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Macro Note

Singapore: Reaching A Critical Demographic Crossroad In 2018

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- Singapore's demographic dividend had paid us off handsomely, bringing the nation from third world to first. However, our population is aging so quickly that we may no longer be as competitive as before.
- This is not the first time we are hearing that our population is aging. However, the awakening is that as we stride into 2018, it will mark an important cross-road for Singapore's stakeholders. 2018 will be the first time in modern Singapore history that the number of below 15 year olds will equal that of above 65 year olds. We are officially at a demographic crossroad.
- To make matters worse, the gap will only widen as we move into the next decade and beyond. By 2030, we estimate the percentage of below 15 year olds to fall to only 11%, while that of the above 65 year olds will reach 27% of the resident population. That will put us in the similar situation as Japan today. And it is only a short 12 years away.
- Imagine the implications that this will bring for policymakers, educators, healthcare providers, investment advisors, and a whole slew of other stakeholders. Will we demand more adult diapers than children diapers? Will we need more nursing homes than childcare centres? Will we need more geriatricians than paediatricians? Assuming that the labour force participation rate of older workers do not go up significantly, will the nation accelerate its use of indirect taxes (eg: GST) rather than direct taxes (eg: personal income tax) to boost its revenue in the midst of higher healthcare spending?

Stronger 2017 Economic Growth Was A Case Of The Rising Tide

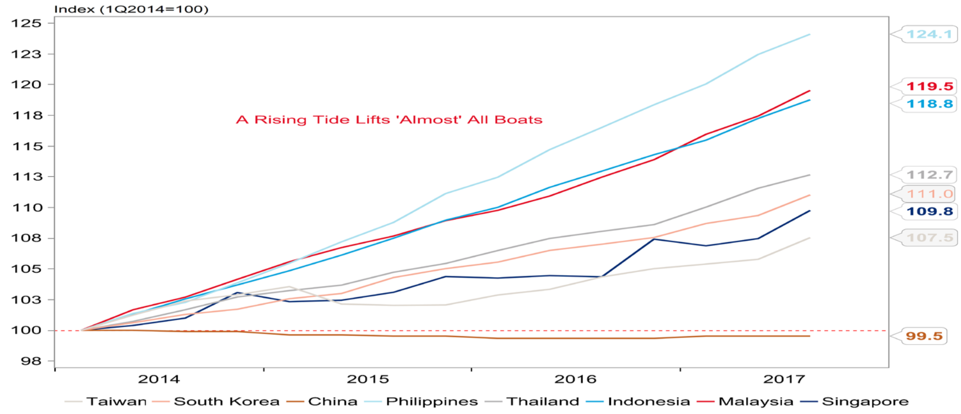
As Singaporeans stride into a brand new year of 2018 in less than a month, the improvement in sentiments that stemmed from stronger economic growth this year seemed to have lifted the festive moods of consumers and businesses alike. While some have accrued the stronger economic growth to Singapore's success at boosting the skillsets of its workers as well as its massive investments to incentivise businesses to re-invent themselves via the adoption of labour-augmenting technologies, we think that there are more important factors at play.

As the old saying goes that a "rising tide lifts all boats", we opine that the stronger-than-initially-expected 2017 economic growth in Singapore was due mainly to a cyclical uplift in global demand. Surrounding economies (such as Malaysia, Indonesia, the Philippines, South Korea, etc) had also enjoyed the same rising tide (**EXHIBIT 1**).

As such, it is not really a case where the average Singaporean worker had suddenly become more productive, or that the average Singapore business had suddenly become more apt at using technology and has become more efficient.

Exhibit 1: Selected Asian Real GDP Index Since 1Q 2014

Source: Macrobond, UOB Global Economics & Markets Research



No doubt, the efforts by policymakers to boost the efficiency of the factors of production (of labour and capital) are enviable and important. But many Singaporeans often do not appreciate the reasons behind it.

The reason is simple – Singapore is facing one of the toughest economic/social challenges since its independence in the form of a rapidly aging workforce/population.

In the early formative years of Singapore's nationhood, her main problem was centred on economic survival ("why should Singaporeans be given a chance to survive?") – How to make use of the abundant but mostly unskilled labour resource to its advantage in the world market. Through the long years of education, industrialisation, and encouraging foreign investments, Singapore prospered.

Now, her main problem is centred on economic justification ("why should Singaporeans be paid so much relative to the world?") – How to make use of the limited but mostly high skilled labour resource to its advantage.

This is especially true on a "relative basis", as Singapore's competitors have also arrived, catching up with the same time-tested recipe of education, industrialisation, and foreign investments. Except that nearly all her competitors have another added advantage (amongst other) – abundant labour force. These countries have scale. And with scale, they can reap the advantage of economies of scale.

Singapore's Demographic Time Bomb Starts Ticking In 2018

For the first time in Singapore's modern economic history, 2018 will be the year where the percentage of residents who are seniors (ie: above 65 years old) will be equal to that of juniors (ie: below 15 years old) at 14%[1] (**EXHIBIT 2**).

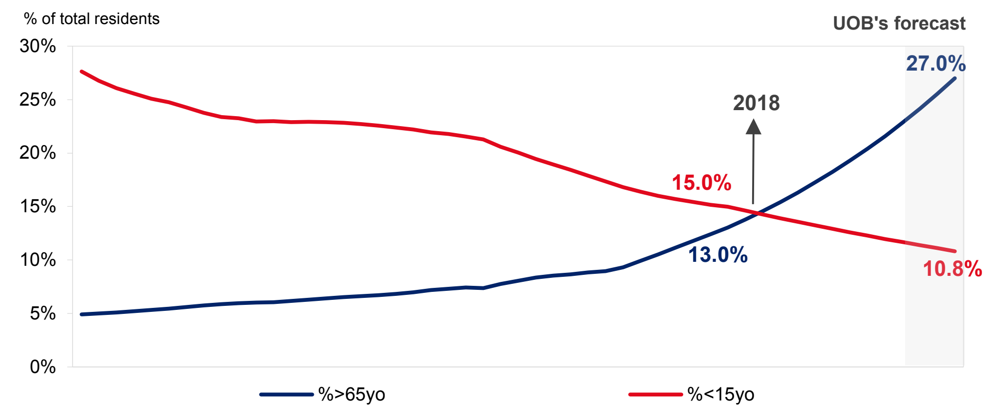
Not just that, our projection shows that by 2030, the percentage of seniors will increase to 27.0%, while that of juniors will decline to 10.8%[2]. The longer run implication is that there will not be enough young residents to replace older ones, especially in the workforce, and that 2030 is only a short 12 years away from next year.

Where will 2030 put us? In relative terms, our demographic situation in 2030 will put us in nearly the same condition as Japan today.

1 It is 13% for seniors and 15% for juniors in 2017.
2 Our projection is based on the CAGR methodology. As a comparison, the United Nations Population Division forecasts Singapore's junior population to drop to 12.3%, while that of the senior population to increase to 23.4% (under a constant-fertility assumption).

EXHIBIT 2: Percentage of Resident Population >65yo and <15yo

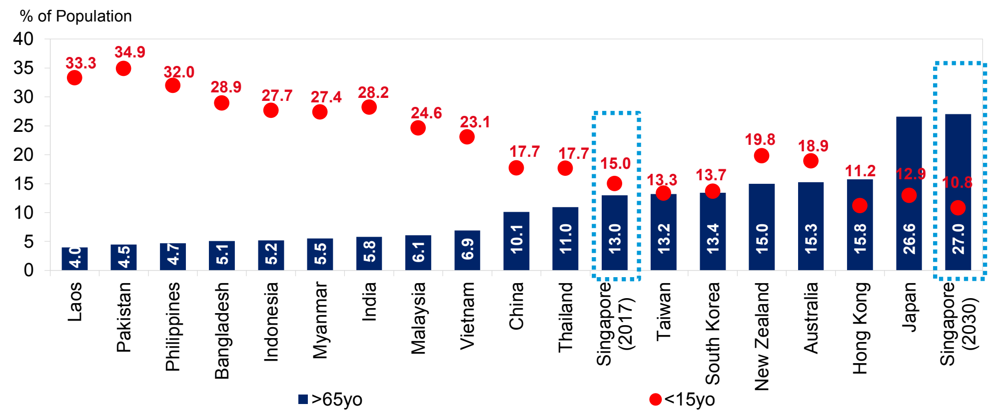
Source: Singapore Department of Statistics, UOB Global Economics & Markets Research



In **EXHIBT 3**, the percentage of the population above 65 years old for a selected group of economies is ranked in ascending order (from left to right). Japan is the oldest society in the world today with 26.6% of her population above 65 years old. Moreover, Japan has only 12.9% of her population below 15 years of age.

EXHIBIT 3: Percentage of Population >65yo and <15yo Across Selected Countries

Source: United Nations Population Division, UOB Global Economics & Markets Research

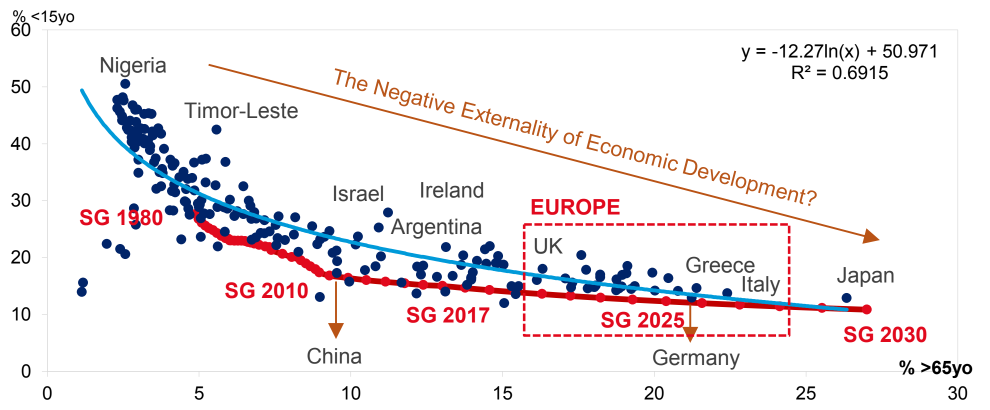


Likewise for Singapore, as of 2016, the percentage of the population above 65 years old was 12.3%, while that of the group below 15 years old was 15.2%. And in 2030, our forecast will lead us to a Singapore demography that is worse than Japan of 2016.

Taking a larger sample size (containing all the countries in the world in 2015), a very interesting relationship appears (**EXHIBIT 4)**.

EXHIBIT 4: Scatterplot of Percentage of Population <15yo and >65yo Across The World (2015)

Source: United Nations Population Division, UOB Global Economics & Markets Research



First, there is a negative correlation. This means that countries with more seniors tend to have less juniors as a percentage of its population.

Second, countries with higher income per capita tend to have more seniors and less juniors. Is this the negative externality that arises from economic development and something that we cannot escape from?

Third, at least for Singapore's case, the relationship described above is also consistent across time. Look at how the red line (representing Singapore's path since 1980 and to our forecast at 2030) has moved over time.

Fourth, another way to look at the demographic scatterplot is to highlight countries that are above the black trend line[3] (especially those that are classified as "high income" countries). Policymakers should zero-in and study their socio-economic policies. This is because these countries are having a higher than usual percentage of juniors at their existing percentages of seniors relative to the global standard.

Let's take Israel as an example. The percentage of seniors in Israel is 11.2% of total population. At this rate, the predicted percentage of juniors should be around 21.5%. Instead, Israel boosts a junior population at 27.8%. On the other hand, Singapore underperforms, using this simple methodology, as the predicted juniors percentage is around 19.3% and not the current 15.0%.

The Topic On Singapore's Aging Society Is Not New

Warning flares about Singapore's worsening demographic future had been fired many times in the past, ranging from government (via the 2013 Population White Paper[4] that the former National Population and Talent Division[5] had discussed quite extensively about the worsening old-age dependency ratio) to private sector analysts[6], entrepreneurs[7] and academics.

UOB Research had earlier discussed this topic in relation to the Singapore Budget back in February 2016 (Singapore 2016 Budget Preview: A Re-Focus on the Economy, 9 March 2016). In that report, we highlighted five key challenges for Singapore's economy and we showcased **Exhibit 2** of this report then.

One of the most recent warnings came from Oxford Economics[8], where it said that Singapore will face the double whammy of a shrinking workforce and slower progress than its Asian neighbours in getting more people into the labour market.

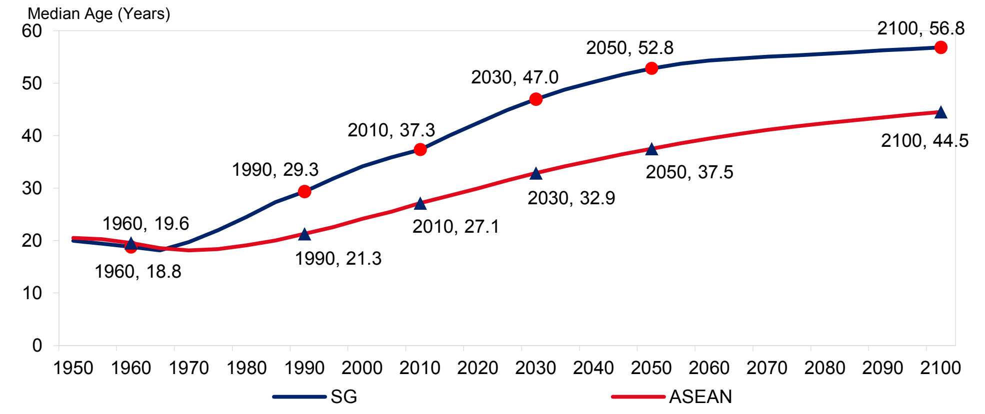
3 This trend line, in statistical-speak, is the best fit line. A relatively high R-squared means that the relationship described in the scatterplot is quite tight.
4 https://www.strategygroup.gov.sg/docs/default-source/Population/population-white-paper.pdf
5 The National Population and Talent Division came under the Strategy Group in the Prime Minister's Office in 2016.
6 http://www.straitstimes.com/opinion/the-big-shift-from-young-to-ageing-workforce
7 http://www.straitstimes.com/opinion/the-population-white-paper-time-to-revisit-an-unpopular-policy
8 https://www.bloomberg.com/news/articles/2017-09-06/singapore-faces-a-grim-labor-future-as-population-ages-rapidly

Oxford estimated that Singapore's labour supply growth – after accounting for changes to the participation rate – will shrink by 1.7% points in the 10 years through 2026 and by 2.5% points in the decade after that.

Continuing our argument, there is certainly more truth to it than not. Already, Singapore is the oldest society in ASEAN, with the median age of the resident population at 40.5 years as of 2017 (**EXHIBIT 5**), whereas that for ASEAN is only expected to be 29.8 years in 2020.

EXHIBIT 5: Median Age of Singapore's Resident Population

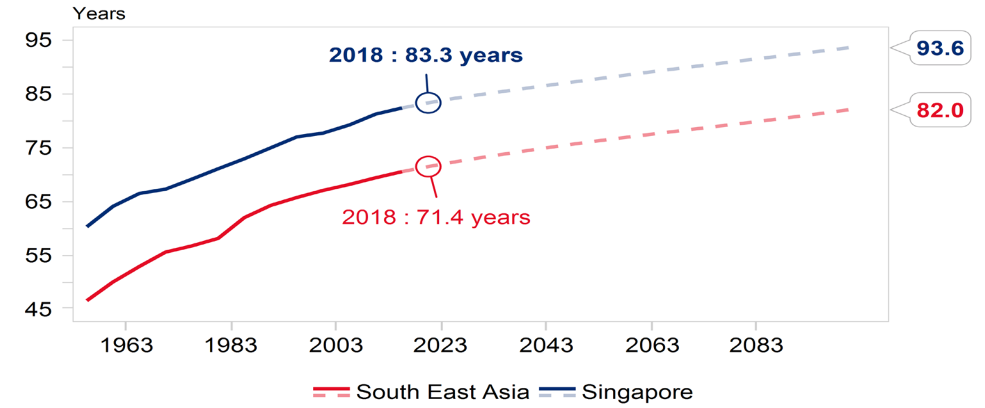
Source: United Nations Population Division, UOB Global Economics & Markets Research



Not only is Singapore the oldest nation in ASEAN today (and for that matter, in the future too), Singaporeans will also live the longest (**EXHIBIT 6**). This will in turn accentuate the challenges of being the oldest nation.

EXHIBIT 6: Comparison of Longevity Between Singapore and ASEAN (Median Age)

Source: Macrobond, UOB Global Economics & Markets Research



Longevity Is Good, But…

While living to a ripe old age is certainly a good thing, quality aging is even more important. This is also why Prime Minister Lee Hsien Loong talked in depth about keeping healthy and deliberated on the risks of diabetes (that will add onto healthcare costs for both the individual and the nation) during the 2017 National Day Rally.

Many Singaporeans then were lamenting that PM Lee was not looking at the more important topics bugging the economy today and had spent too much time on diabetes. With our society aging at such a quick pace as shown earlier in this report, we will begin to understand why did PM Lee went at length into the topic.

The demography-growth equation is simple and an analogy of a restaurant kitchen is used to represent our economy.

If there are fewer new chefs coming into the kitchen to cook the massive pot of broth (because of low birth rates and low levels of immigration), the existing pool of experienced chefs are aging and retiring, and there is no improvement in labour productivity, then the amount of broth (GDP) that will be produced in the next period will certainly be lesser, or worse still, be of inferior quality.

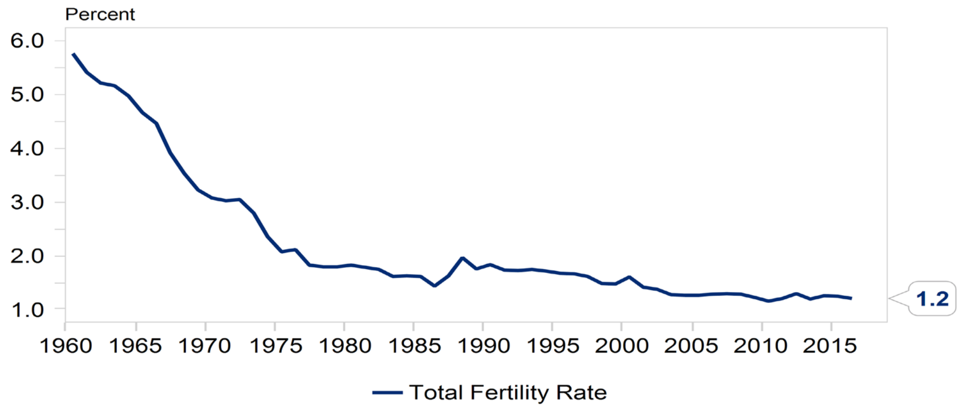
There are a few ways to solve the problem.

First, we can increase the labour inputs. There are two possibilities. One, we can encourage Singaporeans to give birth to more children. Two, we can increase the immigration rate.

On the former, all the years of encouraging child birth had not yielded much results as the total fertility rate (TFR) dropped to its third lowest level of 1.20 in 2016[9] (**EXHIBIT 7**).

EXHIBIT 7: Singapore's Total Fertility Rate Fell To The 3rd Lowest Level In 2016

Source: Macrobond, UOB Global Economics & Markets Research



On the latter, increasing immigration at a much quicker pace could worsen the foreigner assimilation issue for the nation. It will thus have to be done at a managed pace, but we cannot afford to have zero immigration due to extremely low fertility rates.

This time round, at least compared to the last decade, the nation seems to be more ready for the steady and managed increase in immigration, judging from the massive investment into housing and public transportation (both quality and quantity). All these cannot be just for the existing 5.61 million population currently.

Additionally, the United Nations project Singapore's population to keep growing to around 6.59 million in 2046, although declining thereafter (**EXHIBIT 8A & 8B**).

Second, we can slow down the exit of the existing pool of labour. We can encourage older workers to remain and/or rejoin the workforce. Policies such as the increase in the CPF contribution rates for older workers and the progressive wage model for several lower-wage occupations helped to boost the jobs take-ups. Another way is to further increase the re-employment age from the current 67 towards the big 70.

9 The lowest TFR was 1.15 in 2010, and the second lowest was 1.19 in 2013.

EXHIBIT 8A: Singapore's Population Projection At Levels

Source: Macrobond, UOB Global Economics & Markets Research

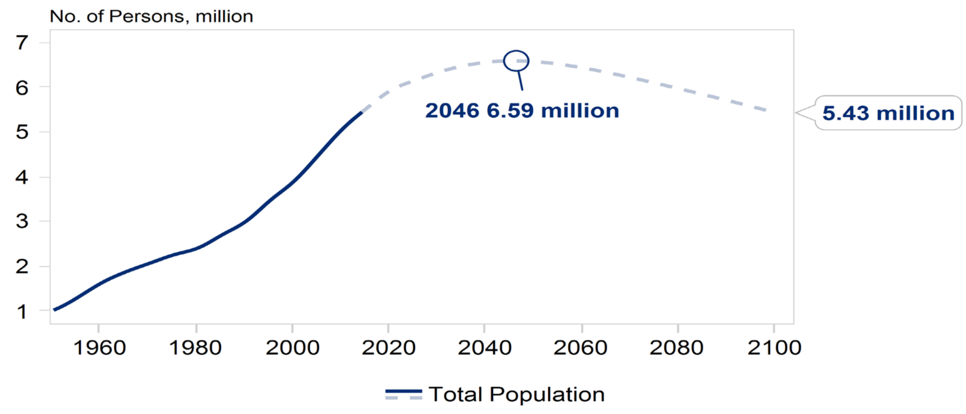
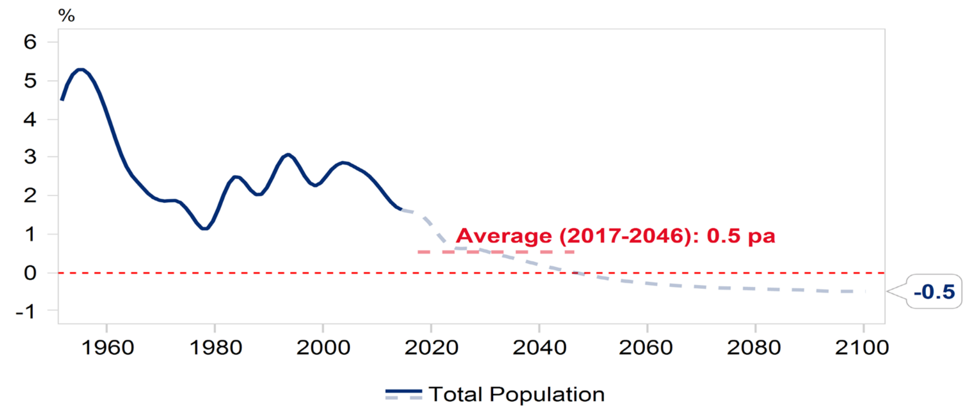


EXHIBIT 8B: Singapore's Population Projection At Changes

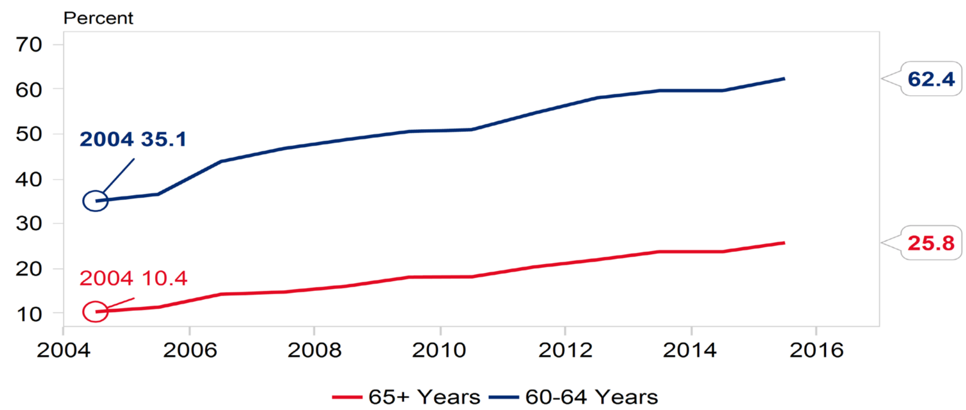
Source: Macrobond, UOB Global Economics & Markets Research



However, although we have observed that the labour force participation of older workers have gone up quite significantly over the recent years (**EXHIBIT 9**), it will not keep going up in a straight line, as there are always older workers who may be willing but unable to work.

EXHIBIT 9: Singapore's Labour Force Participation Rate (Older Workers)

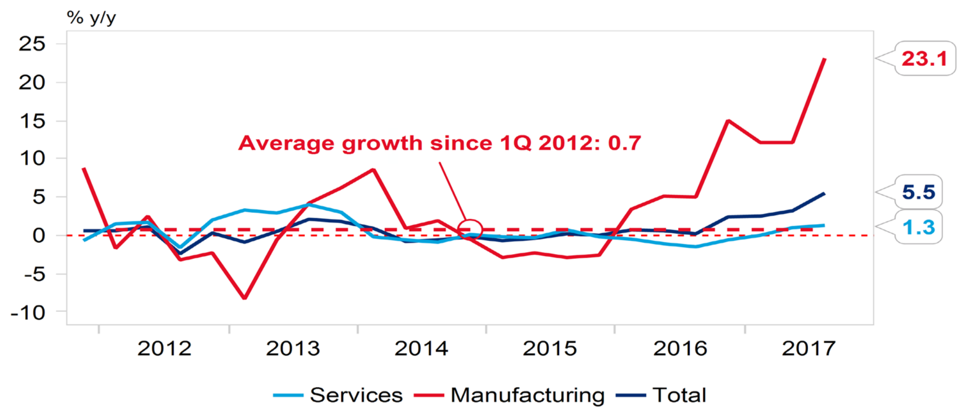
Source: Macrobond, UOB Global Economics & Markets Research



Third, improve labour productivity. If there are not enough chefs to cook the broth like the good old days, maybe machines (or robots) can. Hopefully, more GDP can be created using less labour inputs. However, economy-wide productivity growth averaged only 0.7% since 1Q 2012 (**EXHIBIT 10**).

EXHIBIT 10: Singapore's Labour Productivity Growth By Selected Sectors

Source: Macrobond, UOB Global Economics & Markets Research



The 5.5% y/y growth in overall labour productivity in 3Q 2017 was due mainly to the sharp increase in manufacturing's productivity from the cyclical demand strength. On the services front (which employs 72% of Singapore's resident workforce), labour productivity growth was 1.3% y/y in the latest quarter. So, there is still a lot more room to improve.

The Demographic Time Bomb Only Starts Ticking And Will Not Explode Yet

At this stage, the sense of worry would have multiplied. However, the demographic time bomb only starts ticking in 2018. It does not mean that it will explode yet.

This is because there is still a sizeable percentage of working age population supporting the economy. That said, one will have to understand that this cannot last forever.

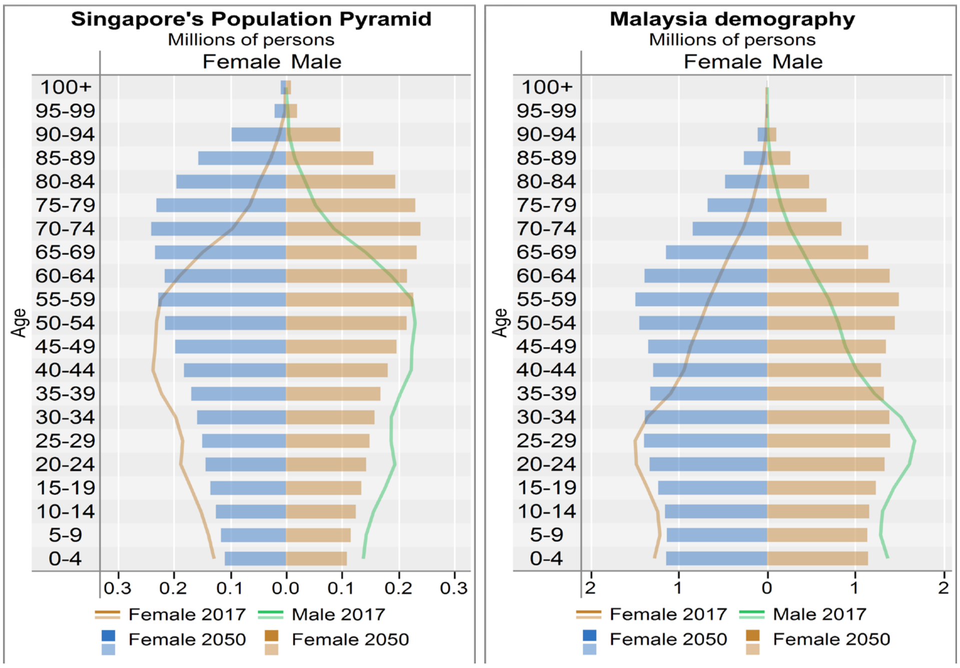
An analysis of Singapore's population pyramid reveals an important trend. In **EXHIBIT 11**, the lines represent Singapore's total population by gender and age group in 2017, while the bars represent that of 2050.

There are a total of 560 females and 151 males above the age of 100 as of 2017 (the lines). In 2050 (the bars), the number would have ballooned to 9064 females and 3045 males. On the other hand, comparing with Malaysia, the Singapore population pyramid looks more inverted and top-heavy.

This means that the stress of supporting the aging population falling onto the laps of the working population in Singapore is more than most of other ASEAN economies.

EXHIBIT 11: Singapore and Malaysia's Population Pyramid Comparison

Source: Macrobond, UOB Global Economics & Markets Research

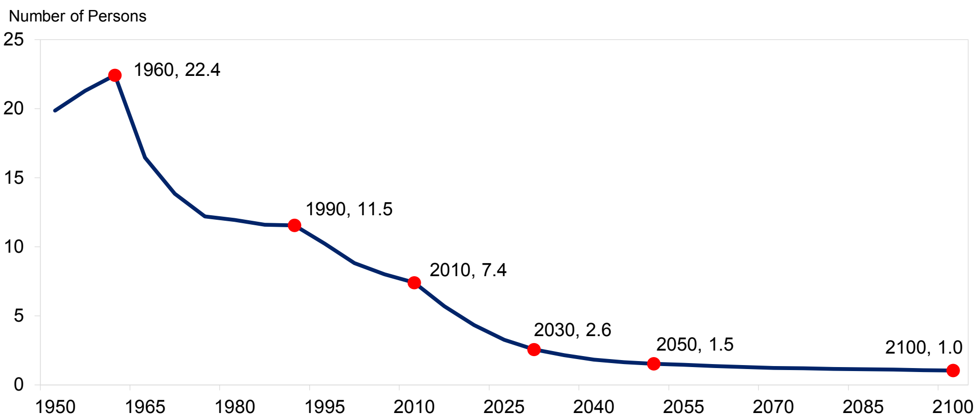


A case in point: Singapore's old age dependency ratio[10] was 17.6% in 2015. This means that for every 1 senior, there were 5.7 working adults supporting him/her.

By 2020, the number of working adults supporting a senior will decline to 4.3, and by 2030, it will decline further to 2.6. By 2050, it would be just 1.5 (**EXHIBIT 12**).

EXHIBIT 12: How Many Working Adults (20-64yo) Supporting Each Senior (>65yo)?

Source: United Nations Population Division, UOB Global Economics & Markets Research



Implications On Singapore's Budget And Economic Growth

With the population aging at such a quick pace, the government will have to increase spending especially in healthcare and social services.

10 Ratio of Population Aged 65+ per 100 Population 20-64, and based on UN Population Division estimates as of July 2017, under the constant-fertility assumption

As such, Singapore's primary budget deficit (before accounting for special transfers and net investment returns contribution) will only widen. To cope with that, Government will have to find more ways to increase revenue.

Not only will the increase in spending widen the budget deficit, the slowdown in economic contribution as more of the population drops out of the labour force will also reduce tax revenue for the government, resulting in a double whammy.

As such, PM Lee Hsien Loong said that "raising taxes is not a matter of whether, but when" during the People's Action Party (PAP) convention[11]. He was referring to the 2017 Budget speech, where the finance minister outlined how spending on healthcare and infrastructure will rise rapidly, and spoke of the need for new taxes or higher tax rates.

GST Hikes Likely To Come In 2018 and 2019, Just Like 2006 and 2007

With that, there could be a one percentage point hike to Singapore's Goods & Service Tax (GST) to 8%, from the current 7%. It could likely be announced in the 2018 Singapore Budget and to be implemented on 1 April 2018.

Moreover, there could also be another one percentage point hike again and implemented on 1 April 2019. The higher economic growth from 2017 will probably result in higher wage growth for 2018. This will provide some cushion against consumption cutbacks due to the GST increase.

Being in the middle of the electoral term, the GST hike is more likely to be implemented early, rather than near the end of the term. Also, the last time the government hiked the GST was way back in 2007.

At Least Singapore Is Rich Before It Gets Old

In April 2017, the International Monetary Fund (IMF) issued a warning that "parts of Asia will grow old before getting rich". In the report[12], the IMF highlighted that Asia's rapidly aging population means the region is shifting from being the biggest contributor to the global workforce to subtracting hundreds of millions of people from it.

The reversal of the so-called "demographic dividend" will drag on global growth and also that in Asia, the world's fastest growing region. The IMF also estimated that Asia's population growth rate will fall to zero[13] by 2050, and the share of the population who are working-age has already hit its peak, the IMF estimates.

That means the ratio of the population aged 65 and older will be almost two and a half times the current level by 2050, and even higher in East Asia.

Singapore is lucky in some sense – that she has reached an enviable developed economy status with high per capita income. However, for a country like Thailand, or even China, it remains to be seen how the economy will restructure/reinvent to push for higher income before they get old.

11 http://www.straitstimes.com/singapore/spore-to-raise-taxes-as-govt-spending-increases
12 https://www.bloomberg.com/news/articles/2017-05-09/parts-of-asia-will-grow-old-before-getting-rich-imf-warns
13 We note that it is already negative for Japan