

The Twenty-Sixth **Singapore Economic Roundtable**

November 2016

Jointly organised by
**Institute of Policy Studies
& The Business Times**

Edited by
**Manu Bhaskaran
Faizal bin Yahya
Mooris Tjioe**

The Singapore Economic Roundtable

The Singapore Economic Roundtable (SER) is a forum of leading economists, policy makers and business leaders who gather twice a year to discuss important issues that affect Singapore's position in the global economy. It deliberates on the role that government agencies and the private sector in Singapore should play in meeting new challenges facing the Singapore economy.

About the Institute of Policy Studies

The Institute of Policy Studies (IPS) was established in 1988 as an independent think-tank to study and generate public policy ideas in Singapore. IPS became an autonomous research centre of the Lee Kuan Yew School of Public Policy at the National University of Singapore in 2008. Today, IPS continues to analyse public policy, build bridges between thought leaders, and communicate its findings to a wide audience. The Institute examines issues of critical national interest across a variety of fields, and studies the attitudes and aspirations of Singaporeans through surveys of public perception. It adopts a multi-disciplinary approach in its analysis and takes the long-term view in its strategic deliberation and research.

The Twenty-Sixth Singapore Economic Roundtable. November 2016

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THE TWENTY-SIXTH SINGAPORE ECONOMIC
ROUNDTABLE

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Ms Grace Lim
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Group Treasury
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1.

Foreword

Mr Manu Bhaskaran

Adjunct Senior Research Fellow
Institute of Policy Studies

The Institute of Policy Studies (IPS) organises the Singapore Economic Roundtable twice a year and has been doing so since 2003. Our aim is to foster rigorous thinking and frank discussions on the main drivers of economic performance both in the short term as well as in the longer term.

The 26th Singapore Economic Roundtable continued in this tradition. The first session, as usual, focused on the cyclical prospects of the economy. While a cyclical recovery was expected in global demand, participants worried about how much of a fillip it would give the Singapore economy in the light of structural changes, given that it was consumption rather than investment spending that was behind this global rebound. There was also concerns over how durable any global recovery would be. Participants agreed that monetary policy settings were appropriate but several argued for a more proactive fiscal policy.

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The second session focused on the development of the data economy and its implications for Singapore. Globally, we will see the data economy expand by many multiples in the coming years, producing a sizeable structural change in the global economy as new modes of digital intermediation became feasible.

Some participants worried about how competitively positioned Singapore was to respond to these transformational changes around it. These participants compared Singapore unfavourably to countries such as Estonia, which they felt were doing better.

There are substantial policy implications as a result in a range of areas. There were legal aspects to the handling of data that needed to be reflected in policy changes. Government would need to review skills development to ensure Singapore workers did not fall behind. The government also needs to rethink its approach to allow the public access to the data that the government already collects. Finally, the government should consider taking the lead in data-driven experiments to show the way to the private sector.

The 26th SER helped to raise important issues in the economy and the policy directions that might need to be reviewed as a result. IPS will continue to organise the SERs as

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a forum for academics, private sector economists, business leaders and policy makers to meet to discuss the economy, its direction and the policy changes that might need to be made.

2.

Recent Economic Developments¹

Ms Grace Lim

Senior Economist, Economic Policy Group

Monetary Authority of Singapore

2.1 Economic Developments in Singapore

The global economy expanded at a modest pace in Q2 2016, as Asia Ex-Japan recorded improved performance as a counterweight to sluggish G3 growth. The global economy is expected to expand at a steady but mediocre pace in 2017. GDP growth across the major regions will hold up, but there will be uneven growth across countries due to differences in contributors. Within Asia, China's growth will be shored up by policy measures, while the ASEAN-4 and NEA-3 will be supported mainly by domestic demand. Taking a closer look at the advanced economies, average G3 growth has slowed significantly from 2.5 per cent in the decade before the crisis, to 1.6 per cent, alongside the moderation in virtually all major expenditure categories. While private consumption

¹ The views and analyses contained in this presentation are the author's and should not be attributed to the MAS.

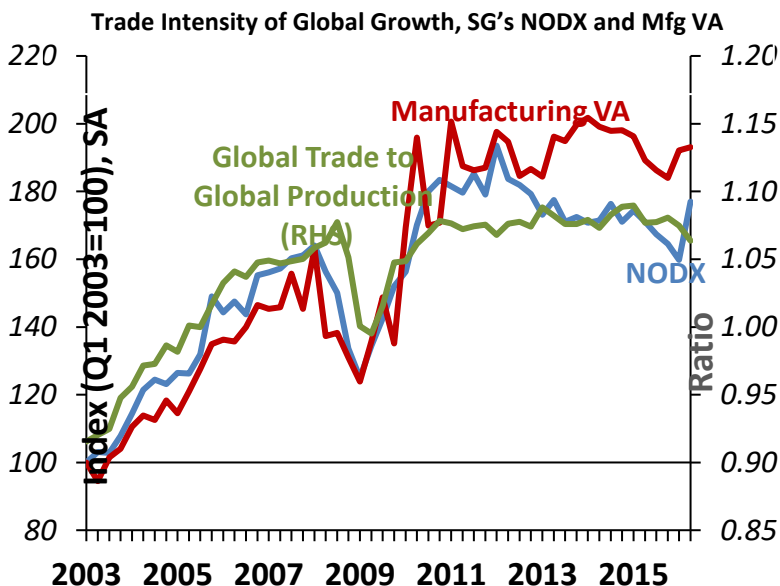
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growth has recovered in recent quarters, investment spending has remained anaemic due in part to the slump in the oil and gas sector. This also reflects a rise in economic policy uncertainty, particularly in the Eurozone, as well as downbeat investor expectations. Consumption spending will continue to be the main support for growth in the US and the Eurozone. In Japan, economic activity should receive a mild boost from fiscal easing in 2017.

Asia has seen a sharp slowdown in trade volume since 2011, due in part to the slump in global private investment. Over the longer term, external trade is not expected to contribute to the region's growth as strongly as in the 2000s. In addition, China's shift away from downstream assembly towards more upstream production has contributed to a shrinkage of regional trade in intermediate goods. The declining positive impulse from trade implies that Asia's growth over the next few years will be predominantly domestic driven. Now turning to the Singapore economy, the domestic economy has slowed discernibly since the last macroeconomic review. After posting essentially flat growth on a quarter-on-quarter Seasonally Adjusted Annual Rate (SAAR) basis in Q2 2016, the Singapore economy slipped further in Q3, with the advance estimates pointing to a 4.1 per cent contraction during the quarter. Based on MAS's economic activity index, the downturn in Q3 was largely due to a broad-based

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retraction in the trade-related cluster. At the same time, activity in the domestic-oriented sectors fell slightly, amid a further decline in private construction activities. The modern services cluster managed a marginal turnaround after two quarters of sequential contraction, as drag from financial services dissipated. While there are emerging signs that the weakness in trade-related industries could be reaching a trough, longer term prospects will be kept by structural factors.



Source: MAS

NODX: Non-Oil Domestic Exports

VA: Value-Added

Figure 2.1

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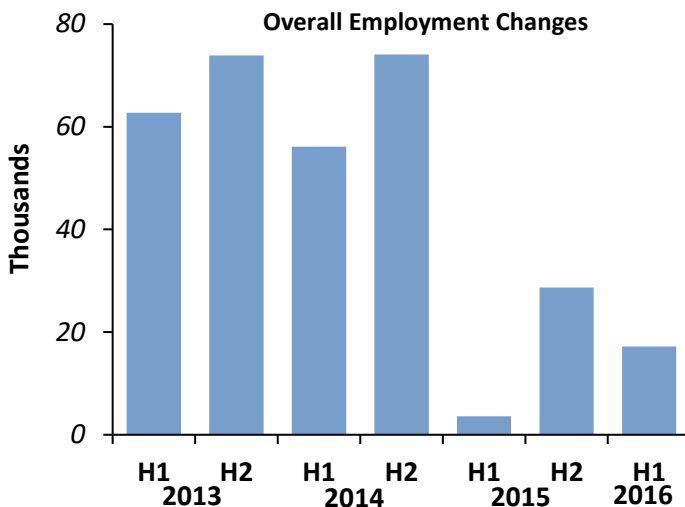
As seen in the chart (Figure 2.1), Singapore's manufacturing Value-Added (VA) and Non-Oil Domestic Exports (NODX) closely track the trade intensity of global production, represented here by the ratio of world merchandise trade to world industrial production. As a highly trade-dependent economy, Singapore will be impacted by this fall in global trade intensity. Over the near term, Singapore also has a large exposure to segments of global trade that are currently underperforming. The 10 worst performing product categories globally account for approximately 40 per cent of Singapore's exports, compared to only a quarter of the world's exports. This reflects the prominence of products such as semiconductors and petroleum in Singapore's export basket. Given subdued external demand, GDP growth is projected to come in at the lower end of 1 to 2 per cent forecast range in 2016 and only slightly higher in 2017. Over the medium term, Singapore is well-positioned to leverage the opportunities in the global economy. The accelerated pace of technological advancement and diffusion in recent decades has led to significant adjustments in global trade and business activity.

Against this backdrop, industries and firms that have tapped into the driving forces of digitisation, healthcare and lifestyle demand have grown strongly. While those whose businesses have been eroded by digitisation or are tied to the global

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commodities cycle have faced intense pressure on profitability. Attracting more global, high-performing corporates and aligning business capabilities to meet regional demand will enable Singapore to leverage these growing industries. In terms of the corporate landscape, several high performers in global electronics manufacturing already have a strong presence in Singapore. Sixty-five per cent of such firms currently feature in Singapore's top 1000 companies. However, the scale of global Information and Communications Technology (ICT) services firms in Singapore is considerably smaller. On the demand side, ageing economies have contributed significantly to global consumption growth, and these trends are likely to continue. The Asia Pacific region is projected to account for about two-thirds of the world's middle-class consumers by 2030, from around 28 per cent in 2009. Corporates who are able to recognise these changes and respond accordingly will stand to benefit in the longer term.

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Source: MAS

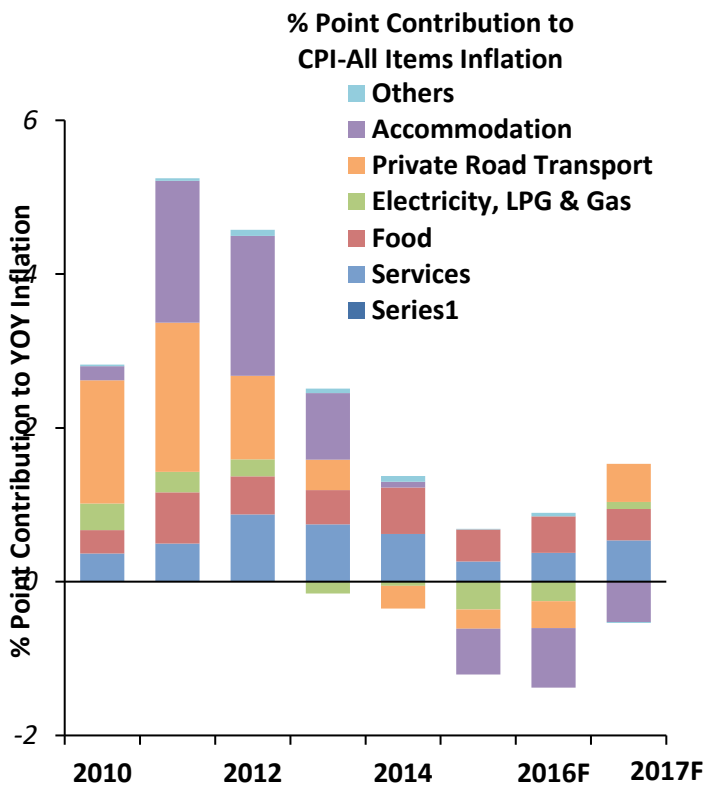
Figure 2.2

Turning to developments in the labour market and consumer prices, overall employment gains fell in H1 2016 (Figure 2.2), as subdued demand and ongoing restructuring in some industries weighed on hiring. In line with emerging weakness in the labour market, the resident and over unemployment rates have risen, while job vacancies and labour market turnover has fallen. Accordingly, the Economic Policy Group's (EPG) labour market pressure indicator turned negative for the first time since 2009. Various indicators, such as the falling re-entry rate into the labour force and the increase in long-term unemployment rate, suggest growing labour

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market mismatches. The EPG estimated a mismatch index for Singapore, measuring the discrepancies between the share of job seekers and job openings across sub markets. However, initiatives put in place by the government, such as the professional conversion programmes and SkillsFuture credits, will help to ensure that workers skills remain relevant to the evolving needs of the economy. Meanwhile, overall resident wages grew at 4.1 per cent in H1, higher than its 10-year average. Firm wage growths in H1 partly reflect compositional shifts in employment, such as the exit of casual workers. Labour demand is expected to weaken further in the next few quarters given the extended period of sub-par GDP growth and consolidation in some sectors. Accordingly, wage pressures are likely to ease in the second half of 2016. For 2016 as a whole, we expect it to settle to a level comparable to 2015.

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Source: MAS

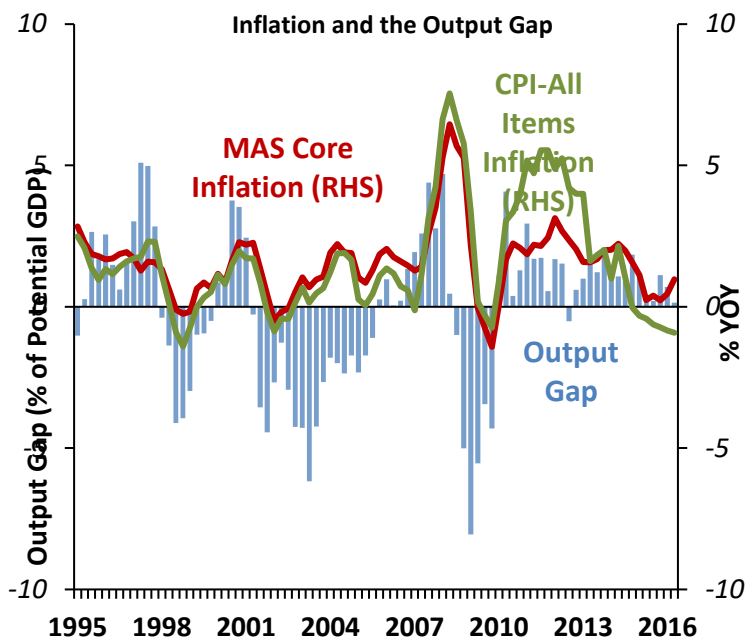
Figure 2.3

MAS core inflation rose from 0.5 per cent in Q1 2016 to 1 per cent in Q2 and Q3, respectively. This was mostly due to higher services inflation and the gradually dissipating effect of lower oil prices. In comparison, CPI-All Items Inflation eased in H1 2016 due to larger declines in private road transport and accommodation costs. However, this trend was

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arrested in Q3. Headline inflation rose to 0.4 per cent from its trough in Q2, given the smaller contraction in private road transport costs. Over the course of 2016, external deflationary pressures have eased to some extent. The decline in Singapore's Import Price Index (IPI) was moderated, reflecting a smaller drag from mineral fuels. Going forward, imported inflation is likely to rise mildly and global oil prices are expected to increase next year from its trough in 2016. On the demand side, subdued economic activity over the past year has resulted in a slightly negative output gap.

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Source: MAS

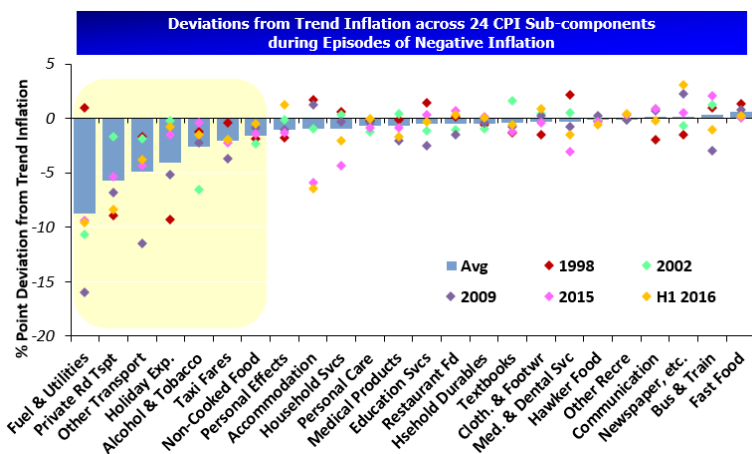
YOY: Year-on-Year

Figure 2.4

This chart (Figure 2.4) shows that inflation dynamics tend to track output gap movements with the lag. While energy related components would begin to contribute positively to inflation next year, the ascent in core inflation would be gradual given the absence of generalised demand-induced price pressures. For 2017, MAS core inflation is forecast to average 1 to 2 per cent next year. Meanwhile, CPI-All Items Inflation has troughed, and it is likely to turn positive in the

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last quarter of 2016. This is projected to rise from around -0.5 per cent this year, to 0.5 to 1.5 per cent in 2016, with most of the upswing due to private road transport. CPI-All Items Inflation has been negative from Q4 2014 to Q3 2016, which is the longest stretch in Singapore's history.



Source: MAS

Figure 2.5

The chart above (Figure 2.5) shows the deviation from trend inflation rates of various CPI components during episodes with negative inflation. The fall in the overall CPI index was mainly the result of large price declines concentrated in a few segments of the CPI basket, such as private road transport, fuel and utilities, and discretionary consumer items. These currently account for around 30 per cent of the CPI basket. As

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such, headline disinflationary pressures were not broad-based and have to be seen in the context of Singapore's inherent susceptibility to external price shocks and volatility in COE premiums. Turning to monetary policy in October 2016, the MAS kept the slope of the S\$NEER (Nominal Effective Exchange Rate) policy band at zero per cent, in view of the subdued macroeconomic outlook. Growth had weakened and was not expected to pick up significantly. While MAS core inflation was likely to rise only gradually in 2017 and average slightly below 2 per cent in the medium term, the MAS says that it will be necessary to adopt a neutral policy stance for an extended period to facilitate the closing of the negative output gap and ensure medium-term price stability.

3.

**Macroeconomic Outlook and
Implications for Policy**

Ms Selena Ling

Head, Treasury Research & Strategy

Group Treasury

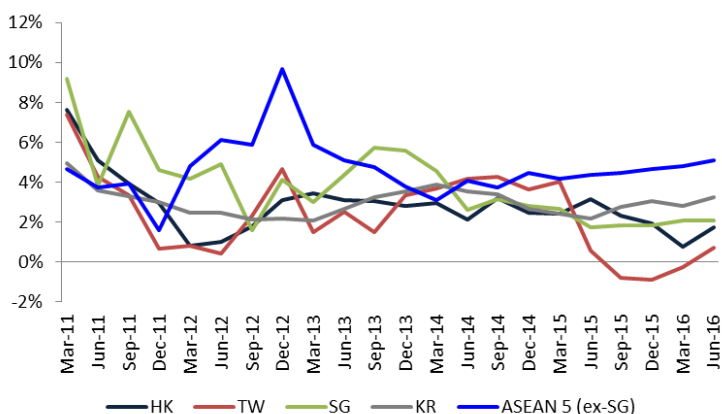
OCBC Bank

3.1 Interest Rates

To begin with, the four rate hikes that were projected for 2016 did not come to pass. Global monetary policy accommodations have remained largely intact, and economic conditions for the past 10 months or so have been fortuitous as there was only one rate hike in the end. However, even with historically low interest rates, lending conditions and financial conditions have been tightening. For emerging markets in particular, loans have not increased. Around the region, finance growth is slowing. While some banks have been struck with appeals and lawsuits, there is generally no

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sentiment that a systemic bank crisis is on the horizon. While oil has averaged at around 45 dollars per barrel in 2016, it is unlikely that there will be significant oil price increases in 2017. A major source of uncertainty, however, would probably be policy certainty with regards to international trade, especially the Trans-Pacific Partnership.



Source: MAS

Figure 3.1

Singapore has experienced a great moderation in growth for both structural and cyclical factors. Overall, Singapore has been growing at a much slower growth trajectory as compared to many of our ASEAN counterparts (Figure 3.1). This is similar to many advanced economies that have seen their growth engines slow down as well. A lot of this would have to do with the story of economic restructuring in China.

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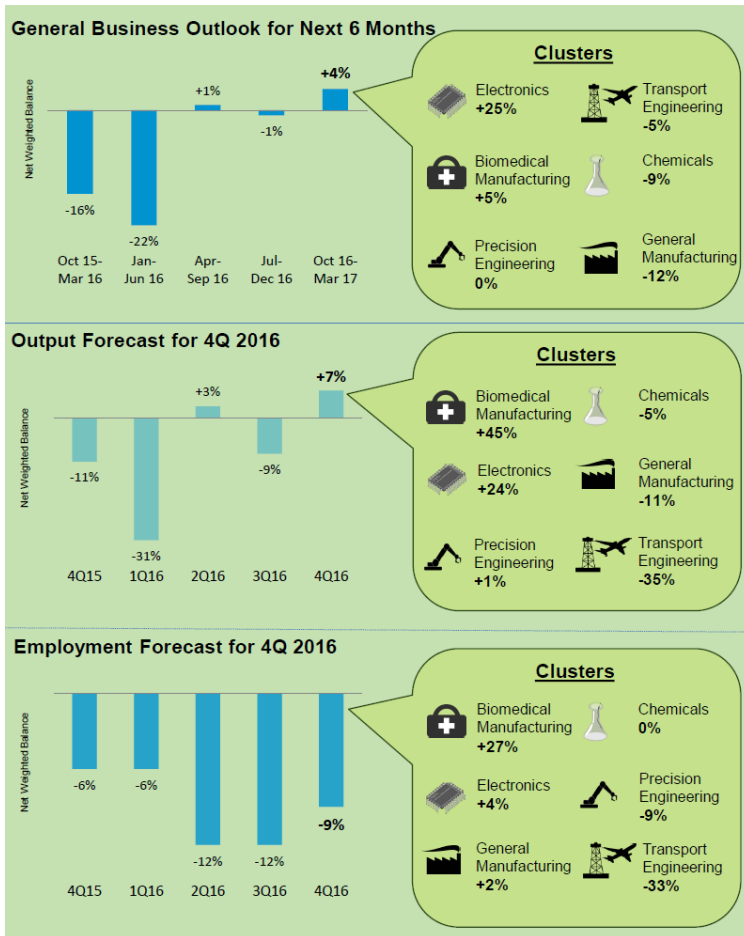


Figure 3.2

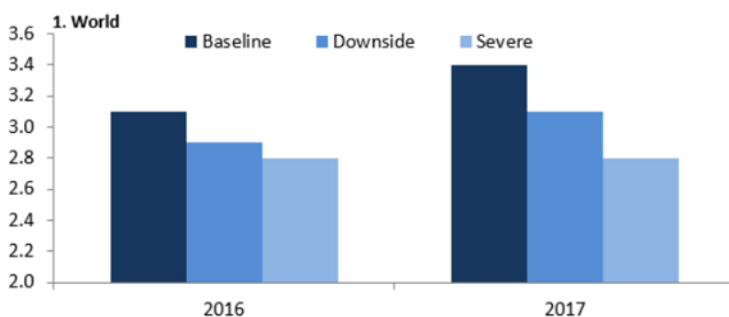
Taking reference to Figure 3.2, technology and innovation will have to be Singapore’s key future growth drivers. In the near-term, Singapore’s economic outlook is gloomy, but manufacturing currently looks like it is past its bottom, with electronics seemingly picking up. However, Singapore is not

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experiencing any form of broad-based recovery — so manufacturing growth is likely to remain negative for at least the first half of 2017. The services industry has also started to lose steam, with increasing pressure on wholesale trade. Real estate and industries tied to the oil and gas sector have also suffered. Job creation and employment in Singapore is likely to take a hit because the services sector accounts for a significant portion of the labour market.

With regards to the labour market, from an administered survey, only 6 per cent of employers surveyed expect to hire more in the fourth quarter of the year. Overall, employment looks likely to deteriorate in 2016.

3.2 Soft Global Growth and Trade Growth – Here to Stay?



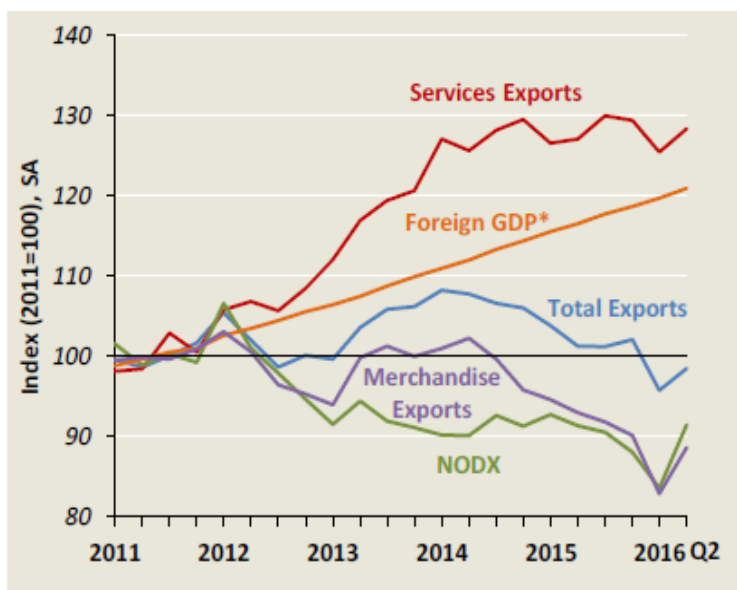
Source: Bloomberg, WTO, IMF

Figure 3.3

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One reason for slow global growth and trade could be because many major economies around the world are adopting protectionist stances. Singapore, due to its small and open economy, is especially vulnerable to such sentiment.

Singapore's Exports and Foreign GDP



* Weighted by shares in Singapore's NODX.

Source: UN Comtrade and EPG, MAS estimates

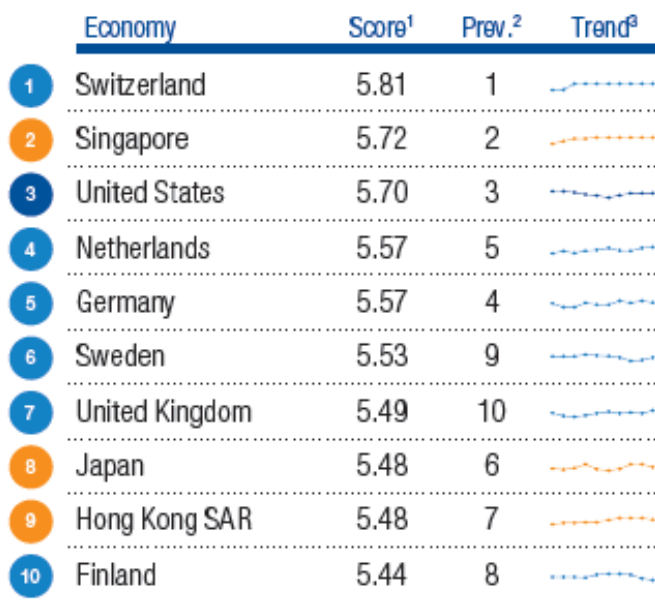
Figure 3.4

While merchandise exports have been doing poorly, services exports have actually been improving (Figure 3.4). A salient concern with these changing trends would be that current

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metrics such as GDP are flowing through intangible ways and may not be properly accounted for in statistics used to measure the economy. Also, while manufacturing has not been doing well, modern services are still growing, while financial services actually benefit in times of volatility. Thus, as world trade slows down, Asia and key banking sectors in Asia actually tend to benefit from safe haven flows. Also, Singapore possesses the requisite fiscal levers and monetary levers to do more, which give it the flexibility required to weather adverse economic conditions moving forward. Furthermore, there have been increased opportunities in e-commerce and financial services within the ASEAN-6 economies. Overall, it is likely that the digital economy will play a bigger part in the Singaporean economy.

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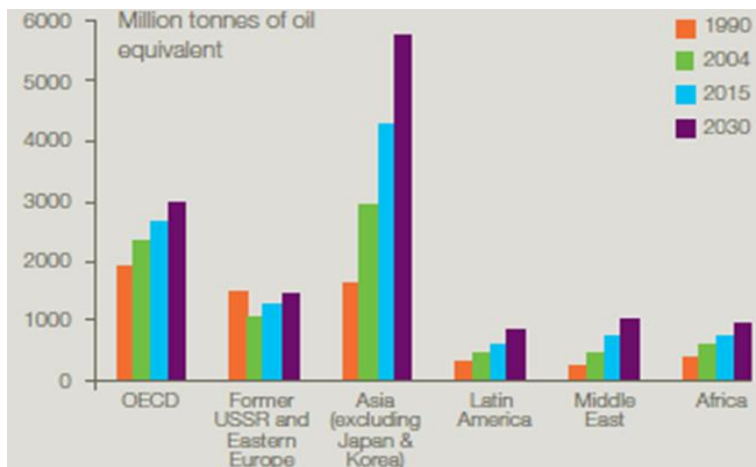
Source: WEF Global Competitiveness Index 2016-2017

Figure 3.5

Singapore is still placed second in the World Economic Forum's *Global Economic Competitiveness* report, while our ranking has actually slipped in the Institute for Management Development's *World Competitiveness Report* from third to fourth place. Several competitors have been narrowing the gap, and are coming closer year on year. In the World Bank's *Doing Business Survey*, New Zealand has overtaken Singapore as the best place to do business. While Singapore is not directly competing with New Zealand for the same manufacturing, financial centre-centred economic activity,

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certain metrics like insolvency — whether corporate or individual — can definitely be improved.



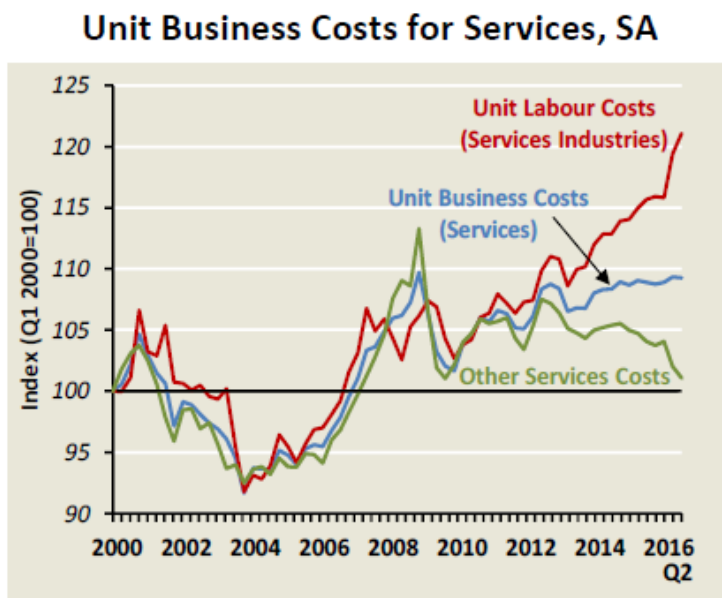
Source: EMA, MTI, BIS, OCBC

Figure 3.6

To begin with, there is a need for Singapore to consolidate in areas in which it has a niche. Firstly, in 2015, Singapore generated the third highest dollar worth of refined oil exports in 2015, at 7 per cent of the global total (US\$42.1b), cementing its position as a regional energy hub. Singapore was also ranked top for the second year in a row in terms of the “network readiness” index, while also building up strong capabilities in logistics, cybersecurity, payments and data analytics. Finally, as a financial hub, Singapore remains the third largest FX hub globally. Singapore has also overtaken

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London as the second largest offshore renminbi trading centre. Thus, despite negative headlines about China's economy slowing down, the inclusion of renminbi to the SDR basket as an international reserve currency leaves a lot of space for offshore centres like Singapore to play a role.



Source: EPG, MAS estimates

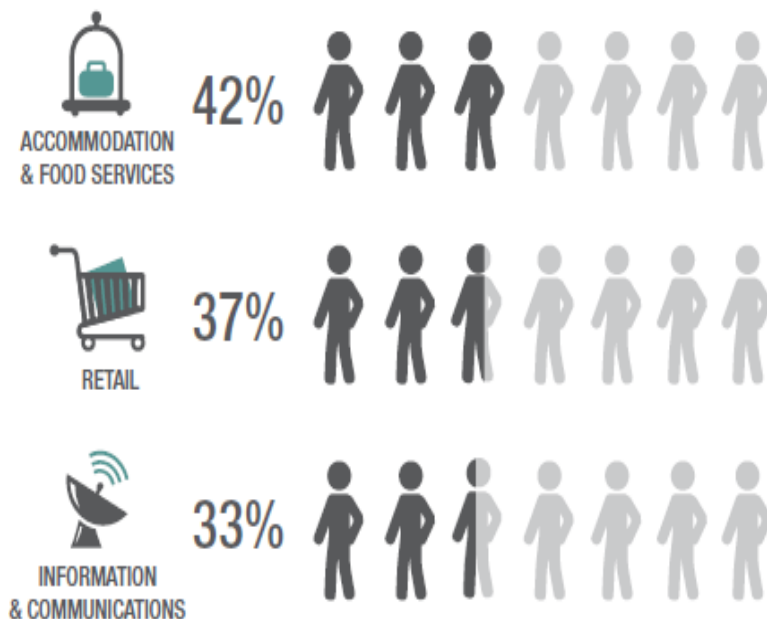
Figure 3.7

However, SMEs are facing difficult times. With high business costs (Figure 3.7) and low external demand, it is unlikely that many of them will be able to internationalise. Between 2011 to 2015 alone, the unit business cost for manufacturing (UBCI) rose by 2.5 per cent Cumulative Annual Growth Rate

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(CAGR), while the unit business cost index for services (USCI) rose by 1.9 per cent CAGR. An interesting trend for SMEs is that even as Singapore enjoys low domestic interest rates, financial conditions have actually tightened, making it difficult for SMEs to get credit.

Labour Cost Component for Service Industries

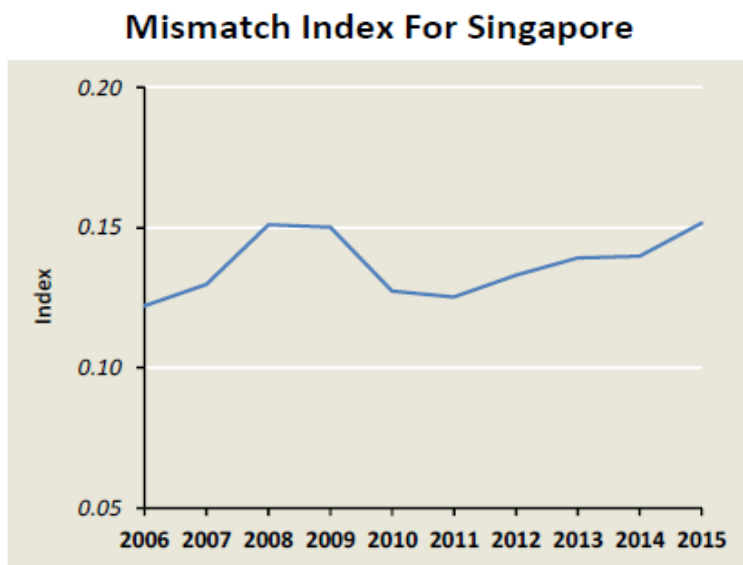


Source: MTI, Singstat, MAS, OCBC

Figure 3.8

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It is also likely that there is a skills gap in Singapore's workforce. In an innovation-driven world, it is especially hard to retrain people with the correct skills. In general, SMEs will find it harder to attract the proper kind of manpower in an innovation-driven world. Firstly, they will not get headline profiles for hiring. Secondly, they typically find it hard to attract young talent. Lastly, many fresh entrants to the workforce face gaps between the things that they learn in school and the things that they need to know when performing their jobs.



Source: EPG, MAS estimates

Figure 3.9

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However, it is apparent to the authorities that a mismatch exists. As Singapore's Mismatch Index (MI) — which measures discrepancies between the share of job seekers and job openings across sub-markets — trends higher (Figure 3.9), the government has formed a slew of schemes and agencies targeting skill-based jobs, such as SkillsFuture Singapore, the Professional Conversion Programme, and iN.LEARN 2020. Overall, there is likely to be a need to integrate paper qualifications with the practical knowledge and skills needed. Any efforts to address these skill gaps is likely to be a multi-year process that requires time to implement and bear results.

Furthermore, Singapore possesses an ageing demographic profile. Given that disruptive technology could very well render obsolete jobs in industries such as tourism, electronics, advanced manufacturing, financial services and certain ICT fields, it is critical that workers continue to reskill themselves.

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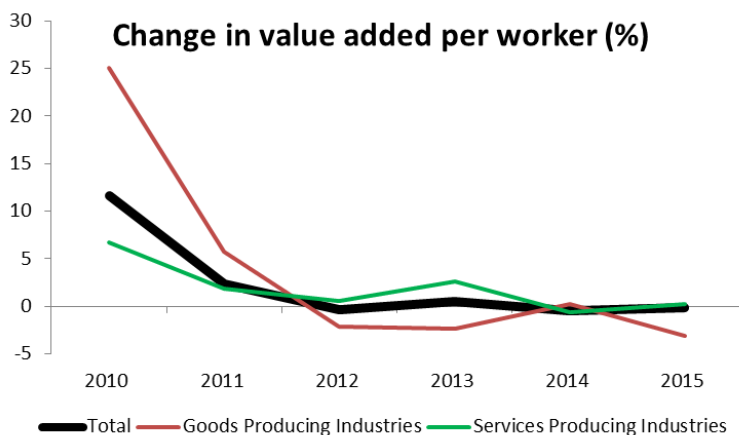


Figure 3.10

3.3 Need for Singapore to Transition to a Digital Economy

Transitioning to a digital economy will aid in overcoming structural problems such as an ageing population or declining labour productivity. Already, Singapore is well placed to make this transition — with its well-educated workforce and high adoption rate of IT technology and reliable IT infrastructure, Singapore possesses a sophisticated and developed financial sector. Furthermore, the large populations of underbanked and unbanked people in the region surrounding Singapore represent a large potential for growth, and it is likely that they will be where Singapore's next growth drivers will come from — not from traditional

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manufacturing plants, but also from services and modern services of these regions.

3.4 More Focus on SMEs Needed

SMEs in general find it difficult to attract young talent. There is also a persistent skills gap in entrepreneurial fields. Moving forward, there will be a need to integrate paper qualifications and practical skills and experience.

4.

Singapore and the Global Economy

Mr Glenn Maguire

Independent Economist

4.1 Preamble

The presentation examined the growing anti-globalisation sentiments and how it will affect small and open economies like Singapore. It also assesses the policy options that open economies could take, considering the multiplier effects of fiscal, as well as, monetary policy.

**4.2 Growing Anti-Globalisation Sentiments
and its Effects on Global Trade**

With regards to the slowdown in global trade, Singapore is likely to face a direct macroeconomic impact due to its openness. The stimulatory fiscal policy also tends to be less effective for highly open economies like Singapore, as they are more likely to suffer from

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leakages in the fiscal multiplier. Globalisation is also likely to take a hit as big economies, such as the U.S., move towards protectionism. Besides hindering economic flows across borders, technology and skills transfer will be affected as well.



Source: CEIC, UNCTAD and WTO

Figure 4.1

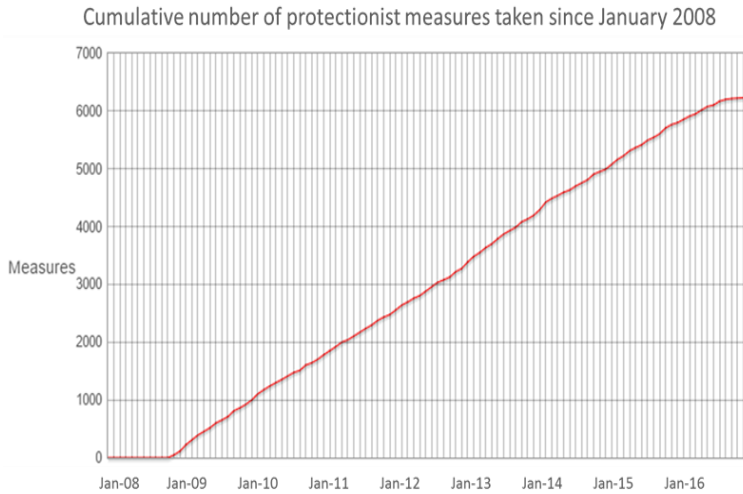
Global trade will slow and such slow growth will possibly linger both from the cyclical and structural perspective. Forecasts from OCBC and MAS report states that the openness of Singapore's economy increases its susceptibility to the impact of the waning global trade.

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Global trade growth appears to be structurally broken; cross-border flows of people, capital, technology and skills transfer are also falling in numbers. This structurally weak trade environment, in the absence of final demand for merchandise goods globally, may mute the effectiveness of the exchange rate mechanism. As a highly open economy, the fiscal multiplier is likely to be constrained by leakages; however, the global fiscal policy stand is likely to turn stimulatory in 2017, which increases the fiscal multiplier in an environment of either regional or global coordination between agents of fiscal expansion. The World Economic Outlook by IMF in April 2017 may present an opportunity to both monetary and fiscal policy to move in greater alignment and be relatively more supportive of growth.

There are growing anti-globalisation sentiments across the world, as economies, such as the U.S., are choosing to close in on themselves. Past data saw world goods traded as a percentage of the world's GDP peaking around the years 2007 and 2008, while global cross-border flows of bank lending peaked around 2005. The top 5,000 multinational companies globally are expected to reduce capital expenditures by around 15 per cent as we move into 2016, taking away US\$1.5 trillion of inward FDI from the Asian region.

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Source: CEIC, UNCTAD and WTO

Figure 4.2

The data from the Independent Global Trade Alert shows that there has been a cumulative number of temporary trade protection measures taken since January 2008, and this has increased dramatically from zero to a total of 6,300 measures as of October 2016. This upward trend of growing trade protection measures is expected to continue.

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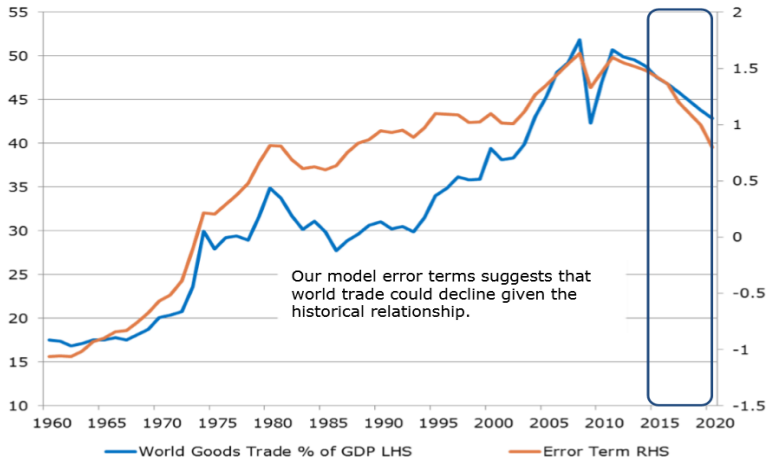


Source: ANZ Research

Figure 4.3

On the impact that globalisation has on trade, a long-run model of globalisation trends (Figure 4.3) suggests that we are 45 years ahead in globalisation due to the two very strong sequential waves of globalisation that ran from 1960 to 2007. This means that the actual trade is much higher than predicted model trade. The reasons for the huge disparity include the fact that the recoupling from the trade to its trend tends to be measured in decades rather than years.

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Source: WTO, CEIC, ANZ Research

Figure 4.4

On top of that, the relationship of trade to its trends seems to be asymmetric. This suggests that as the world merchandise goods trade recouple to its long run trend (due to greater protectionism) it seems possible that there will be a continued structural overhang to the slowdown in merchandise goods trade. This could be the case even though a cyclical recovery is likely.

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Figure 4.5

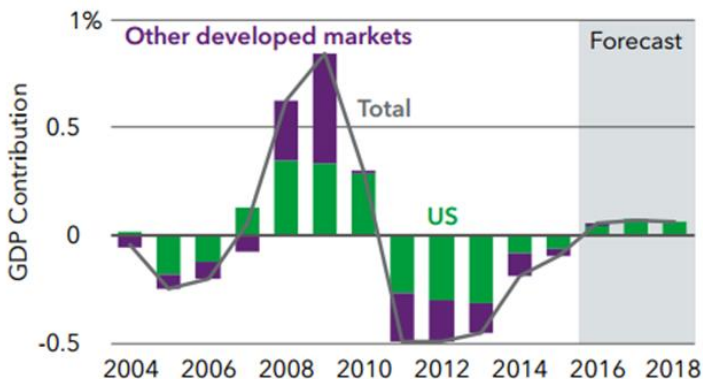
Even though globalisation appears to be waning, there is an uptick in cross-border flows of data as the world steps into its digital age. The woe of the digital age is the difficulty of classifying such data as either goods or services. The increasingly data-centric world calls for more detailed categorisation of big data, which could assist in solving the global world trade conundrum.

4.3 Policy Options in the Global Climate

The existing global monetary policy still remains largely effective. However, its continued implementation might induce greater risk. Therefore, global policy should change course and take on a fiscal position in stimulating the world's economy.

4.4 Increased Global Focus on Fiscal Policy

DM fiscal contributions to world GDP, 2004-2018



Sources: BlackRock Investment Institute and IMF, September 2016

Figure 4.6

In the U.S., the two presidential candidates proposed large fiscal spending; Clinton suggest a 1.3 per cent of GDP per year fiscal spending, while Trump proposed a fiscal spending that amounts to 5 per cent of GDP and an even greater tax cut on its citizens. With Clinton’s policy, there would be a heftier tax in place, and that would take a toll on her fiscal policy. The Ricardian equivalence would suggest a drag on U.S. consumer spending and this would make her efforts to stimulate the economy rather futile. Trump’s policy appears to be a hefty degree of fiscal stimulus that could potentially corrode its own national reserve. Canada also rolled out a 1 to 3 per cent

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of GDP fiscal stimulus. This suggests that the world is slowly shifting its policy approach to one that relies on fiscal policy. Fiscal stimulus for developed nations has a short-term multiplier on spending of 0.6 to 1.4 per cent; the tax multiplier is expected to be between 0.3 per cent and 0.8 per cent. Overall, in the global coordination of policies on a fiscal front the spending multiplier is 1.7 per cent, while the tax multiplier is 0.3 per cent. As for global monetary policy, it is 2.8 per cent and 0.5 per cent respectively.

The MAS modelling and analysis on the impact of GDP on fiscal policy suggests that an increase in government consumption has a higher multiplier compared to government investment. Moving forward, Singapore would have to rely on fiscal policy to stimulate the economy, as the fiscal multiplier is relatively more effective and stronger for the country.

4.5 Singapore's Actionable Policies in the Short and Long Term

The impact of global uncertainty and retarding influence on Singapore's business investment due to the global trade slowdown is likely to be in the short term. In the long term, Singapore should focus on beefing up its fintech industry, as the services industry is expected to be more profitable than its predecessor, the manufacturing industry.

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Government policies would need to be in place to tackle the technological disruptions caused by new technologies. The policies should emphasise reskilling and incubating innovation; introducing more multi-disciplinary institutes as we move into the digital age; and shifting our education system into one that supports a liberal arts education that will help our future generations to think out of box and embrace entrepreneurship.

Similarly, the shift in our education system would solve the current labour mismatch issues, thereby helping our labour force upskill and reskill to remain relevant in the current economic climate. This requires coordination between the government, education institutions and private sectors to push for lifelong learning within the workforce, which would generate long-term growth potential for Singapore.

5.

Discussion

5.1 Preamble

The fall in global trade volume suggests a growing localisation effect on the economies. Big economies such as China and the U.S. could be choosing to develop inwards instead of trading with other countries. The presentation will examine the strategy that Singapore should adopt for future growth.

5.2 Structural Decline in Trade

There is evidence of structural change in trade over the years. In the 2000s, during the great era of globalisation the intensity of trade (measured as a ratio of real trade volumes to global GDP or global industrial production) soared.

The mid-1990s saw greater intensity of trade as China's engagement with the world trading system increased — this was even more pronounced after China joined the WTO after 2001. However, the intensity of world trade levelled off

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starting with the financial crisis of 2008 and 2009. The crisis has weakened the pace of global investment, particularly in the G3 economies, and these economies have not fully recovered. While investment in China surged initially as the government pump-primed the economy, it slowed one to two years after the crisis as well.

The late 1990s to mid-2000s also saw the construction of regional supply chains, many of which were centred on China, facilitated by cost differences and the integration of China into the global economy.

In the late 2000s, China became more sophisticated in producing its own inputs and shifted their production chain upstream, importing fewer intermediate products and components. This had repercussions on the intermediate goods market, reflected in the slump in intermediate products trade in the region since the late 2000s. In addition to these economic-driven reasons for the structural changes in trade intensity, there are also political reasons such as rising protectionism.

Of late, a significant pick-up in the lead indicators for world trade, such as the WTO trade lead indicator (which brings together variables such as trade in electronic components, export orders, container freight and air freight) points to a cyclical recovery in global trade volumes.

5.3 Globalisation and Localisation

Recent data suggests that there could be a shift towards localisation in some countries. In advanced economies such as the U.S., this trend towards localisation seems to be evident mostly in the innovation and technology-driven sectors. As a result, this has boosted onshore employment.

For China, the change is reflected in its participation within the global value chains, as it moves up the value-added chain and starts producing its own intermediate goods. China might possibly be facing a process of creative destruction as data suggests that cities with low value-added manufacturers, such as manufacturers in the clothing and apparel sector, show an overall decline in their population. The workforce in those cities has been reskilled and moved to higher value-added production outside of their cities, which explains the fall in population numbers. The shift of the policy priority in China towards employment stability is the driving force behind greater localisation. This is because they face broad-based labour market dislocation, where it is difficult to reskill and ease the workforce from a manufacturing industry to the service industry.

Despite these trends, it is too soon to write off globalisation. MNCs, such as Toyota, which pioneered the China plus one model, are shifting from the China plus one policy to

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strategies such as the Thailand plus one policy. Thus, new economic clusters are emerging as companies seek to restore profitability and rebuild profit margins in even cheaper localities.

5.4 Policy implications for Singapore

In the short term, there needs to be fiscal changes to a more progressive tax system in Singapore, where the current tax system sees only 20 per cent of the affluent population supporting 80 per cent of the less affluent population. While long term, economic vibrancy will still depend on key drivers such as a continued flow of FDI, there will also be a role for judiciously expanded government policy support.

Because the U.S. is shifting its business focus from Asia generally to specifically China, China's role in the global market has become greater in the region, even though their economy is slowing down. Our trade policies would have to now skew towards maintaining or creating better trade relations with China.

Advances in technology, greater access to the Internet and the rise of social media has resulted in greater difficulties for policymakers when disseminating new policies. For example, there is a greater polarisation of views on social media. The population now turns to social media for news, seeking out

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media that reinforces their views. Therefore, there is a pressing need for a two-way feedback channel, where the government and the people can directly interact with each other. Policymakers need to communicate more effectively by making policy announcements simpler and articulating the case for policy changes in a more persuasive manner.

There is also a greater need for long-term investment in innovation and to provide medium-term financing to firms so as to facilitate creative destruction. There needs to be incentives for private sector lenders to be engaged in this effort, while government also needs to back the effort. The state has a crucial role to play in fostering, supporting and enabling innovation that would benefit Singapore's economy in the long run.

6.

Conclusion

The fall in the global trade volumes would have a direct macroeconomic impact on small and open economies like Singapore. Big economies like China are moving up its production chain, producing intermediate goods as well. This will affect our export market as China is one of our largest export partners.

To brace against the coming impact, Singapore should increase fiscal spending, as well as make necessary changes to the progressive tax system. We should also work to foster greater diplomatic and economic ties with China due to their increasing influence on the global economy. Singapore should also make efforts to ensure that our economy remains vibrant to attract FDI into the country.

Furthermore, there is also a greater role for policymakers to improve the government-to-people interaction through the use of social media. Similarly, policymakers are likely to have to make changes to our education system, changes that support innovation.

7.

Special Session:
**The Data Economy: Implications for
the Future**

Mr Sree Kumar

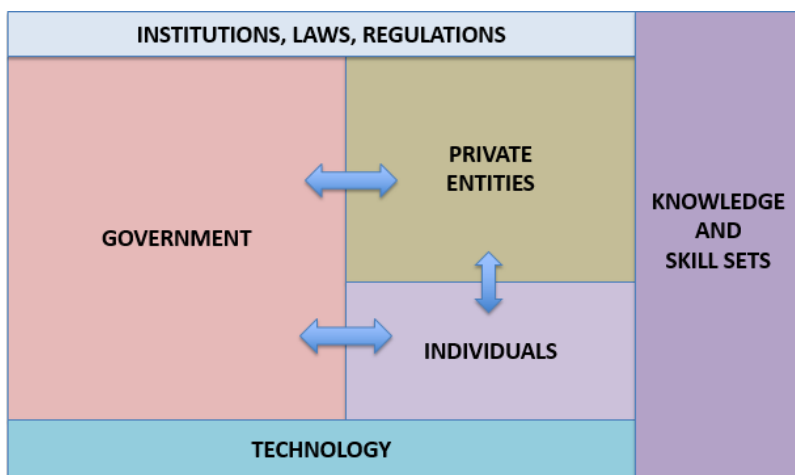
Adjunct Senior Fellow

Lee Kuan Yew Centre for Innovative Cities

7.1 Preamble

Big data is the collection of large, complex and diverse sets of data. It is largely and commonly used by all facets of the ecosystem, which includes the government, private companies and individuals.

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Source: Sree Kumar, LKY CIC

Figure 7.1

There are vast interactions and data transaction flows between the different stakeholders of the economy (Figure 7.1). There could be businesses-to-government data transactions, government-to-individuals data transactions and individuals-to-businesses data transactions — anything from census data/statistics to personal information to consumer purchasing data and patterns. All these are possible with the booming of the data economy. However, there are also growing concerns regarding privacy issues and how corporations and the government are playing a part in shaping regulations and legal processes.

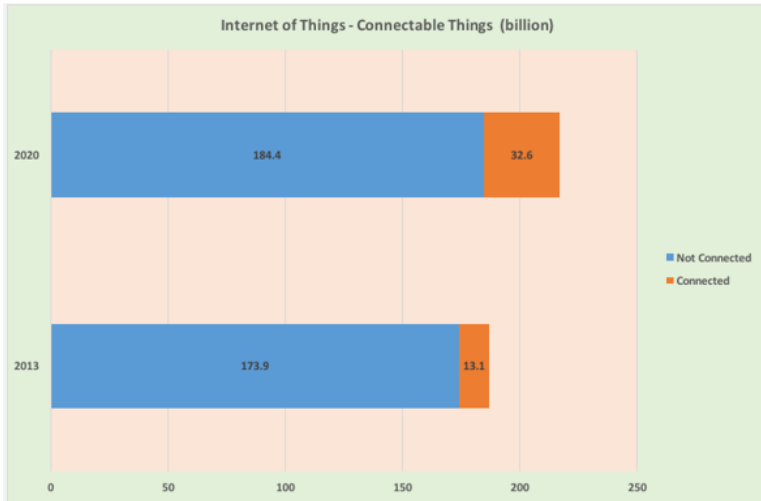
7.2 Data Privacy

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Technology is the big enabler of data across streams. However, the downside of big data is the issue of privacy. Singaporean laws have been put in place to prevent misuse and abuse. These laws include the Personal Data Protection Act (PDPA), the Official Secrets Act (OSA), as well as the Computer Misuse and Cybersecurity Act (CMCA), etc. This will help Singapore guard against data breaches such as the one that occurred in Hong Kong concerning the MTR, in which the distributor of the transport card, Octopus, sold personal data of customers to private companies for HK\$44m. However, these rules and regulations protecting how transactions take place can only work if we have technological knowledge and skills. Big data has also led to new forms of contracts such as the principle agent theory.

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7.3 Management of Big Data



Source: IDC 2014

Figure 7.2

The digital economy is expected to experience high growth, and by 2020 the economy is expected to have about 217 billion things that are connectable, of which only 15 per cent will be connected (Figure 7.2). Businesses that are able to make use of such data can increase their business efficiency and be better able to capture revenue through improved marketing strategies. For instance, companies such as Amazon currently utilise transaction data to find out customer’s purchasing patterns to improve sales and also

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position their operations where businesses are most profitable.

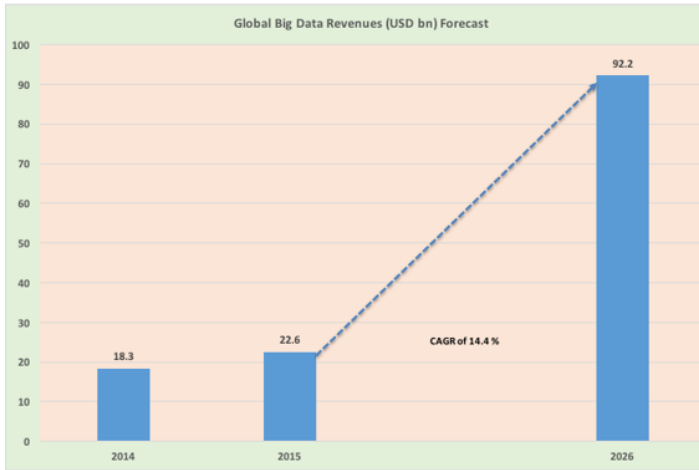
7.4 Challenges

The key challenges for the data economy are as follows:

- 1) management of unstructured data
- 2) Interpreting results drawn from the data
- 3) Having the specialised skills to perform such analysis.

Business operations have also changed with the rise of the data economy. Many businesses now hire in-house data analyst teams to run analyses on data available and draw business decisions from there.

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Source: Finos (2016)

Figure 7.3

The job market for data analysts is expected to further expand with exponential growth in global data revenue, from about US\$23 billion to US\$93 billion. Even though there is a growing demand for data analysts, it is not expected to contribute to overall employment opportunities as the job is highly specialised and requires only individuals with a certain set of knowledge and skills.

Even though Singapore has the basic infrastructure to sustain a data sector, more needs to be done by the government to provide reskilling and education programmes to enable our data sector to contribute to GDP growth in Singapore.

7.5 Conclusion

It is highly likely that data will increasingly be seen as a factor of production. While the proliferation of data looks likely to take varying forms — both structured and unstructured, private entities and individuals are highly likely to become significant producers and users of data, while the government's share of data supply and use may eventually shrink as a result. The government's role should then transition from a collector and supplier of data towards activities like privacy protection, data security and institutional design.

Furthermore, the use of data as a tool will only increase as computing power and data acquisition techniques improve. While Singapore is steadily establishing itself as a leader in applied analytics in particular, there is an urgent need to enhance the education system to create a workforce with the relevant knowledge and skills.

8.

Discussant

Ms Irene Boey

Consulting Director

Integral Solutions (Asia) Pte Ltd

&

Vice President Strategies & Development

Association of Small and Medium Enterprises

8.1 Preamble

This presentation comes from the perspective of one of the earliest business practitioners in Singapore's data industry, and it will explore some of the business challenges faced, as well as how the economy and opportunities have changed for SMEs stepping into the age of the data economy.

8.2 The Development of the Data Economy and its Impact on SMEs

From the 1990s to early 2000s, the data industry in Singapore was under-developed, with the private and public sector generally unaware of its potential applications and importance. Early businesses that ventured into this industry had poor performance and experienced stagnant growth. From 2000 to 2010, data mining workshops started to be provided to educate the public and business owners on the usefulness of such tools. Later, many data mining companies started providing consultancy services to banks and MNCs, as well as the government.

As relevant stakeholders recognised the applications of data solutions, several companies tried their hand at creating their own in-house data mining teams with limited success, as many were unable to derive actionable results from the data. Anecdotally speaking, several businesses experienced failed projects and high attrition rates in their data mining team as in-house analysts were put under immense pressure to deliver results. Some companies ended up downsizing their data analytics departments or shutting them down completely.

In the present day, more companies have decided to outsource data analytics operations to companies that

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provide end-to-end solutions. However, many of the vendors and data companies vary wildly in quality and price, and they often leave customers confused with regards to which vendor to engage. In that regard, an impartial method of assessment or licensing would be useful to maintain the quality and standards of vendors dealing with data mining or other related work.

Keeping the Cost of Data Solutions Low

To market Singapore's position as a data centre, Singapore has to go beyond just providing normal data services to providing services that add value to businesses in the country. If Singapore is unable to create a strong reputation in that aspect, it is likely to lose its businesses to other countries. To that end, Singapore needs to ensure that the cost of the entire data value chain is kept reasonably low, which includes the cost of acquiring, analysing and curating data. On top of that, it needs to promise a result that would be of high value to business owners.

Need for Specialists in Identifying Viable Data Sets

Singapore has a stable of successful data mining companies that have high potential to allow the country to gain the competitive advantage in the region. However, there is a shortage of key labour that may throw a spanner into the works. To begin with, an important aspect of data mining is to identify viable sources of data from the outset. Singapore, however, currently faces a shortage of such skilled personnel. Put simply, if we are to strengthen Singapore's position in this industry, we need to develop a pool of data miners able to identify the types of data required to produce actionable insights before the data mining process begins. Furthermore, a competent data miner should possess skill, passion, flexibility, integrity to handle sensitive data and a high emotional quotient (EQ) so as to better communicate the data mining process to the management. This will be the pathway for companies to derive actionable insights from the data mined. To that end, the education system needs to cultivate the requisite soft and hard skills in order to train a new generation of data miners in Singapore.

8.3 Conclusion

Singapore needs to invest resources into building a greater pool of talented labour specialised in data analytics, while keeping the cost of the data value chain low. This will go some way to help expand the capacity and capabilities of the current pool of data mining companies. This in turn will help Singapore transform into a more successful regional data hub.

9.

Discussion on the Data Economy

Several factors crucial to developing a data driven economy were highlighted in the discussion.

The legalities that come with data protection are of high concern; the government, as well as companies have an increasing role to play in ensuring data privacy. It will not be sufficient to rely simply on self-policing, as industry practices remain relatively weak. Moreover, it is the government that is better able to enforce rules and regulations and to ensure that data is safely protected.

Singapore is still in the early stages of development, where data integration is poor and participants are generally unable to provide deep analysis of existing data sources. Companies and the government in Singapore need to enable their managers so that they are able to perform data analysis themselves. This will reduce the reliance on foreign data miners, while ensuring that our data industry is self-supporting.

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While Singapore's ambition to be a smart nation is still in the early stages, it is important to get our businesses ready in the short to medium term, as technological disruptions such as automation are rapidly advancing. This is to ensure that our businesses do not fall behind in the technological age. In fact, Singapore is still far from its goals compared to countries like Estonia that are highly advanced in today's world (e.g. electronic ID cards that can make payments and register votes, etc.).

The discussion also highlighted concerns such as information failure from publicly gathered data — where the government does not make information readily available to the general public or data analysts for perusal. Currently, the government's data seems to be gathered and sequestered in silos and protected by the Official Secrets Act (OSA). Institutional bottlenecks were also said to play a large role in damming up the amount and granularity of information from time to time. The government's role is very important to strengthen laws and regulations once data is more prolific.

Similarly, there is lack of direct feedback avenues to aggregate customer experiences or foster greater citizen-to-government interaction. There is also resistance from employees in many workplaces who are unwilling to embrace new technology and methods of doing work. This is shown by

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the lacklustre job performance of the IT departments within Singapore companies, in contrast to data analysts from MNCs.

A top-down approach should be taken by business owners and the government, where even managerial roles in the company are equipped with the basic knowledge of data analysis. This is to avoid making hiring mistakes when employing data analysts for the job, mistakes which could potentially worsen the job-skills mismatch. Basic knowledge of data analysis will help managers identify the set of skills required of the employees for the job during the hiring process.

Currently, SMEs in Singapore face more of a cultural block rather than an institutional problem when provided with big data. This is because they do not have the skills to interpret the data, and they would rather be spoon-fed with already generated solutions to solve their business problems.

10.

Conclusion

The presentations and discussions in both sessions of the 26th SER produced a range of insights and implications for policy.

MACROECONOMIC OUTLOOK AND IMPLICATIONS FOR POLICY

First, although many participants saw a decent chance of a cyclical upturn in the global economy, they were not confident of how much of a fillip it would give to Singapore.

- A cyclical pickup driven by consumer demand would not flow strongly into demand for Singapore's manufactured exports which were more correlated with fixed investment spending rather than consumer spending.

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- Moreover, there was considerable concern over the structural drags on the global trade that was so vital to Singapore. The factors driving reduced trade intensity of global growth would not go away quickly. China was now able to manufacture intermediate components domestically, components that it once imported, and protectionism was more prevalent.

Second, there was significant uncertainty over the direction of the global economy.

- The global economy had endured a series of political and other shocks which made it very difficult to come up with predictions of economic variables upon which policy could be confidently based. The margins of error around forecasts were substantially greater than before.
- The election of Donald Trump as President of the United States was just one example of shocks that contribute to this difficulty. Brexit was another one.

Third, the room for policy manoeuvre was further constrained by a number of developments.

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- A structurally weak global economy limited the effectiveness of using exchange rates to boost external demand.
- Policy interventions in other countries also affected Singapore. For instance, Hong Kong had just imposed additional restrictions on the property sector. In this context, any easing of macro-prudent restrictions on housing demand in Singapore could precipitate a tidal wave of external liquidity into Singapore's property market.

Consequently, there was a need for a more pragmatic and flexible policy formulation:

- In general, policy making should focus on “the path of least regret”. Given so much uncertainty about the economy's direction and how specific policy measures would actually work in practice, it was best to adopt measures that would do the least damage should the economy develop in unexpected ways.
- Most participants appeared satisfied with current monetary/exchange rate policy settings and suggested greater use of fiscal policy to support demand.

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- In view of the tighter financial conditions facing local enterprises, the government should consider stepping up the use of risk sharing schemes to encourage lending.
- The government should review the use of price-based measures to incentivise economic agents, and policy makers need to be more sensitive to the risk of unintended consequences of policy. Many of these measures had resulted in much higher costs, which was especially difficult for small and medium enterprises.

THE DATA ECONOMY: IMPLICATIONS FOR THE FUTURE

First, the size of the data economy will surge exponentially, dramatically altering the nature of this dimension of the world economy.

- Global data, whether enterprise created or enterprise managed or cloud-based, is growing explosively. For example, cloud data will grow from 7.9 zettabytes (zb) in 2015 to 35 zb in 2020. The number of appliances and devices of various kinds that will be linked with the

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Internet of Things will rise from 13.1 billion to 32.6 billion between 2013 and 2020.

- This surge will cause the data economy to be restructured fundamentally within a short space of time. There will be new ways of digital intermediation, many more opportunities to create economic value and the industrial sector will become increasingly integrated with the data economy as smart manufacturing becomes more prevalent.

Second, participants expressed some concerns over Singapore's competitive positioning in the data economy.

- One participant queried why it was that although Singapore had realised the need to go online fairly early, it was behind countries such as Estonia? He asserted that in Estonia, most government services could be accessed online and troubleshooting could be completed online as well. In Singapore, he said, straightforward transactions could be done online but when problems arose, they could not be resolved online and one had to go down to the government agency in question to finalise the transaction.

**As a result, there are significant implications
for policy makers:**

- **Legal:** Big questions will be raised over legal issues. Personal data will probably command much greater commercial value, raising questions over whether the Personal Data Protection Act might need to be reviewed.
- **Skills development:** There is a dearth of skills across the spectrum of activities in the data economy — from data generation/acquisition to data analysis to data storage/curation and to data valuation and other usage services. Very few people are able to combine the capacity to excel in all these categories, so we are likely to see them specialise in each category. Training programmes need to be expanded and geared to such specialisation. Participants felt that there was a particular problem in the government service where there was a dearth of staff who could undertake data visualisation and analysis.
- **Making data available to the public:** Some participants felt that the government could do more to collect more categories of data and to then make these available to the public.

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- **Government should conduct data-driven experiments:** For example, government could take the lead to test hypotheses such as the impact of arts education on overall student performance. Or on how the use of behavioural nudges could alter investment decisions made by Central Provident Fund members. One participant wondered whether such experiments were indeed being conducted but were not being made available to the public.
- **Government policy on endorsing individual companies:** One participant felt that the government policy of never endorsing a specific company's product inhibited local Singaporean companies' ability to establish themselves in the data field. Where a local company has performed well and has a good product, this participant wondered if an endorsement could be made to encourage its development and scaling up.

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ROUNDTABLE

Appendix 1: List of Participants

Chairperson

	Senior Economist
Mr Manu BHASKARAN	Economic Surveillance & Adjunct Senior Research Fellow
Institute of Policy Studies	Forecasting Department Economic Policy Group Monetary Authority of Singapore

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Mr Sree KUMAR	
Adjunct Senior Fellow	Ms Selena LING
Lee Kuan Yew Centre for Innovative Cities	Head, Treasury Research & Strategy Group Treasury OCBC Bank
Ms Grace LIM	

Discussants

Ms Irene BOEY	Strategies & Development
Consulting Director	Association of Small and Integral Solutions (Asia) Pte Ltd
and	Mr Glenn MAGUIRE
Vice President	Independent Economist

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Vice President	Research Analyst
Membership & Training	TRPC
Association of Small and Medium Enterprises	Ms Diana DEL ROSARIO
	Economist
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	Mr Ray FARRIS
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Dr Kaushik GHATAK	
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Appendix 2: Curricula Vitae of Presenters, Discussants & Chairperson

Manu BHASKARAN is Adjunct Senior Research Fellow at the Institute of Policy Studies. He is also concurrently Partner and Member of the Board, Centennial Group Inc, a policy advisory group based in Washington DC, where he heads the Group's economic research practice. Mr Bhaskaran co-leads the Institute's work in the area of economics. His major area of research interest is the Singapore economy and the policy options it faces. Prior to his current positions, he worked for 13 years at the investment banking arm of Société Générale as its Chief Economist for Asia. He began his professional career at Singapore's Ministry of Defence, focusing on regional security and strategic issues. Mr Bhaskaran graduated from the University of Cambridge with a Masters of Arts and also has a Master's in Public Administration from Harvard University.

Irene BOEY holds a marketing degree and an MBA in Entrepreneurial Management. She is the Consulting Director at Integral Solutions (Asia) Pte Ltd which specialises on data mining since 1992. She was involved in bringing data mining technologies to Asia and has accumulated a good collection of business best practices which enabled her to help businesses to maximise returns from data.

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Ms Boey has presented numerous papers in public conferences and led various public workshops. Some of these include: “Using Machine Learning to Make Education Smarter”; “Leveraging on Predictive Analytics to Power Up Your Customer Retention and Relationship Management” and “Data Mining: Strategies for Leveraging on Hidden Values From Your Database”.

Ms Boey is also the Adjunct Lecturer for NICF-Enhanced Customer Acquisition and Retention: An Information-Centric Approach, a course certified by National University of Singapore and Workforce Development Agency. She is also Infocomm Development Authority’s Silver Infocomm Wellness Ambassador and has served as board member for various non-profit organisations.

Sree KUMAR is a lawyer, development economist, engineer and a Founding Director of Sreekumar Siddique & Co Pte Ltd, a regional research and consulting firm. He focuses on strategy and economic development, international tax and operations improvement for clients in the Asia-Pacific and the Indian Ocean regions. He is also an Adjunct Senior Fellow at the Lee Kuan Yew Centre for Innovative Cities, Singapore University of Technology and Design, where he is managing a study on the data economy.

Mr Kumar holds degrees in law, English, economics, business administration and engineering. He is a Barrister (Middle Temple), and a Fellow of the Royal Statistical Society.

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Grace LIM is a Senior Economist in the Economic Policy Group at the Monetary Authority of Singapore (MAS). She has been with the MAS since 2010. She is presently involved in the forecasting and analysis of inflation in the Singapore economy. Prior to this, Ms Lim was involved in the formulation of exchange rate policy, as well as in macroeconomic modelling work. She obtained her Honours Degree in Econometrics and Mathematical Economics and her Masters in Economics from the London School of Economics and Political Science.

Selena LING is Head of Treasury Research & Strategy in OCBC Bank. She is responsible for Treasury market research, forecasts and trading recommendations for the bank, focusing on interest rates, corporate credit, foreign exchange and macroeconomic commentary. She is a Member of the OCBC Wealth Panel and the Economic Society of Singapore.

Her research writings have been extensively quoted and published. Under her leadership, OCBC's research capabilities have been greatly valued by customers and highly ranked in surveys for interest rate research, FX research, commodities and Asian macroeconomic research.

Prior to joining OCBC in August 2000, Ms Ling was with the Fiscal Policy Unit under the Ministry of Finance, and the Economics Department in the Ministry of Trade and Industry.

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Glenn MAGUIRE joins the 26th SER as an Independent Economist. He was The Australia and New Zealand Banking Group's (ANZ) South and Southeast Asia Chief Economist, a position he held here in Singapore from May 2013 to August 2016. In his time at ANZ, Mr Maguire authored key research on financial deepening in the ASEAN, ASEAN Integration and industrialisation in the Mekong. He most recently concluded a joint ANZ-Asia Development Bank study and survey on Special Economic Zones (SEZ) in the Mekong Region that concluded these SEZs were succeeding in attracting Foreign Direct Investment (FDI) into the Mekong that would have otherwise not occurred.

Prior to joining ANZ, Mr Maguire was the Asia Chief Economist with Société Générale based in Hong Kong. He commenced his economic career in the Fiscal Policy Division of the Australian Department of the Prime Minister and Cabinet.

Mr Maguire will be commencing a new Singapore-based economics and analytics role later in November 2016.