy industry to invest in Singapore, the petroleum refining industry, has been continually upgraded over the past decades to now include a wide range of downstream products, as well as ancillary services such as oil and gas futures trading, and even LNG storage in underground rock caverns.

The same is true for financial services, where a regional advantage some thirty years ago has been parlayed into a global leading position in wealth and funds management or forex trading, even as other purely regional advantages have declined.

This strategy is good for another 50 years, but the purposeful, deliberate selection of specific industries as the winners of tomorrow is itself risky. It requires a judicious balance between planning and market forces, and close collaboration between policy makers and industry. Another risk is the very expensive link between applied

research and product development. Research funding cannot always have immediate commercial applications and yet funding cannot be open-ended; finding the right balance will again require clear, far-sighted but accurate judgement.

Finally, even should Singapore's geographic location become less strategic in a global context, the eventual creation of a genuine ASEAN Economic Community will finally provide a more homogeneous, relatively affluent market of over 700 million people for our SME's. When I was a young journalist, I was already happily writing about a tariff-free ASEAN. 30 years later, it still has not really happened, but 30 years from now, I presume it will finally happen. But they better move fast because every ASEAN country has its own hives of buzzing SME activity, possibly more hungry and aggressive than ours.

Let's look now at the second L: Land. I had identified two challenges: viability of manufacturing in the face of land shortages, and housing affordability.

On the first challenge, there is no evidence that manufacturing of high value, sophisticated products require more space or labour than services.

In fact, it may be the other way around – the output per square meter of space or worker is probably multiple times higher in a life-sciences production plant than in a food court. The choice really is a false dichotomy if one chooses between services and manufacturing, as Hong Kong actually has found to its great detriment. Hong Kong now has a very fragile economy of, on one hand, very high-end financial services and property, and everything else below that is very low-skilled. That is the big mistake Hong Kong has made by moving out of manufacturing. The choice is not between services and manufacturing. It is between low and high valued activities of any kind.

In the new economy with its customized, on-demand production, don't think of large factories with thousands of people. You are looking now at 3-D printing of as-needed components, there will almost be no distinction between services and manufacturing. Knowledge creation leading to product creation will be a seamless process: medical research leading to drug manufacture on demand; or design and then production of nano-technology components – these are just a few examples.

Now, let's go on to the giraffe in the room. The second challenge of housing affordability is more intractable and perhaps requires a more radical approach. How do we become?

The research paper I quoted earlier hints at a possible way. Let me quote from their conclusion:

"The average growth rate of lifetime income for cohorts born after 1960... has been about 4–5 per cent which has also been the average growth rate of per capita disposable income since 1975. Property prices should fall in line with this trend.

Although it is difficult to avoid property price cycles, policies could be devised to reduce the amplitude of these cycles. In this regard, it is worth questioning why one should let the private housing market—

that accounts only for about 20 per cent of the housing stock— to dominate the price trends of the entire housing market and erode housing affordability.”

There are two critical implications from this observation. First, that property prices should perhaps be more actively managed so that they match the growth rate of lifetime income or about 4 – 5 % per year.

And second, that in terms of pricing the tail should not wag the dog – public housing prices should perhaps determine private housing prices, not the other way round.

Both of these suggestions point to one possible idea: that of a national housing price regulator. Before private developers and free-market economists shout “Foul”, we should realise that competition within regulated price bands is already found in other economic sectors – electricity and telecommunications, for example. More pertinent, we already have price regulation through HDB unilaterally setting the price of entry-level flats.

One objective of a national housing price regulator would be to integrate and influence the pricing of the three housing markets – HDB entry level, HDB resale, and private housing, so that the whole market is not led by private housing, which in turn is led by foreign demand. Another goal would be to have prices strike a balance between housing as an utility – the goal of young, first time owners -- and housing as a wealth asset, a store of value – the goal of older owners or investors.

Singapore has never really had a totally free-market system anyway for land utilisation or pricing. It has always been subordinated to national economic or social objectives. This social-democrat orientation of our pioneer political leaders fundamentally differentiated Singapore from Hong Kong’s laissez-faire, pro-oligopoly economy.

Affordable home ownership, our pioneer leaders fervently believed, underpinned the Singapore identity and was the bedrock of social stability. That goal must remain a paramount objective of political governance and not the dictates of the free market.

In its early years, the primary task of the new PAP government was to build massive numbers of affordable public housing in the quickest time possible. There were no private sector developers whom the government could cooperate with to undertake such a massive and ambitious programme, so HDB became the biggest housing developer in Singapore – by necessity. Fifty years on, that has not changed.

Our public housing programs today resemble that of a command economy. The only country that produces as much public housing as us is North Korea. For almost 40 years until 2002, young Singaporeans essentially queued for a flat in their desired location and were allocated based on availability. This was called the Registration for Flats System or RFS.

Typical of a planned economy, supply was based on planned projections and not fluctuating market demand. When the Asian financial crisis hit in 1997, HDB was

left with 20,000 empty flats which it could not unload by price discounting, as this would have infuriated those who bought at normal prices.

The RFS program was suspended and replaced by the Build to Order or BTO program under which, as the name suggests, HDB blocks are built only when sufficient units are sold. That has led to an approximate 4-year wait for a flat.

In 1960, HDB had a total housing stock of over 120,000 units. This figure rose rapidly and as of 2013 stood at 933,367. That probably makes it the single largest housing developer in the world, except perhaps for North Korea.

As can be expected, a planned economy for housing and a free-market economy for the rest of the country, will have contradictions. From 2002 to 2010, not enough flats were built and led to a backlog of unmet demand – with its electoral consequences.

The government then ramped up supply again and in the past two years have built an average 26,000 units per year – close to the total amount built in the 4 years from 2006 to 2010.

This kind of dislocation is not fundamentally different from the problems which arise when say, Chinese planners decided how much steel the country needed, or North Korea building public housing. The mismatch of supply and demand not only leads to unhappy customers with its political consequences, but also leads to distortions in the entire construction and building supplies sector, and also in the influx of foreign workers. Increasingly affluent and choosy customers are also not happy with the lack of variety which a monopoly public-housing developer can provide.

Furthermore, it is also difficult to determine who should qualify for public housing as the country becomes more affluent. The Executive Condominium or EC scheme was introduced to satisfy the so-called “sandwich class”; then DBSS or Design Build and Sell Scheme was a further case of mission creep.

It angered the public housing users who felt that resources were being devoted to a new elite within the public housing spectrum. The scheme was short-lived and soon dropped.

It has become increasingly clear to me that there is yet another elephant in the room, with its legs in every sector of the country, from social identity to economy to family to sustainability. That elephant is the HDB.

And again, as with the PAP, its elephantine status is ironically due to its success in providing mass affordable housing – one of the true achievements in our Third to First World ascent. But its sheer dominance of the landscape by this elephant warrants some questioning as to its proper role in the Singapore of the next 50 years.

When we eventually approach our 100th anniversary in 2065, should some 80% of our housing stock still be designed and priced by one developer, whose sense of what the market wants and should pay, simply determine what we get?

In every affluent and developed society, consumer tastes have become far more complex and nuanced to be served by a single product supplier. In an extremely

land-scarce economy, private sector demand – and particularly from wealthy foreigners – cannot be the price setter for the rest of the housing markets.

It may be timely for HDB to consider a gradual and phased exit over the next decades, from its role as housing developer in order to focus on a new dual role: first, as master land developer for entire new towns or districts, and second, as the regulator of housing prices in these areas, and to get out of the developer business entirely.

Some functions of the new-imagined HDB would parallel what the URA does as town planner, but going beyond, the HDB would be master developer also, investing in all the town infrastructure. It could even play a developmental role and invest in large-scale, low-return but labour-saving prefabrication technologies for contractors to avail themselves of.

But its most important and sensitive function could be the setting of residential product sale-price caps for each land parcel, which in turn would then be auctioned off to private developers. The competition by private developers on detailed design, quality, features and so forth would ensure that market forces dictate, but within residential price ranges set by HDB.

All housing developments will then in fact be private, with a single master land developer selling parcels to private developers.

HDB estates will also be real towns, with housing of different price ranges so as to erode the social distinctions that we still have, and should not have, between public and private housing. As with now, resales could be allowed after a holding period.

If I were to somewhat tongue-in-cheek, express the benefits of a reconstituted HDB, in traditional Chinese Communist Party style, it would be what I would call “The Five No-Mores”:

1. No more monopoly developer for public housing;
2. No more supply and demand imbalance as the private sector will sort this out through the invisible hand, and undertake market risk;
3. No more private versus government developers, as all housing will be undertaken by private developers, with government only regulating home unit price caps;
4. No more social stratification or social divide based on HDB versus private housing ;
5. No more private or foreign demand setting prices, as government can release land at lower price caps to bring down prices;

And to continue, the function of HDB will be the “Two Regulates”:

1. Regulate the supply and type of residential land
2. Regulate the residential unit sale price ranges for land parcels, which will then be auctioned to private developers.

From a policy perspective, it would be using supply-side levers – the supply of land with caps on final product pricing – to regulate property cycles, rather than demand-side levers, which is to subdue demand through restrictions on debt financing, or taxes on purchase.

Even if one agrees in principle with the Five No Mores proposal, implementation will take decades. A pilot project may be worthwhile to throw up undiscovered issues.

But integrating the Five No-Mores model with existing HDB inventory will be difficult and it may just be easier for existing 99-year old leases to expire and then start afresh with the new model. Of course, the entire issue of what to do when leasehold land expires, is going to challenge other governments in the region with their own leasehold assets maturing.

Finally, the third L: Labor. This is perhaps the most complex problem, ranging from job destruction and polarisation, to stagnant productivity, to over-reliance on foreign workers.

One response has been tried, has worked, but is painful. First attempted in the 1980's to ratchet the economy up the skills and wages ladder through a forced squeezing on the supply of foreign labour coupled with economy-wide wage increases, it led initially to a recession. But in retrospect, the strategy worked and laid the groundwork for a higher-skill, higher-cost economy that we have today.

Today we are undergoing another restructuring. In all likelihood this will not be the last such restructuring. Singapore's version of creative destruction will have to undergo periodic, perhaps 20 year cycles of forced restructuring. But whilst this will inevitably be disruptive, it is fundamentally necessary, and government needs to stay the course despite industry lobbying.

What does deserve worry, however, is worsening income inequality. There are no magic bullets, only a multitude of measures, of which I will propose two.

One reason for Singapore's high income inequality is the high wage differential between different job vocations. Among all the OECD economies, Singapore has the highest income differential between a doctor or lawyer on one hand, and a construction worker or retail assistant, on the other. Our gap in fact is double that in Western European countries, and even much higher than that in Hong Kong. For example, where the wage gap between a doctor and construction worker may be 4 or 5 times in Europe, ours is about 10 ten times.

There are two reasons for this. First, a large workforce of low-cost, low-skill foreign workers depresses the wages of everyone in that wage band, regardless of nationality. Second, our educational system creates a large differential in starting salaries between the technical versus university graduates.

There are two possible ways to address these two causes of our problems.

First, we can perhaps devise a more innovative immigration program where foreign workers are seen less as a necessary evil but more as one element, and a positive one, in an overall population strategy which does not distinguish so much between foreigner and Singaporean, but recognises their mutual dependency. Instead of just drastically curtailing their influx, the focus could be on finding ways to drastically increase their wages, skills and productivity. And very importantly, to provide economic incentives to create desired outcomes.

Current immigration policy with its punitive foreign worker levy may be simply counter-productive. It raises the cost of employing them but does not reduce the demand, and furthermore attracts lower-skilled workers because the better ones prefer to go to countries where the take home pay is higher.

The levy could instead be converted into each worker's deferred savings account – similar to a CPF -- to be withdrawn upon his permanent repatriation so as to ensure good behaviour whilst in Singapore. Immediately and without an increase in cost to employers, the quality of foreign workers will go up since the higher-skilled will be attracted here. Manipulation of both levers – the immediate wage and the levy – will provide instruments for policy adjustments.

The two-year “use and discard” approach to foreign workers, besides being socially less than humane, is also simply bad economics. It will be far more productive to institute a philosophy of “in-country” skills upgrading for foreign workers, with the reward being a longer work residency and even higher payments into their so-called savings accounts.

The conversion of levies into CPF look-alike for foreign workers is also the most effective way to ensure voluntary repatriation after the long-term residency has expired.

After each round of economic restructuring, the foreign worker community in our midst should correspondingly, be more skilled – perhaps all will even have a minimum high school education and certified skills. When that happens, we can perhaps see foreign workers as a potential talent pool.

We can sieve through this pool to find a small minority who are self-motivated to attain measurably higher skills through training programs and employer certification, and we reward them by longer-stay residency permits of say 5, 10, even 15 years.

Those who further aspire even further upwards to change their careers or become entrepreneurs, such as domestic helpers becoming nurses, or construction foremen becoming self-employed builders -- for whom we need, and for whom our young are not willing to become -- can perhaps even find a pathway towards permanent residency and for some, eventual citizenship.

People talk of New York City as an example of how unskilled, uneducated and impoverished immigrants have helped build the most innovative, entrepreneurial city in the world.

But we only need to look back at our own illiterate forefathers who built this nation, to perhaps recognise that not only the rich Chinese tycoon who is able to buy his citizenship, or the super-skilled scientist or investment banker, has the potential to become a citizen.

I am not going to be so romantic as to think that of the 300,000 construction workers we have in our midst that even 10 per cent would even aspire to become citizens. But I think building that pathway is not only important for the people that may move along that pathway, it sends a more important message to others who would not choose that pathway.

Second, perhaps education pathways can be re-designed to help reduce income inequality. Although much admired for its rigor, Singapore's rigid, linear pathways reflect the university bias of the Anglo-Saxon model. The Institutes of Technical Education or ITE's generally absorb those who do not do well in normal secondary schools. Although changing slightly, the Polytechnics still mainly absorb those who do not qualify to enter the university preparatory schools, appropriately called Junior Colleges. University is the apex of a single pathway to educational success.

This is reflected by statistics. The starting salary of a Singapore university graduate is about 30 – 35% higher than a Poly graduate, whilst in Europe the gap is only about 10 – 15% . The gap is much higher for an ITE graduate.

This narrower differential in Europe is achieved by purposefully ensuring that a technical education is genuinely almost as good as a university degree. Switzerland and Germany practice what they call a dual education system where high school graduates can choose either option. Both the technical education and university tracks are equally rigorous in their different ways and technical education in these countries is an attractive option, not a fall-back for failing to enter university.

There are possibly two things we can do to reduce the income gap between technical and university graduates.

First, we can amend the technical school – meaning Polytechnic – educational pathway so that their students graduate at the same age as university graduates, and have starting salaries closer to graduates.

This can be done with a longer industry attachment and genuine apprenticeship programs which provides much deeper (and equitably paid) work experience and job knowledge. Industry involvement in apprenticeship and curriculum development is far higher in Europe than here.

Second, we can increase the intersecting pathways by which early entrants into vocational training can cross back into Polytechnic or university streams. Today, the rarity of an ITE graduate making it to university justifies a news headline; this should become normal in future.

Our vocational and technical schools are recognized as best of class around the world. But our graduates do not receive sufficient status, which is reflected in their salaries.

Vocational guilds in Europe generate artisanal pride in and status for their members, by providing professional certification and self-regulation. In Singapore, however, this legally recognised authority is only reserved for the traditionally very elite professions such as law and medicine.

Ironically, such powers are not sought after by industry associations because their members are companies which will only lose out if their employees can be able, with professional certification, to practice on their own, like lawyers and doctors. Government needs to take the lead here.

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Finally, I would like to make two “soft” suggestions which would not normally be associated with “hard” economics.

But just as we talk about corporate culture, social culture or political culture, there is also an economic culture which shapes how people behave in an economy.

My first suggestion is that Singapore can take the lead in defining new and more holistic indices for economic progress, which take into account factors such as human well-being, environmental sustainability, and socio-cultural development. Bhutan’s gross national happiness index is too touchy-feely on one extreme, but traditional indices like GDP and GNP are on the other extreme, generally accepted as too crude, and worse, promote a lopsided, unsustainable depletion of resources and destruction of the environment. The Australian Bureau of Statistics has actually launched a decade ago, an ambitious program to conduct a Measure of Australia’s Progress or MAP, which is tailored to Australia’s own unique context.

There are two self-interested reasons for this suggestion.

First, Singapore has already established a reputation as a sustainable city of the future, and getting international acceptance for a measurable yardstick of holistic development can only increase our soft power and brand positioning globally.

Second and perhaps more important, there is a need to counter the complacency of affluence with a compelling vision for our young to aspire towards, measured by more than per capita GDP growth or billionaires per square mile. In other words, even if others don’t want to measure against us, we should measure ourselves against our own yardsticks of holistic progress.

My final suggestion is that inclusion, diversity and freedom of expression needs to be pro-actively cultivated if we want to attract the best global talent for innovation in knowledge-based, creative industries, from artificial intelligence to bio-mechanics.

An interesting study once showed a close correlation between those US cities with an actively pro-gay culture, and the number of high-tech start-ups and creative enterprises. The study tentatively concluded that gays tend to be disproportionately represented in these industries. Upon further research however, it found that conclusion to be untrue, Apple’s CEO Tim Cook notwithstanding. The number of gays in any industry is largely the same. Instead, the researchers found that many

totally straight, decidedly geeky or nerdy people, from scientists to artists to writers, often interpreted a pro-gay culture simply as a bellwether for tolerance.

And most innovative people are generally very individualistic and even eccentric, and like to live in environments where diversity rather than conformity is the daily ethos.

Further studies found the same correlation between the number of publications, theatres, and art galleries in a city, with the presence of innovative companies. These were signals or symbols of a society which promotes the freedom of expression.

The point here is that whilst tourists may come to Singapore for our mega-attractions, whether car races, casinos, or massive plant conservatories, the people we really want -- indeed, need -- to attract to Singapore to spearhead entrepreneurial innovation, come for different reasons. Our clean, safe, physical environment is of course important. But beyond that, a culture of freedom, inclusion and diversity is very important – perhaps even more than tax incentives.

I shall close here with the recollection that I chose to study economics in university not because it was the closest to a respectable science, which I was always bad at, but because I believe at its very core, economics is about human behaviour, human foibles and human aspirations, and how these collide and collude to enable human society to make mistakes and yet ultimately to progress.

On the eve of yet another exciting chapter of our history, I am confident that our people can come together to ensure that our economy will not only make us materially better off, but it can, with the proper policies, enable the cohesive diversity which I have always held as a vision, to truly become a reality.

Good night and hope to see some of you again at the next pop up lecture.