

# **AMRO Annual Consultation Report**

## **Singapore - 2017**

**The ASEAN+3 Macroeconomic Research Office (AMRO)**

December 2017

### Acknowledgements

1. This Annual Consultation Report on Singapore has been prepared in accordance with the functions of AMRO to monitor, assess and report its members' macroeconomic status and financial soundness and to identify the relevant risks and vulnerabilities, and assist them in the timely formulation of policy recommendation to mitigate such risks (Article 3(a) and (b) of AMRO Agreement).
2. This Report is drafted on the basis of the Annual Consultation Visit of AMRO to Singapore from July 6 to 28, 2017 (Article 5 (b) of AMRO Agreement). The AMRO Mission team was headed by Dr Sumio Ishikawa, Group Head and Lead Economist. Members include Dr Simon Liu Xinyi (Economist and Country Economist for Singapore), Dr Nguyen Thi Kim Cuc (Senior Economist and Back-up Economist for Singapore), Mr. Anthony CK Tan (Senior Economist), and Mr. Edmond Choo Chiang Yong (Research Analyst). AMRO Chief Economist Dr Hoe Ee Khor also participated in key policy meetings with the authorities. This AMRO Annual Consultation Report on Singapore for 2017 was approved by Dr Hoe Ee Khor, AMRO Chief Economist.
3. The analysis in this Report is based on information available up to 9 October 2017.
4. By making any designation of or reference to a particular territory or geographical area, or by using the term "member" or "country" in this Report, AMRO does not intend to make any judgements as to the legal or other status of any territory or area.
5. No part of this material may be disclosed unless so approved under the AMRO Agreement.
6. On behalf of AMRO, the Mission team wishes to thank the Singapore authorities for their comments on this Report, as well as their excellent meeting arrangements and hospitality during our visit.

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## Executive Summary

*In the 2016 Annual Consultation Report, AMRO highlighted that Singapore's growth had weakened somewhat on account of weak external demand and its spillover on domestic demand. Inflation remained low, monetary policy was accommodative and financial system remained sound with pockets of vulnerabilities. **Since then**, the economy has rebounded, led by external demand and a turnaround in trade. Growth is also gradually becoming more broad-based. However, the labor market development has lagged the economic rebound and has slackened. Inflation has picked up recently but remains subdued; while interest rates has remained low. The outlook for the property market is mixed, with early signs of recovery in the private residential segment. Downside risks to growth stem from (1) trade protectionism; (2) decline in energy prices and their impact on the marine and offshore engineering industry; (3) sharp rise in interest rates and (4) cyber-attacks. The Committee on the Future Economy (CFE) has identified seven strategies for economic restructuring, including the labor market. Fiscal and monetary policies should remain supportive of the economy. Macprudential measures have been effective and should be maintained.*

### Recent Developments and Outlook

**1. Growth has accelerated in recent quarters, led by external-oriented sectors, especially manufacturing.** After a surprisingly strong Q4 2016, the economy has continued to grow strongly in Q1 to Q3 2017, led by strong demand for electronics and precision engineering products and a turnaround in international trade. Trade has increased substantially after a few years of decline, with exports to China and Korea particularly strong. Growth is becoming more broad-based, with strong external demand cascading to some domestic-oriented sectors. However, some sectors still remain weak, including marine and offshore engineering and construction.

**2. The labor market has slackened, with net job losses in H1 2017.** External-oriented sectors have seen sustained net job losses since Q2 2016, as workers were retrenched, mostly in manufacturing and wholesale trade services. In the domestic-oriented sectors, job creation has been uneven. Community, social and personal services, including health care, saw sustained job gains, while construction and retail trade shed jobs. The resident unemployment rate (seasonally adjusted) has remained low, and is similar to the average for the past decade. In Q2 2017, the total number of retrenchments was slightly higher than the historical average (Q1 2011 to Q4 2015) but still lower than Q1 2017 and the same period one year ago. The majority of the retrenchments were for workers in Professionals, Managers, Executives and Technicians (PMETs).

**3. Inflation has picked up recently, but remains subdued; while interest rates remain low.** Core inflation has increased gradually to 1.5 percent in Q3 2017 after averaging 0.9 percent for the whole of 2016, due to a recovery in energy prices as well as administrative measures. However, reflecting the slack in the labor market, inflationary pressures will be restrained, and therefore, core inflation is likely to remain low and is projected at 1.5 percent for 2017 and 1.8 percent for 2018. Interest rates have been low and increased only slightly since Q3 2016, despite a 75 basis points increase in the U.S. federal funds rate, as liquidity has been abundant while the SGD has strengthened against the USD.

**4. Recent data point to a mixed picture in the property market, with some early signs of recovery in the private residential segment.** The volume of private residential transactions in H1 2017 increased to the highest level seen since H2 2013. The commercial property market, meanwhile, remains relatively weak, owing to a slack rental market. The vacancy ratio for offices, as well as other commercial space, remains elevated.

### Risks and Vulnerabilities

**5. Downside risks to growth stem from a rise in trade protectionist sentiments.** Such sentiments could lead to imposition of protectionist measures, causing a downturn in

global trade. This would, in turn, lead to a slowdown in Singapore, which is a small and open economy.

**6. A sharp decline in energy prices could hurt Singapore through spillover effects from energy-exporting countries.** A sharp fall in energy prices could hurt the economies of energy-exporting countries and have a negative spillover effect on Singapore's economy through their demand for marine and offshore engineering, a considerable component of Singapore's manufacturing sector.

**7. Corporate and household debt remain high, and some segments could be vulnerable to an unexpected spike in interest rates.** Since the Global Financial Crisis (GFC), under the low interest rate environment, both corporate and households in Singapore have leveraged up. A sharp increase in interest rates, triggered by some external shocks, could push up debt repayment burdens, and cause stress in certain segments in household and corporate sectors.

**8. As a financial center, Singapore is also vulnerable to cyber risks.**

### Policy Discussion

**9. The Committee on Future Economy (CFE) has identified seven strategies to meet challenges emanating from the shifting global environment and changing demographics.** These seven mutually-reinforcing strategies are aimed at building a vibrant and resilient economy, with strong digital and enterprise capabilities to innovate and scale up. Various government agencies have been tasked with developing and implementing sectoral initiatives, such as MTI, EDB, SPRING, IE Singapore, A\*Star, Ministry of Manpower and Ministry of Education. These agencies are monitoring, reviewing and tracking the initiatives, and at the same time, learning and adapting through implementation. The implementation of the CFE's recommendations is overseen by a Future Economy Council (FEC) which comprises members from the government, industry, unions, and educational and training institutions.

**10. The authorities have taken measures to address labor market challenges.** Recognizing the changing demographics, particularly from an aging population, and the need to balance socioeconomic policy objectives, the government has initiated a multi-year restructuring effort to steer the country towards a labor-lean, high productivity, and innovation-based economy. Supportive policies have been adopted to facilitate the adjustment in the labor market. The tripartite collaboration among the unions, employers and the government, will be key to the successful implementation of these initiatives.

**11. The government should continue to use fiscal policy to support the recovery and restructuring of the economy.** In FY2017, fiscal policy will be expansionary as expenditure is expected to be higher due to an increase in healthcare and security spending as well as higher investment in infrastructure. This policy stance should help to support the nascent recovery, and more importantly, fiscal policies should help the restructuring of the economy.

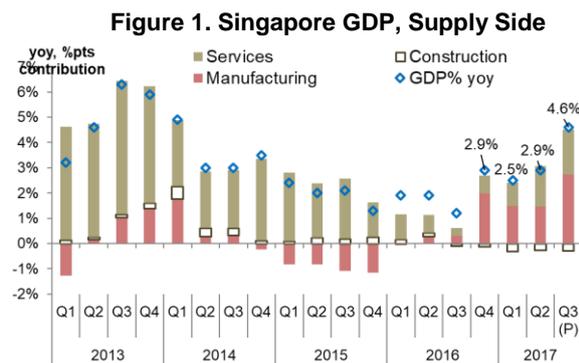
**12. Monetary policy has been accommodative since April 2016, and supportive of the economic recovery.** MAS eased monetary policy in April 2016 by flattening the Singapore dollar NEER policy band. The policy parameters have been kept unchanged since then. In light of the low inflation outlook, such a neutral policy stance is appropriate to support the economy and is consistent with medium-term price stability.

**13. The macroprudential measures have been effective and should be maintained.** The measures have been effective in curbing speculation in the property market and excessive leverage among households. With the residential property market showing tentative signs of recovery and with low interest rates, the current macroprudential policies should be maintained.

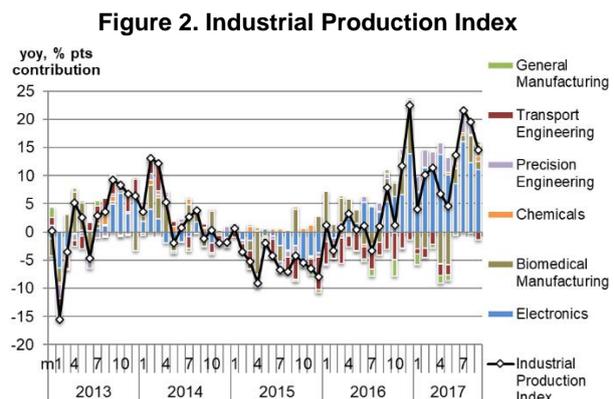
## A. Recent Developments and Outlook

### A.1 Macroeconomic Developments and Outlook

1. **Growth has accelerated in recent quarters, led by a recovery in global trade and capital spending (Figure 1).** After a surprisingly strong growth of 2.9 percent in Q4 2016, growth momentum was sustained in Q1 to Q3 2017<sup>1</sup> at 3.5 percent on average, led by a sustained recovery in the external demand for electronics and precision engineering products (Figure 2), and a turnaround in international trade. However, the recovery is still at a nascent stage and uneven in some sectors. Within the manufacturing sector, marine and offshore engineering, an important pillar of transport engineering, saw its output fall by 22.0 percent in the first nine months of 2017 as rig-building activities and demand for oilfield and gas field equipment remained weak. At the same time, biomedical manufacturing remained volatile. While the trade-related services sectors have rebounded, the domestic-oriented services sectors remained relatively subdued. The construction sector contracted owing to the correction in residential projects construction.

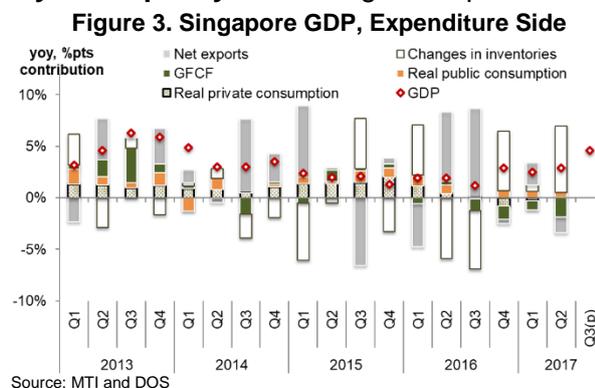


Note: Q3 2017 is based on advanced estimate.  
Source: Ministry of Trade and Industry (MTI), Department of Statistics (DOS)



Source: Economic Development Board (EDB), CEIC, AMRO staff calculations

2. **Economic activities have gained traction with improved external demand and accommodative monetary and expansionary fiscal policy.** Reflecting the improvement in business sentiments, inventory has been built up rapidly since Q4 2016 (Figure 3), and production has been ramped up. However, gross fixed capital formation (GFCF) contracted, while private consumption has remained subdued.



Source: MTI and DOS

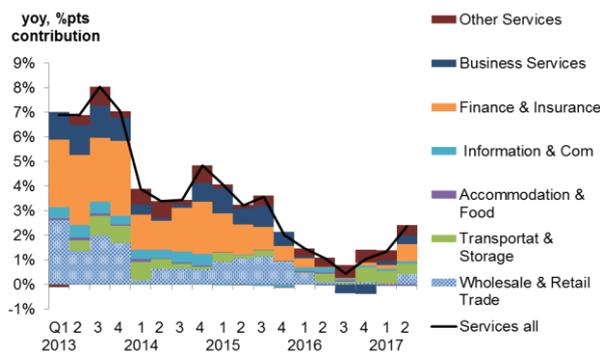
3. **Growth remains volatile, especially in the manufacturing sector.** This is because as Singapore continues to move

<sup>1</sup> Q3 2017 data are based on 3Q 2017 advance GDP estimates.

up the value chain, manufacturing has moved from final products to intermediate products, where demand is more volatile (selected issue: Understanding Volatile Trade and Manufacturing Activities in Singapore).

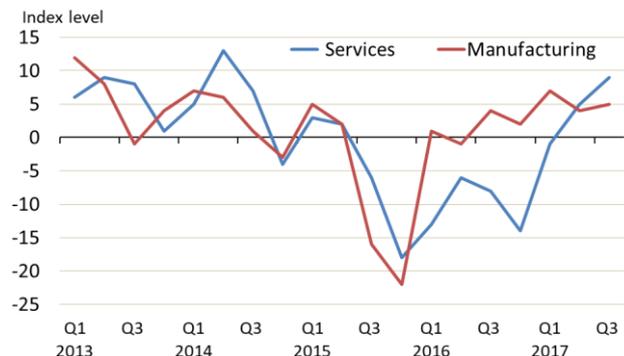
**4. The export-led growth will gradually spillover to the services sector, and GDP is expected to grow by 3.0 percent in 2017 and 2.6 percent in 2018.** External demand and international trade are likely to be sustained in the coming quarters<sup>2</sup>, continuing to benefit external-oriented services, such as transport and storage, trade finance, wholesale trade, fund management, head offices and business representatives, and tourism (Figure 4). Over time, it will also lift the domestic-oriented sectors and labor market. The Economic Development Board (EDB) and the Department of Statistics (DOS) surveys suggest that business expectations have improved for both manufacturing and services sectors (Figure 5), including some domestic-oriented sectors.

**Figure 4. Services GDP, Supply Side**



Source: MTI, DOS, CEIC

**Figure 5. Business Expectations for Next 6 Months**



Note: the horizontal axis denotes the forecast period. For the forecast period Q3 2017, the business expectation period is from October 2017 to March 2018.  
Source: DOS, EDB, CEIC

**5. Disruptive technologies are changing the industrial landscape.** Disruptive technologies have boosted sectors such as FinTech, e-commerce retailing,<sup>3</sup> online media, IT and information services segment, and the sharing economy. However, they are also hurting some sectors such as conventional retail trade,<sup>4</sup> conventional telecommunications and print media.

**Authorities' views**

**6. Growth across the Singapore economy should become more even in the quarters ahead.** The boost imparted by the IT-related industries is expected to diminish but remain positive, while the pace of contraction in the weaker sectors of the economy is likely to

<sup>2</sup> In particular, the global demand for semi-conductors is likely to remain strong, according to forecasts made by IC Insight (icinsights.com) and Gartner (gartner.com).

<sup>3</sup> See MAS Macroeconomic Review, Apr 2017, Box A "The Opportunities for E-commerce in The Retail Sector".

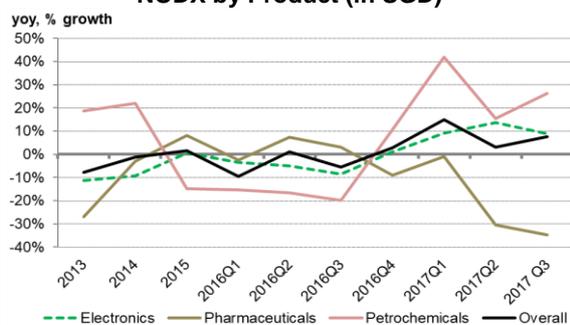
<sup>4</sup> According to the MTI economic survey of Singapore Q2 2017, which uses data from the Accounting and Corporate Regulatory Authority, company and business cessations have seen an increase in 2015-2016, with the retail trade sector being one of the hardest hit.

level off. The strengthening of sentiment and gradual recovery in the labour market will also support activity in the domestic-oriented services. Abstracting from the electronics-related segments, growth rates in a broad range of industries are projected to be stable or slightly improving in 2018 compared to 2017. GDP growth should stay firm in 2018, in line with potential growth, but could moderate from this year. The expansions this year and next will be driven by productivity gains.

## A.2 External Sector and the Balance of Payments

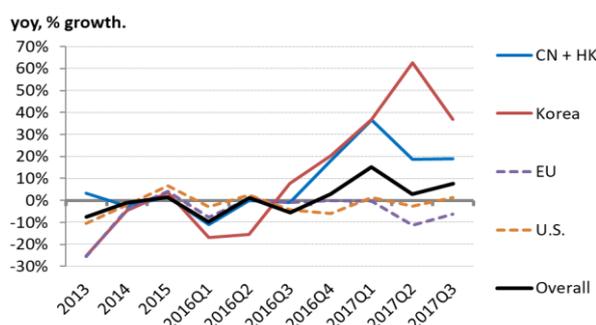
**7. Merchandise exports have rebounded strongly after a few years of decline, broadly in line with the recovery from the weaker global trade performance in recent years.** International trade, including non-oil domestic exports (NODX), has rebounded since Q4 2016, after lackluster performance in the preceding years (Figure 6). The recovery of exports was led by strong demand for semiconductors and specialized machinery. Growth in exports to China (including Hong Kong, China) and Korea have been particularly strong compared to the U.S. and EU (Figure 7). In the coming quarters, exports of electronics products will likely remain buoyant, exports of chemicals are expected to remain firm, led by a recovery in the petrochemical segment from a low base in 2016, and exports of pharmaceutical products are expected to be volatile and on an upward trajectory in the long term.

**Figure 6. Growth of non-oil domestic exports NODX by Product (in SGD)**



Source: IE Singapore, CEIC, AMRO staff calculations

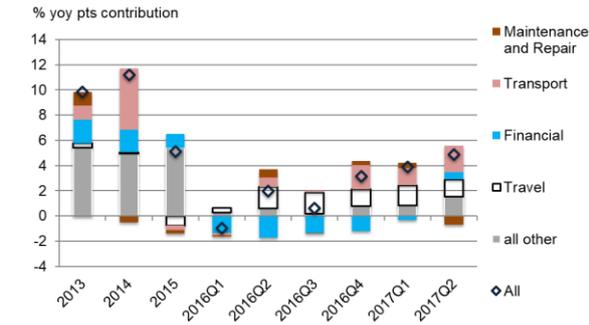
**Figure 7. Growth of NODX by Destination (in SGD)**



Source: IE Singapore, CEIC, AMRO staff calculations

**8. Services exports grew strongly in H1 2017, led by transport and travel (Figure 8).** Services exports has been gaining momentum since Q4 2016, reflecting a turnaround in international trade and increased tourism arrivals. There has also been a gradual recovery in other business and financial services, with a turnaround in cross-border bank loans and an improvement in headquarter offices and business activities.

**Figure 8. Growth of Service Exports (in SGD)**

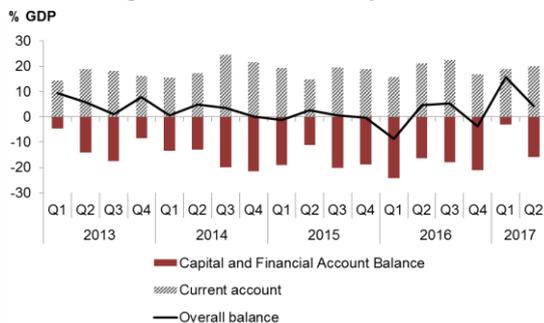


Source: DOS, CEIC

**9. Singapore has benefited from the growth of ASEAN, including CLMV (Cambodia, Laos, Myanmar, and Vietnam) economies.** Singapore will be assuming the ASEAN chairmanship in 2018. Recently, the authorities have identified opportunities offered by the digital economy and should continue to commit to trade and regional integration. According to our study (selected issue, The Changing Dynamics of Singapore Capital Goods Exports), Singapore has accounted for a significant share of intra-ASEAN trade, especially capital goods trade; it has benefited greatly from higher investment demand in this region (ASEAN plus Three) and will continue to do so, including the CLMV economies.

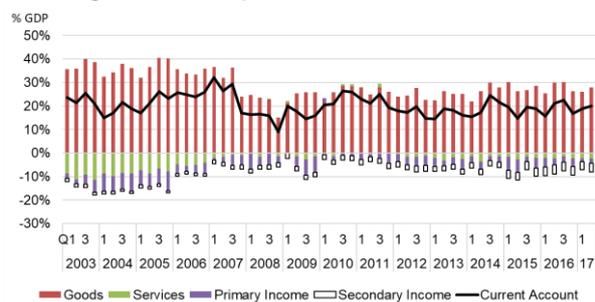
**10. Singapore continued to maintain a strong external position with a large current account surplus (Figure 9).** With strong growth of both exports and imports, Singapore’s current account surplus remained large at 19.5 percent of GDP as of H1 2017. The goods surplus remained higher in the period after the GFC than before, notwithstanding the decline in global trade. Exports of goods continued to exceed imports, even as the goods surplus as a share of GDP has been lower after the GFC (Figure 10)<sup>5</sup>, reflecting sustained strength in GDP growth.

**Figure 9. Balance of Payments**



Note: There has been a change in sign convention for the financial account, based on BPM6. A positive sign now indicates an increase in assets or liabilities, and net outflows in net balances. For ease of display, this figure still uses the BMP5 sign conventions.  
Source: DOS, CEIC

**Figure 10. Components of the Current Account**

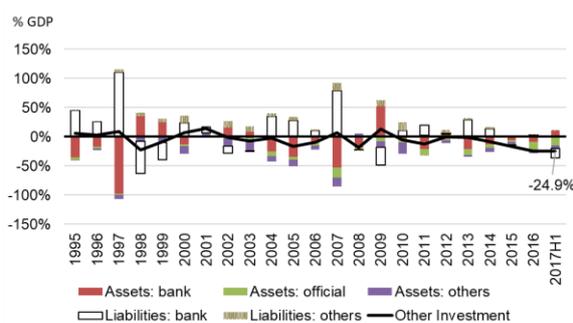


Source: DOS, CEIC

<sup>5</sup> While figure 10 showed that the goods surplus as a share of GDP was lower after the GFC, the goods surplus still grew, although less so than GDP.

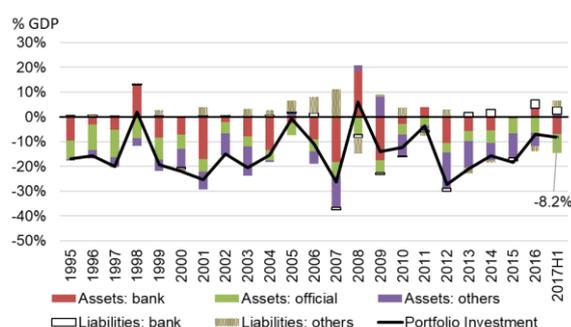
11. At the same time, the capital and financial account is in deficit (Figure 9), in particular, the “other investment” account (Figure 11). In “other investment”, banks play an active role. In years of strong regional growth, such as 1995-1997, 2004-2007, 2013-2014, as a financial center, Singapore-domiciled banks played an important intermediary role for cross-border funding. This has not been the case in 2015-2016, as the regional demand for loans, especially cross-border trade finance, remained subdued. In H1 2017, BOP statistics suggest that banks saw a net withdrawal of overseas lending (or assets) in 1H 2017, and they also reduce their borrowings from overseas, which resulted in a decline of liabilities incurred by banks and hence, a greater “other investment” deficit. At the same time, the deficit in the portfolio investment account in H1 2017 was smaller than the average for the 2010-2016 period (Figure 12).<sup>6</sup>

Figure 11. Components of the Other Investment Account



Note: Similar to Figure 9, for ease of display, this figure still uses the BMP5 sign conventions.  
Source: DOS, CEIC

Figure 12. Components of the Portfolio Investment Account



Note: Similar to Figure 9, for ease of display, this figure still uses the BMP5 sign conventions.  
Source: DOS, CEIC

### A.3 Labour, Inflation and Monetary Policy

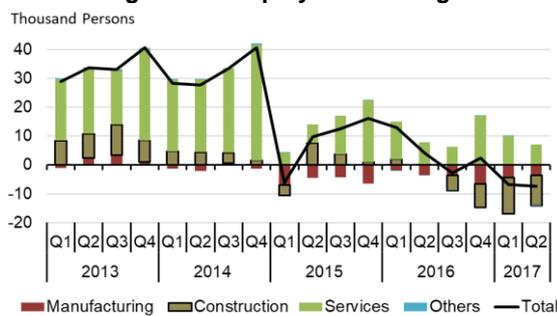
12. Labor market has slackened with net job losses in H1 in the manufacturing and construction sector, while hiring expectation is positive in some service sectors. Despite an improvement in the economic outlook, employment contracted in H1 2017, mainly in the manufacturing and construction sectors (Figure 13). In particular, employment declined among work permit holders.<sup>7</sup> The weakness in manufacturing employment is attributed to the marine and offshore engineering segment. On the other hand, overall job vacancy rose slightly in H1 2017 from a multi-year low in Q4 2016, led by clusters with robust growth. At the same time, retrenchments, which had risen for a few years, declined in H1 2017, lower than H1 2016 (Figure 14), while the seasonally-adjusted number of job vacancies increased. In H1 2017, the six-month re-entry rate into employment of retrenched residents was comparable to H1 2016, although the re-entry rates were lower among those aged 50 and over, degree holders

<sup>6</sup> In portfolio interment, the changes in asset have been much higher than liabilities (Figure 11), therefore the volatility is dominated by Singapore entities' investment overseas.

<sup>7</sup> Work permits are for foreign workers from approved source countries working in the construction, manufacturing, marine shipyard, process or services sectors, and the duration of these permits is up to two years, depending on other factors.

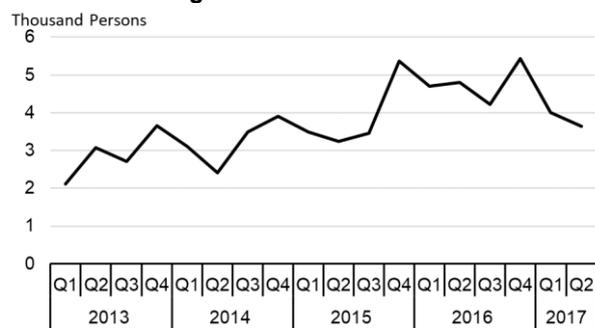
and Professional, Manager, Executives and Technicians (PMET). As a measure of the aggregate degree of tightness or slack in the labour market, the seasonally-adjusted ratio of job vacancies to unemployed persons has improved in Jun 2017. Moving forward, PMET could potentially see higher re-entry rates alongside the pickup in vacancies. The Government’s “Adapt and Grow” initiative, which includes various Professional Conversion Programmes, will help workers with a mismatch of skills enhance their re-employability. Moreover, according to the latest business expectation survey by DOS and EDB, while still muted in the manufacturing sector,<sup>8</sup> hiring expectation is positive in the services sector. On balance, while structural challenges will continue to weigh on the labor market, the labor market will gradually improve with growth and restructuring.

**Figure 13. Employment Change**



Source: Manpower Research & Statistics Department, Ministry of Manpower (MOM)

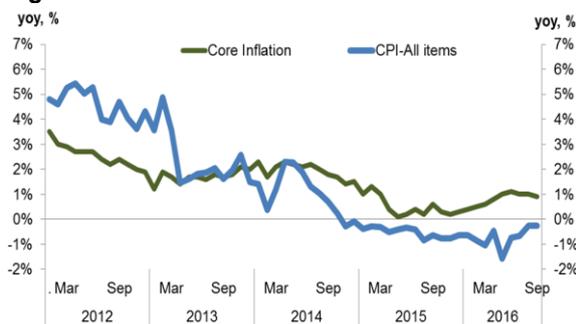
**Figure 14. Retrenchment**



Source: Manpower Research & Statistics Department, MOM

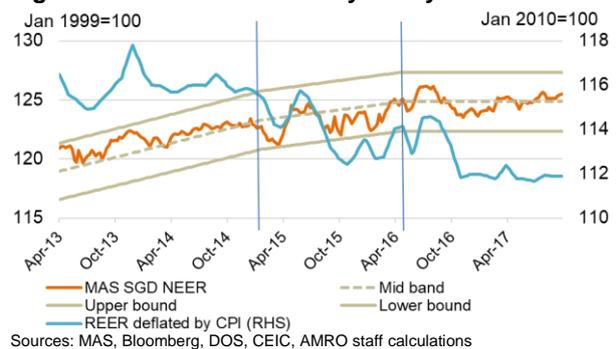
**13. The labor market continues to grapple with structural challenges, although a number of indicators suggest that the labor market has been improving in recent quarters.** Appendix 5 discusses Singapore’s labor market challenges. Wage pressures are unlikely to accelerate in the near term as the accumulated slack in the labour market will take time to be absorbed.

**Figure 15. CPI Inflation and MAS Core Inflation**



Source: DOS, CEIC

**Figure 16. Estimated Monetary Policy Band**



Sources: MAS, Bloomberg, DOS, CEIC, AMRO staff calculations

**14. Inflation has picked up recently but remains low.** MAS core inflation<sup>9</sup> has increased from 0.9 percent for the whole of 2016 to 1.5 percent in Q3 2017 (Figure 15) due to a recovery

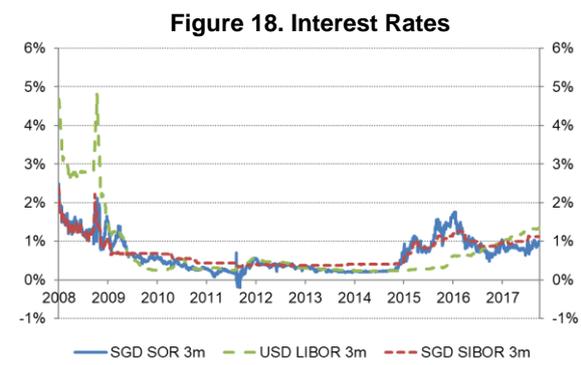
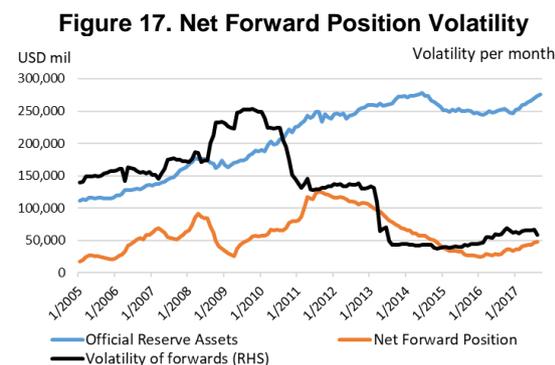
<sup>8</sup> This is largely due to the marine and offshore engineering cluster.

<sup>9</sup> MAS core inflation excludes the costs of accommodation and private road transport.

in energy prices as well as administrative measures. At the same time, headline inflation has also increased but it has been volatile in recent months due to the timing of the service and conservancy charges (S&CC) rebate. Singapore Management University’s quarterly survey suggests that inflation expectations rose in Q1 and Q2 2017 from Q4 2016, after falling to a multi-year low in Q3 2016. However, the increase in unit labor cost is moderating, reflecting the slack in the labor market. Domestic demand-driven inflationary pressures will likely be restrained and hence core inflation is likely to remain low in the coming quarters.

**15. Monetary policy has been accommodative since April 2016, supporting the economic recovery.** Monetary Authority of Singapore (MAS) eased monetary policy in April 2016 by flattening the Singapore dollar NEER policy band. Policy parameters, such as the slope of the band, have been kept unchanged since then. As indicated in both the October 2016 and April 2017 monetary policy statements (MPS), such a neutral policy stance is needed or appropriate for an extended period and consistent with medium-term price stability. The October 2017 MPS also kept the same policy parameters. Singapore’s inflation has been lower than that in its trading partners, which has caused the REER to trend down (Figure 16), which implies that business costs have fallen compared to its major trading partners.

**16. Singapore’s net forward position has been stable since 2014, reflecting the reform of MAS money market operations.** After the GFC, MAS accumulated a large positive net forward position, due to strong capital inflows (Figure 17), and it subsequently unwound the forward position from 2012 to 2016. The net forward position has been quite stable since 2014 and volatility has been low<sup>10</sup> (Figure 17), partially due to the reform of MAS monetary market operations,<sup>11</sup> as MAS bills have grown in importance as an instrument in recent years, and especially relative to FX swaps. This has reduced the need for MAS sterilized intervention.



**17. Interest rates in Singapore have been low and increased only slightly since Q3 2016, despite a 75 basis points increase in the U.S. federal funds rate (Figure 18).**

<sup>10</sup> Volatility is calculated as follows:  
 let  $S(t) := R(t) + F(t)$ , where  $R(t)$  is the official reserve assets at month  $t$ , and  $F(t)$  is the net forward position;  
 let  $DF(t) := F(t) - F(t-1)$ ;  $Y(t) := DF(t)/S(t)$ ;  
 then volatility plotted on Figure 17 is the standard deviation of  $Y(t)$ , based on a 24-month rolling moving window.  
<sup>11</sup> See “Box C Review of MAS Money Market Operations in FY2014/15”, MAS Macroeconomic Review, October 2015.

Although the Federal Reserve has hiked the interest rate by 75 basis points since December 2016, Singapore dollar interest rates have remained stable and low. While the 3-month SIBOR had been higher than 3-month USD LIBOR from early 2015 to the middle of 2016, SIBOR has become lower than LIBOR since early 2017, as liquidity has been abundant while the SGD has strengthened against the USD.

#### A.4 Financial System

**Table 1. Financial Soundness Indicators**

	2016 Q1	2016 Q2	2016 Q3	2016 Q4	2017 Q2		
	for all banks in Singapore				DBS	OCBC	UOB
Total Risk-Based Capital Ratio (%)	16.4	16.6	16.9	16.5	16.5	16.1	17.8
Tier 1 Risk-Based Capital Ratio (%)	14.1	14.4	14.7	14.3	15.2	13.9	14.3
Nonperforming Loan (NPL) Ratio (%)	1.16	1.33	1.39	1.49	1.5	1.3	1.5
Housing Loan NPL Ratio (%)	0.4	0.4	0.4	0.4	n.a.	n.a.	n.a.
Oil and Gas Exposures (% of Loans)	n.a.	n.a.	n.a.	n.a.	5.4*	5.8*	4.2*
Nonperforming Asset (NPA) Allowances (% Coverage of NPAs)	n.a.	n.a.	n.a.	n.a.	100	101	113
Liquidity Coverage Ratio (LCR) (%) All Currency	n.a.	n.a.	n.a.	n.a.	150	144	154**
LCR (%) SGD	n.a.	n.a.	n.a.	n.a.	509	260	232**

Note: From 2016 Q1 to 2016 Q4, all banks in Singapore are included and not just local banking groups.

\* The oil and gas exposure is as of end 2016.

\*\* UOB's LCR ratios are as of Q1 2017.

Source: The NPL ratio and housing loan NPL ratio are from MAS. The oil and gas exposures for individual banks are from banks' websites. Other individual bank information is from Bloomberg and AMRO staff calculations. The remaining information is from the IMF financial soundness indicators.

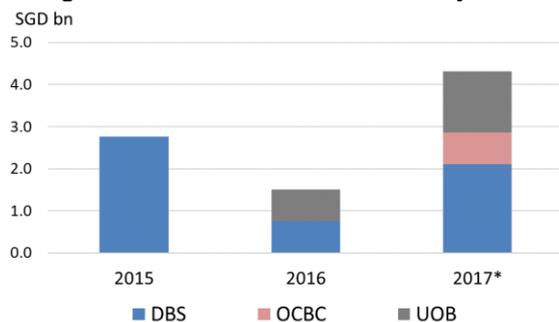
**18. Banks have a high capital adequacy ratio and overall liquidity is abundant.** As of Q2 2017, the local banking groups are well-capitalized with high risk-based capital adequacy ratios (Table 1). While the nonperforming loan (NPL) ratio has edged up in 2016 and remained at 1.4 percent in both Q1 and Q2 2017<sup>12</sup>, it is still low and will likely to stabilize soon<sup>13</sup>. In addition, Singapore's banking system has remained liquid. In 2015, banks were actively offering fixed deposits with attractive promotional rates; however, anecdotal evidence suggests that banks have been less keen to do so in recent months as their liquidity profiles have further improved, and their liquidity coverage ratio (LCR) has increased and well above the regulatory requirement<sup>14</sup>. Since 2015, to obtain long-term foreign currency funding, local banks have been issuing foreign currency denominated covered bonds (Figure 19), backed by mortgage portfolios. These covered bonds reduce local banks' reliance on the FX swap market for foreign currency funding and mitigate liquidity risk.

<sup>12</sup> This is an equally weighted average amongst three banks. This number is different from the Table 1, as Table 1 includes all banks.

<sup>13</sup> This is because (1) the economy is recovering; (2) the trend of banks' NPL formation is highly persistent and it has stabilized; (3) while the exposures to the upstream oil and gas service borrowers will continue to weigh on banks' asset quality, most of the vulnerable credit exposures have been recognized as NPL, and loan loss provisions have also been made to this sector; and (4) the credit growth has also rebounded, and there will be a clear strong pick-up in housing loan, whose NPL rate is very low.

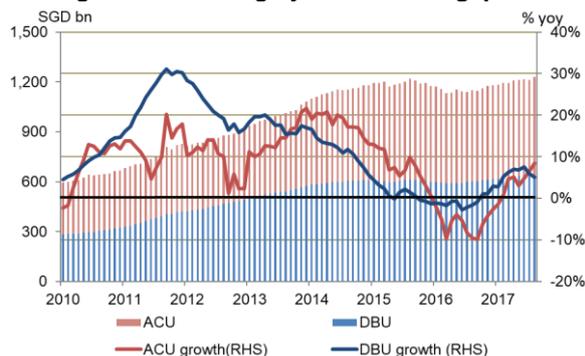
<sup>14</sup> While the overall LCR ratios of local banks are high, structurally, the all currency LCR is much lower than the SGD LCR, as Singapore banks still have more than sufficient SGD liquidity, but less sufficient foreign currency liquidity, and local banks still rely on the FX swap market to obtain some foreign currency liquidity.

Figure 19. Covered Bond Issuance by issuer



Note: \* 2017 data is up to Sep 4<sup>th</sup> 2017  
Source: Bloomberg, AMRO staff calculations

Figure 20. Lending by Banks in Singapore



Source: MAS, AMRO staff calculations

**19. Both corporates and household loans are expected to increase in the coming quarters.** Lending by Singapore banks bottomed out in the middle of 2016 and has been growing at an accelerating pace since then (Figure 20). In particular, the demand for trade finance has bottomed with a turnaround in international trade. According to anecdotal reports, Singapore banks are also increasingly involved in ASEAN infrastructure projects including power plants, transport and water treatment plants. In terms of lending to households, transaction volume of private residential properties has surged since early 2017, and mortgage loans are poised for stronger growth in the coming quarters<sup>15</sup>. At the same time, deposits have also continued to grow, and the loan-to-deposit ratios remain largely stable.

**20. Banks' profitability will also continue to improve due to both net interest income and non-interest income.** With higher loan growth, a stabilizing NPL ratio and possibly also a slight improvement in net interest margins<sup>16</sup>, local banking groups will see higher net interest incomes. At the same time, non-interest income will also continue to grow. In particular, Singapore's wealth management business will benefit from the rapidly growing wealth in this region, while the assets under management of local banking groups have also reached a critical scale for higher profitability.

**21. Singapore's banking sector has been proactive in digitalization and these efforts are bearing fruit.** Banks have been building data warehouses, and data analytics, digital payments and processing capabilities. Those efforts are gradually showing tangible results. A noteworthy development in July 2017 was seven banks in Singapore coming together to launch PayNow, which is a new, efficient peer-to-peer funds transfer service<sup>17</sup>. MAS has also adopted a regulatory sandbox approach, which enables financial institutions as well as

<sup>15</sup> There is a lag between a housing transition and its mortgage disbursement.

<sup>16</sup> Fed rate hikes will lift interest rates and slightly increase the net interest margin.

<sup>17</sup> PayNow enables sending and receiving Singapore Dollar funds almost instantly from one bank to another by using just the recipient's mobile number or Singapore NRIC/FIN.

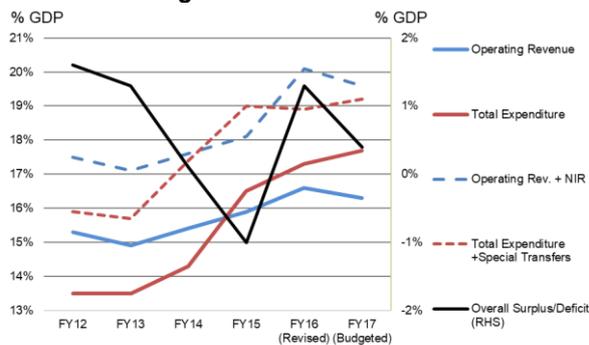
FinTech players to experiment with innovation, but within a well-defined space and for a specific duration.

**22. The picture is also generally positive for other types of financial activity.** Aside from a turnaround in bank lending, in the first eight months of 2017, the Straits Times Index gained 13.8 percent<sup>18</sup>—among the best in the region—and it coincides with a higher SGX turnover. At the same time, fund management and insurance segments continued to be strong. However, FX turnover and SIMEX turnover growth remained subdued, due to muted demand from the region.

**A.5 Fiscal Position**

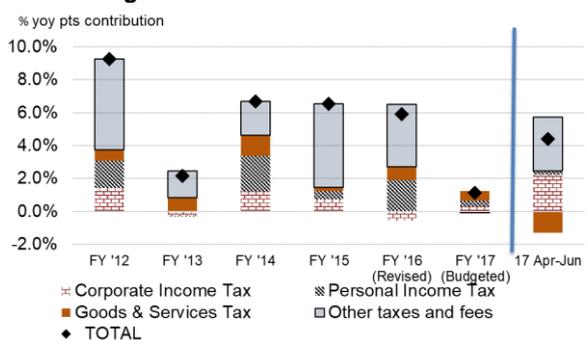
**23. The government has continued to use fiscal policy to support recovery and restructuring of the economy (Figure 21).** In FY2017, total expenditure is set to expand to 17.7 percent of GDP, from 17.3 percent in FY2016. However, operating revenue is expected to decline to 16.3 percent of GDP in FY2017.<sup>19</sup> As such, the primary deficit is expected to widen from 0.7 percent of GDP in FY2016 to 1.3 percent of GDP in FY2017. With lower expected long-term real returns, net investment returns contribution also fell slightly in FY2017. As a result, the overall balance is expected to be a surplus of 0.4 percent of GDP in FY2017, lower than in FY2016. This expansionary fiscal policy should help support the nascent recovery, and more importantly, help the restructuring of the economy

**Figure 21. Fiscal Position**



Note: NIR is net investment returns contribution  
Source: Ministry of Finance and DOS

**Figure 22. Fiscal Revenue Growth**



Source: Ministry of Finance and DOS

**24. Budget 2017 builds on the economic restructuring strategies proposed by the CFE.** In addition to addressing headwinds and managing the economic transition, budget 2017 also proposed initiatives to meet the CFE vision<sup>20</sup>. It aims to strengthen enterprises' capabilities, and encourage the adoption of digital solutions through measures such as SME Go Digital, and support them to scale up globally and innovate, through the

<sup>18</sup> This excludes dividend.

<sup>19</sup> In dollar terms, operating revenue is expected to increase by 1.1%.

<sup>20</sup> See Appendix 8, Summary of Report of the Committee on the Future Economy.

Global Innovation Alliance. It also aims to deepen people's capabilities through the Skills Future Leadership Development Initiative. In addition, it also proposes partnerships among enterprises of different sizes and forward-looking regulations, and provides funding to enhance construction productivity.

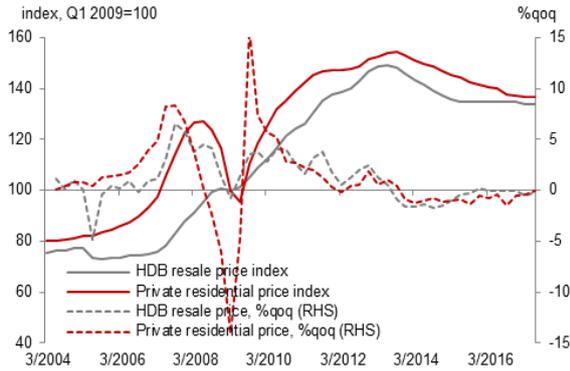
**25. Fiscal policy also continues to address near-term headwinds and the building of a caring and inclusive society.** Budget 2017 provides support for businesses, especially those affected by restructuring, through measures such as the corporate income tax rebate. As the economic recovery is still nascent and uneven, fiscal support will help ensure that the recovery is sustained. The budget also proposes measures to build an inclusive society, strengthen community bonds and support families, such as higher grants for buying a resale HDB (The Housing & Development Board) flat. Separately, the Prime Minister announced in August that the government will increase spending on the pre-school sector, so that by 2022, the public spending will double to SGD 1.7 billion a year from the current level.

**26. In Q2 2017, both expenditure and operating revenue were on track to meet their targets.** From April to June, total expenditure grew moderately by 2.1 percent, as development expenditure declined compared to the same period last year. At the same time, operating revenue grew modestly at 4.4 percent. As Appendix 1B shows, both expenditure and operating revenue are on track to meet their FY 2017 targets.

## **A.6 Property market**

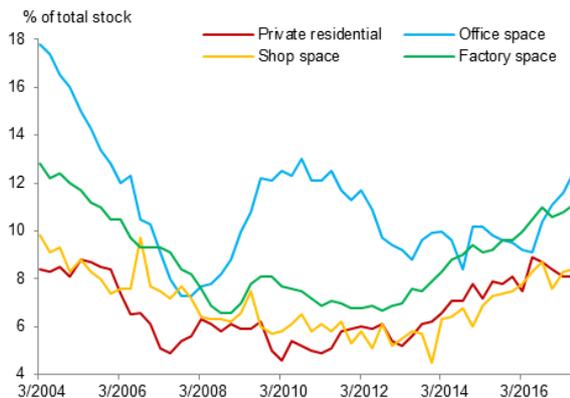
**27. Recent data point to some early signs of recovery in the residential property segment.** HDB resale and private residential prices have been close to the bottom, as both price indices retreating marginally by 0.1 percent qoq in Q2 2017 (Figure 23) and the recent release points to a modest increase in private residential prices in Q3 2017. Transaction volume, meanwhile, has picked up from the low levels seen in 2014-2015. In particular, the number of private residential transactions in the first half of 2017 jumped by more than 60 percent from a year earlier (Figure 24). Going forward, downward pressures on residential property prices may dissipate in tandem with improved market sentiment and a moderation in the supply pipeline. Underlying demand is expected to remain resilient, as household formation continues to be supported by a growing population and smaller average household size.

**Figure 23. Housing Prices**



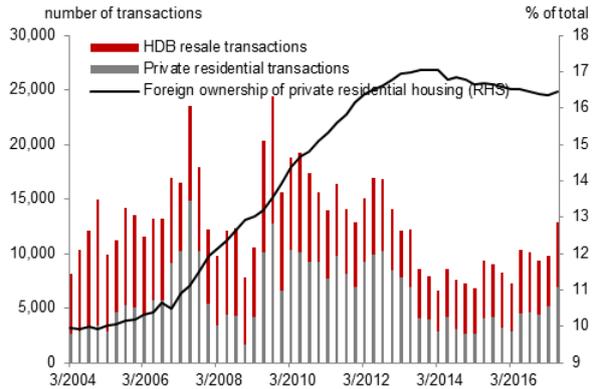
Sources: URA, HDB, CEIC, AMRO staff calculations

**Figure 25. Vacancy Rates**



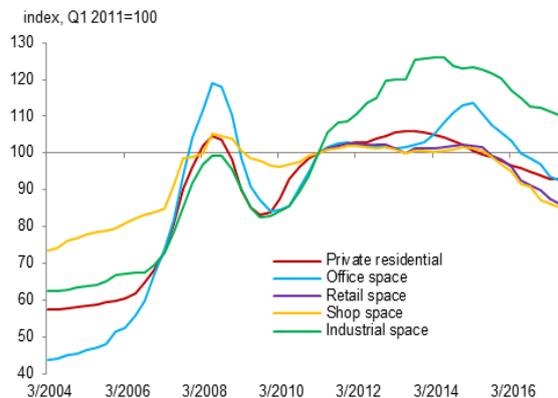
Sources: URA, CEIC, and AMRO staff calculations

**Figure 24. Housing Transactions**



Sources: URA, HDB, CEIC, AMRO staff calculations

**Figure 26. Rental**



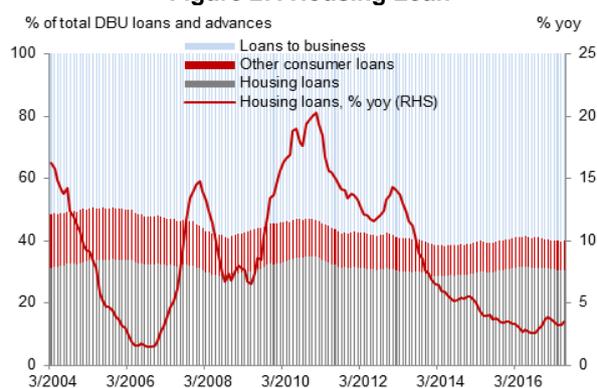
Sources: URA, CEIC, and AMRO staff calculations

**28. The correction in the commercial property segment, meanwhile, remains ongoing.** In the office space market, demand has generally lagged behind supply which has been boosted with the recent completion of several large-scale office space projects.<sup>21</sup> The office space vacancy rate has remained elevated and rents have continued to moderate (Figure 25 and 26). The retail space market has been hit even harder, with the rental index in Q3 2017 declining by 5.4 percent from a year earlier, as the traditional retail sector continues to adjust amid the emerging e-commerce and online shopping boom. The recent pick-up in economic activity may lend some support to the commercial property market which has been expected to remain soft in the short-run.

<sup>21</sup> Examples of these projects are the Guoco Tower and Marina One office buildings.

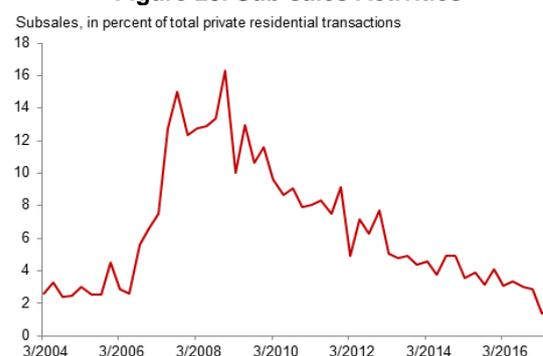
**29. Macroeprudential measures rolled out since 2009 have been effective in curbing speculation in the property market and excessive leverage among households.** The authorities introduced a number of macroprudential measures—also known as property cooling measures—between 2009 and 2013, including the imposition of stamp duties, lowering of the loan-to-value (LTV) limit, and introducing a total debt service ratio (TDSR) ceiling of 60 percent of gross monthly household income. Growth in housing loans has moderated significantly since 2011, has been at around 4 percent yoy in the past few quarters (Figure 27). The housing loan NPL ratio has stayed low as well. Meanwhile, the house price-to-income ratio has come down significantly since 2014 (Appendix 2. C.). The volume of transactions and prices of private residential properties have both moderated from peak levels seen during 2009-2013, with the share of sub-sales<sup>22</sup> in total transactions—an indicator of speculative flipping—falling to a record low in early 2017 (Figure 28). Against this backdrop, the authorities have tweak regulations related to sellers’ stamp duties, which were introduced to prevent such speculation, while reiterating their intention to keep other existing cooling measures intact.

**Figure 27. Housing Loan**



Sources: MAS, CEIC, and AMRO staff calculations

**Figure 28. Sub-sales Activities**



Sources: URA, CEIC, and AMRO staff calculations

## B. Risks and Vulnerabilities

### B.1 Rise in Trade Protectionist Sentiments

**30. Downside risk to growth stem from a rise in trade protectionist sentiments.** Trade protectionist sentiments could heighten, with protectionist measures undermining the current recovery in global trade. This would, in turn, lead to a downturn in growth for a small and open economy such as Singapore.

<sup>22</sup> A sub-sale happens if the purchaser sells the unit while the unit has not been completed for living.

**31. A noteworthy risk is rising trade tensions between the U.S. and China.** A rising trade tension between the U.S. and China could lead to the imposition of protectionist measures and jeopardize the export recovery and growth prospects for our region.

#### ***Authorities' views***

**32.** The global economy and world trade are expected to be on a firmer footing to recovery in 2017. Although anti-globalisation sentiments could adversely affect global trade, the potential for such a risk to have a significant impact on global growth has eased compared to the earlier part of 2017.

### **B.2 A Sharp Decline in Energy Prices**

**33. A sharp fall in energy prices could also hurt Singapore through spillover effects from energy-exporting countries.** While Singapore is an energy importer and could benefit from a fall in energy prices, a sharp fall in energy prices that hurt the economies of energy-exporting countries could have a negative spillover effect on Singapore's economy through a decline in demand for marine and offshore engineering. Marine and offshore engineering has been a considerable component of Singapore's manufacturing sector, accounting for 7.0 percent of total manufacturing output in Singapore in 2015, however, its output has declined by 61.0 percent from the peak in Q4 2013 to Q2 2017.

**34. A sharp fall in energy prices could also affect banking sector due to higher NPLs in the upstream sector of the oil and gas industry.** Singaporean banks lend a sizable amount to oil and gas sector, both to Singaporean and foreign entities, although risks remain manageable. Exposure to this sector accounts for about 4-6 percent of Singapore's total loans, including about 2 percent to the vulnerable upstream and offshore support sectors. While banks have already largely provisioned for the NPLs in this sector, lower energy price will depress the value of the collaterals, which will further erode banks' asset quality.

### **B.3 Elevated Corporate and Household Debt and A Sharp Rise in Interest Rates**

**35. Corporate and household debt levels in Singapore are relatively high, and some segments are vulnerable to a sharp spike in interest rates.** After the GFC, both corporates and households in Singapore have leveraged up in the low interest rate environment. As of Q1 2017, household debt has stabilized at a high level, similar to other advanced economies (Figure 29). At the same time, non-financial corporate debt has reached 118 percent of GDP (Figure 30). While the elevated household debt reflects high home ownership in Singapore and the elevated corporate debt is partially due to Singapore's status as a financial center,

certain segments of households and corporates have become more vulnerable to a sharp rise in interest rates. The majority of corporate and household debt are priced in relation to SIBOR and SOR, which generally move in tandem with USD LIBOR.<sup>23</sup>

Figure 29. Household Debt-to-GDP Ratio

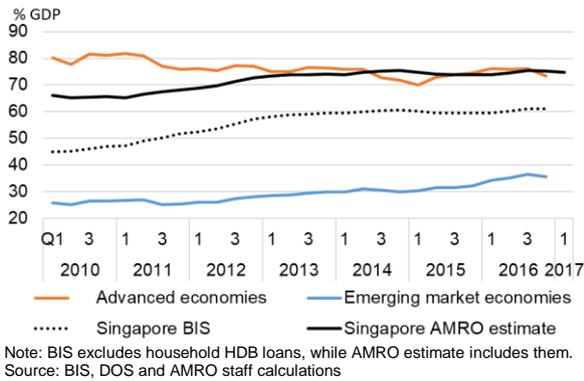
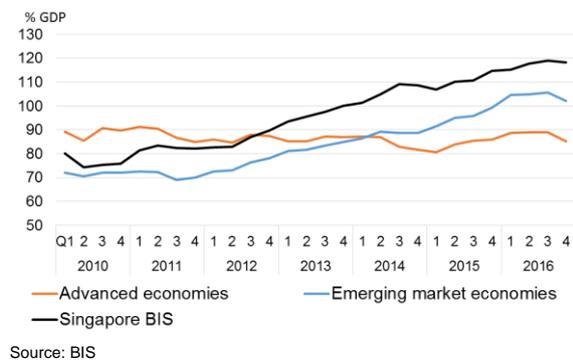


Figure 30. Non-Financial Corporate Debt-to-GDP Ratio



**Authorities' views**

**36. Low interest rates could drive risk-taking behavior, although Singapore has remained largely resilient.** Based on MAS study and stress test, Singapore’s banking system is strong while continued vigilance is warranted. Corporate balance sheets remain resilient. Most firms should be able to service their debt, although there are pockets of vulnerabilities. Firms should review their debt profiles and reduce leverage over time. Households continue to deleverage. Mortgage servicing burdens remain manageable for most households due to conservative interest rate assumptions used under the TDSR framework. Households are taking steps to mitigate risks from rising mortgage rates, as seen by rising share of households taking fixed-rate loans and loans linked to household deposit rates which are more stable.

**B.4 Cyber risks**

**37. Cyber risks are emerging in tandem with the upsurge in digital technology innovations, internet banking, the sharing economy and the Internet of Things.** In particular, as a financial center, cyber-attacks can be extremely damaging to financial institutions in Singapore. While it is difficult to quantify the impact of such potential “black swan” events, corporates with insufficient measures for cyber security are more vulnerable. A study by Deloitte<sup>24</sup> also highlighted a lack of human resources capabilities in Asia Pacific, making the issue harder to deal with. The MAS has taken an active interest in enhancing cyber security and working closely with the banks in Singapore to build up their cyber security capacity so that they are prepared for cyber-attacks.

<sup>23</sup> The U.S. 10-year sovereign bond yield is still below 2.5 percent and the volatility has been low. Hence, the market implied probability of a rapid Fed rate hike is not very high. However, as some borrowers are sensitive to interest rates, this remains a key risk scenario.  
<sup>24</sup> Deloitte Cyber Regulation in Asia Pacific report, 2017.

**Authorities' views**

**38. Cyber-attacks are a growing threat to the financial ecosystem, and FinTech could potentially accentuate this risk.** As more financial services are delivered over the internet, there will be growing security and privacy concerns from cyber threats. Cyber risk management will be the new frontier for global regulatory efforts and supervisory co-operation. MAS is preparing regulatory and supervisory frameworks for the technological changes sweeping the industry - addressing new risks while promoting innovation, harnessing the benefits of technology, and promoting growth and opportunity in our societies<sup>25</sup>.

**C. Policy Recommendations****C.1 Economic Restructuring and Supportive Fiscal Policy**

**39. The Committee on the Future Economy (CFE) and Future Economy Council (FEC) were set up to develop and implement strategies to meet the challenges of the shifting global environment and changing demographics.** CFE has proposed seven mutually-reinforcing strategies (Appendix 8), which are aimed at building a vibrant and resilient economy, with strong digital and enterprise capabilities to innovate and scale up. While the CFE report provides the strategic direction, the FEC is now overseeing the implementation of the CFE recommendations, and will build on the work of the earlier Council on Skills, Innovation and Productivity, which includes SkillsFuture initiatives and the Industry Transformation Maps.

**40. Various government agencies have been tasked with developing and implementing sectoral initiatives to realize the vision of CFE.** For example, EDB, IE Singapore and SPRING are leading half of the 23 Industry Transformation Maps. The agencies are also working together to foster collaboration between SMEs and large organizations including government agencies in areas such as knowledge transfer, capability upgrading and the development and test-bedding of innovative solutions through the Partnership for Capability Transformation (PACT), enabling Singapore enterprises' access to private cross-border project financing with the extension of the Internationalisation Finance Scheme (IFS) to catalyse non-recourse financing, as well as deepening linkages with overseas networks and partners via the Global Innovation Alliance (GIA); Ministry of Education is working with various stakeholders and government agencies to design and implement a Continuing Education and Training (CET) system to encourage learning and acquiring of new skills throughout life, such as SkillsFuture. The agencies are monitoring, reviewing and

<sup>25</sup> For example, MAS collaborated with Financial Services Information Sharing and Analysis Center and established an Asia Pacific (APAC) Regional Intelligence and Analysis Center to encourage regional sharing and analysis of cybersecurity information within the financial services sector.

tracking the performances of these initiatives; and at the same time, learning and adapting through implementation.

**41. Considering the changing demographics, rapid shifts in technology and shortening skill cycles, the authorities have taken active policy measures to address these challenges, which will need to be continued.** Recognizing the changing demographics—particularly an aging population, and the need to balance socioeconomic policy objectives, the government has initiated a multi-year restructuring effort to steer the country towards a labor-lean, high productivity and innovation-based economy. This includes adopting new technologies, and facilitating the creation of new jobs in the sharing economy. While there are also job “missed matches” and growing issues of skills mismatches in the process of economic transformation, supportive policies have been adopted to facilitate the labor market adjustment such as through the SkillsFuture initiatives, Career Support Programme, Career Advisor Programme, Professional Conversion Programme and career fairs. Such active policy measures are welcomed and should continue. In particular, the tripartite collaboration between the unions, employers and the government, will continue to be key in the successful implementation of these initiatives (see selected issue— Singapore’s Labor Market Challenges).

**42. The Budget FY2017 is appropriately expansionary, as the economic recovery is still nascent and uneven and there are structural challenges.** Fiscal spending is budgeted to increase in FY2017 to foster an innovative and connected economy with inclusive growth. The FY2017 Budget builds on efforts of economic restructuring proposed by the CFE, such as the SMEs Go Digital Programme and Tech Access Initiative, among many others. The FY2017 Budget also pays attention to near-term headwinds and provides help for those affected by restructuring. Given that revenue for FY2017 is projected to grow by only 1.1 percent and contributions from net investment returns contribution are also lower, fiscal expenditures should continue to target measures to support economic restructuring. At the same time, the FY 2017 Budget also continues the goal of building an inclusive society, and it introduces measures to correct for externalities and distortions in the energy and water markets.

### ***Authorities’ views***

**43. Singapore is undergoing a key transition as its economy matures and fiscal measures will be taken to help to build capacity and partnerships.** Singapore should develop strong capabilities in its firms and workers. In addition, the government, businesses, unions, firms and workers must forge deep partnerships. The government can maintain a good

balance between state action and community initiative. Singapore will take a learning and adaptive approach, try new methods, continue with them when they work well, cut losses when they do not, and draw on feedback and experience to adjust and refine its plans.

## C.2 Accommodative Monetary Policy

**44. The authorities should continue to maintain an accommodative monetary policy to support the economy in view of the low inflation outlook in the coming quarters.**

Given the nascent and uneven economic growth, weakness in the labor market, and low inflation, monetary policy should remain accommodative for now. The current policy band with a zero appreciation slope is appropriate at this juncture.

**45. The MAS has removed the forward guidance in the October 2017 MPS given the strength of recovery, which is appropriate.**

As indicated in both the October 2016 and the April 2017 MPS, a neutral policy stance was needed or appropriate for an “*extended period*”. Such forward guidance reduced uncertainty about future path of monetary policy. As the recovery gained traction, it reduced the risk that SGD NEER would rise prematurely and become a drag on growth. The forward guidance thus helped to secure a recovery of sufficient breath and duration. However, while the current recovery is still nascent, it has gained much traction and broadening rapidly to most sectors, reflecting in part the strong rebound in global trade and capex spending. The labor market condition has also shown signs of pick-up in some sectors. MAS therefore did not reiterate the forward guidance in the October 2017, and we think this is appropriate, and it has prepared the market and the public for a normalization of the policy stance.

### **Authorities’ views**

**46.** MAS had indicated in the October 2016 MPS that the neutral policy stance would be appropriate for an extended period. Given the economic outlook at this stage and consistent with medium-term price stability, MAS will maintain the rate of appreciation of the SGD NEER policy band at zero percent. The width of the policy band and the level at which it is centred will be unchanged.

## C.3 Safeguarding Financial Stability and Macroprudential Measures

**47. In light of the high indebtedness of the households, whereby some segments remain vulnerable to high interest rates, the current macroprudential measures should be maintained.** The overall household debt level in Singapore is much higher than in the period prior to the GFC, while the household debt-to-income ratio has remained stable in the

past 10 years.<sup>26</sup> While the continuing effects of macroprudential measures have reined in household debt and dampened the property market in the past few years, with persistently low interest rates and a turnaround in market sentiments, it is likely that the private residential market will recover in the coming quarters, which could lead to a strong transaction volume and also higher household debt. Higher household debt, in particular debt priced with floating rates, will make households sensitive to a spike in interest rates. Therefore, the authorities should maintain the macroprudential measures and be prepared for the scenario of an unexpected sharp spike in interest rates.

**48. Maintaining the current macroprudential measures will also control the risk profile of mortgages.** The current macroprudential measures address potential vulnerabilities from different perspectives. Not only will it help to control the overall household debt, but it will also help to control the risk profile. The mortgage default rate has remained low at 0.4 percent in recent quarters, as the proportion of high LTV mortgage loans declined and the number vulnerable households with high debt servicing burden also reduced. This needs to be maintained to ensure household and banking sector resilience.

#### ***Authorities' views***

**49. It is not time yet to ease the cooling measures and they remain necessary.** The calibrated adjustments by the government earlier this year were made for very specific reasons and purposes. Over the medium-term, property prices should be aligned with broader income trends in the economy.

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<sup>26</sup> On the other hand, in aggregate, due to high saving rates, household's currency and deposits are higher than total household debt, however, such liquidity buffer is not uniform for all households, and it may concentrate in different segments of households.

## Appendices

### Appendix 1. Selected Economic Indicators for Singapore

#### Appendix 1A. Selected Economic Indicators and Projections, 2012 - 2018

		2012	2013	2014	2015	2016	2017	2018	
								proj.	
<b>Growth</b>									
	Real GDP (%yoy)	3.9	5.0	3.6	1.9	2.0	3.0	2.6	
	Real Private Consumption (%yoy)	3.7	3.3	2.4	4.6	0.6	1.0	1.5	
	Real Public Consumption (%yoy)	-1.5	11.5	0.1	8.0	6.3	5.0	4.0	
	Gross Fixed Capital Formation (%yoy)	8.2	5.7	-1.1	1.1	-2.5	1.5	1.5	
	Exports of Goods & Services	1.4	5.8	4.0	2.6	1.6	6.5	3.5	
	Imports of Goods & Services	2.5	5.9	3.0	2.9	0.3	6.0	3.5	
	Manufacturing (%yoy)	0.3	1.7	2.7	-5.1	3.6	9.5	4.0	
	Construction (%yoy)	11.4	3.0	6.6	3.9	0.2	-5.0	0.0	
	Services (%yoy)	4.7	7.2	3.9	3.2	1.0	1.7	2.2	
	Wholesale & Retail Trade	4.4	6.8	1.9	3.7	0.6	—	—	
	Transportation & Storage	5.0	4.1	3.0	1.6	2.3	—	—	
	Accommodation & Food Services	3.0	3.1	2.3	0.7	1.7	—	—	
	Information & Communications	7.8	8.0	7.4	-0.6	2.3	—	—	
	Finance & Insurance	5.9	17.2	9.1	5.7	0.7	—	—	
	Business Services	4.8	5.6	1.8	3.9	-0.9	—	—	
	Other Services Industries	2.6	2.1	3.9	1.2	3.1	—	—	
<b>Monetary</b>									
	MAS Core Inflation (%yoy)	2.5	1.7	1.9	0.5	0.9	1.5	1.8	
	Consumer Price Inflation (%yoy)	4.6	2.4	1.0	-0.5	-0.5	0.7	1.4	
	Unemployment Rate, Annual Average	2.0	1.9	2.0	1.9	2.1	2.3	2.4	
	3-month SGD Sibor (%end period)	0.4	0.4	0.5	1.2	1.0	1.3	1.6	
<b>Fiscal</b>		FY2012	FY2013	FY2014	FY2015	FY2016	FY2017	FY2018	
	Operating Revenue (% GDP)	15.3	14.9	15.4	15.9	16.6	16.3	—	
	Total Expenditure (% GDP)	13.5	13.5	14.3	16.5	17.3	17.7	—	
	Primary Surplus / Deficit (% GDP)	1.9	1.4	1.1	-0.6	-0.7	-1.3	—	
	Overall Budget Surplus / Deficit (% GDP)	1.6	1.3	0.1	-1.0	1.3	0.4	—	
<b>Balance of Payment</b>									
	Exports of Goods (%yoy)	-0.2	1.2	0.1	-7.0	-4.3	11.0	5.0	
	Exports of Services (%yoy)	6.1	9.8	11.2	5.1	1.2	4.0	3.0	
	Current Account (SGD bn)	62.8	64.0	77.1	73.9	78.1	82.0	75.0	
	Current Account (% GDP)	17.4	16.9	19.7	18.1	19.0	19.0	17.1	
	Capital and Financial Account (SGD bn) 1	-30.7	-42.4	-66.5	-70.8	-81.9	—	—	
	Direct Investment, Net (SGD bn)	46.0	26.4	27.6	53.9	52.1	—	—	
	Portfolio Investment (Net)	-98.5	-79.6	-61.1	-74.8	-28.6	—	—	
	Other Investment (Net)	0.0	-5.6	-34.1	-67.1	-99.0	—	—	
	Overall Balance (SGD bn)	32.6	22.7	8.6	1.5	-2.5	—	—	
<b>Asset prices</b>									
	Straits Times Index (end period)	3,167	3,167	3,365	2,883	2,881	3413	—	
	Property Price Index (2009Q1=100)	151.5	153.2	147.0	141.6	137.2	137.3	—	
<b>Spot Exchange Rate (USD/SGD, period ave.)</b>		1.25	1.25	1.27	1.37	1.38	1.36	—	
<b>Official Reserve Assets (USD bn, end-period)</b>		259.3	273.1	256.9	247.7	246.6	275.4	—	

Note: 1) There has been a change in sign convention for the financial account, based on BPM6. A positive sign now indicates an increase in assets or liabilities, and net outflows in net balances. To be consistent to Figure 9, this figure still uses the previous sign conventions. The numbers in blue cells are as of 9 Oct 2017.

Source: The Singapore authorities, CEIC, AMRO staff calculations

Appendix 1B. Government Accounts <sup>1/</sup>

SGD Billions	FY2013	FY2014	FY2015	FY2016 (Revised)	FY2017 (Budgeted)	2016 Apr-Jun	2017 Apr-Jun
<b>OPERATING REVENUE</b>	<b>57.0</b>	<b>60.8</b>	<b>64.8</b>	<b>68.7</b>	<b>69.5</b>	<b>18.2</b>	<b>19.0</b>
% GDP	14.9%	15.4%	15.9%	16.6%	16.3%		
% yoy	2.2%	6.7%	6.6%	5.9%	1.1%		4.4%
<b>Tax Revenue</b>	<b>51.1</b>	<b>54.1</b>	<b>55.6</b>	<b>58.2</b>	<b>59.4</b>	<b>15.7</b>	<b>16.5</b>
Income Tax	22.1	23.9	24.9	26.2	25.9	8.1	8.5
% yoy	-1.6%	8.6%	4.0%	5.1%	-0.9%		5.8%
Corporate Income Tax	12.7	13.4	13.8	13.4	13.6	5.1	5.5
Personal Income Tax	7.7	8.9	9.2	10.5	10.7	2.7	2.8
Withholding Tax	1.2	1.1	1.4	1.5	1.3	0.3	0.3
Statutory Boards' Contributions	0.5	0.5	0.4	0.8	0.3	0.0	0.0
Assets Taxes	4.2	4.3	4.5	4.4	4.4	0.9	0.9
Customs and Excise Taxes	2.2	2.5	2.8	2.8	3.1	0.5	0.7
Goods and Services Tax	9.5	10.2	10.3	10.9	11.3	2.9	2.7
% yoy	5.3%	7.4%	1.3%	4.9%	3.7%		-8.1%
Motor Vehicle Taxes	1.7	1.6	1.8	2.3	2.7	0.5	0.6
Betting Taxes	2.4	2.6	2.7	2.7	2.7	0.6	0.6
Stamp Duty	3.9	2.8	2.8	2.9	2.7	0.7	1.1
Other Taxes	5.2	6.1	5.9	6.1	6.5	1.5	1.5
<b>Fees and Charges</b>	<b>5.6</b>	<b>6.4</b>	<b>8.7</b>	<b>10.0</b>	<b>9.8</b>	<b>2.3</b>	<b>2.3</b>
Vehicle Quota Premiums	2.7	3.4	5.4	6.9	6.5	1.6	1.6
Other Fees and Charges	2.9	3.0	3.2	3.1	3.3	0.7	0.7
<b>Other Receipts</b>	<b>0.3</b>	<b>0.3</b>	<b>0.5</b>	<b>0.5</b>	<b>0.3</b>	<b>0.1</b>	<b>0.1</b>
<b>TOTAL EXPENDITURE *</b>	<b>51.7</b>	<b>56.6</b>	<b>67.4</b>	<b>71.4</b>	<b>75.1</b>	<b>14.9</b>	<b>15.2</b>
% GDP	13.5%	14.3%	16.5%	17.3%	17.7%		
% yoy	5.6%	9.5%	19.1%	5.8%	5.2%		2.1%
<b>Operating Expenditure</b>	<b>39.7</b>	<b>42.7</b>	<b>48.1</b>	<b>52.7</b>	<b>56.3</b>	<b>9.8</b>	<b>10.9</b>
Education	10.7	10.7	11.2	12.0	12.1	1.1	1.1
Health	5.0	5.9	7.5	8.3	9.2	1.9	1.9
Social and Family Development	1.6	1.7	2.1	2.4	2.4	0.7	0.8
<b>Development Expenditure</b>	<b>12.0</b>	<b>14.0</b>	<b>19.4</b>	<b>18.7</b>	<b>18.8</b>	<b>5.1</b>	<b>4.4</b>
% yoy	-4.6%	16.3%	38.6%	-3.4%	0.3%		-14.3%
Transport	5.5	5.5	10.3	9.3	7.6	3.5	1.8
% yoy	1.7%	-0.3%	88.2%	-9.7%	-18.3%		-48.0%
Trade and Industry	1.9	2.1	2.4	2.9	2.7	0.5	0.4
<b>Primary Surplus/Deficit</b>	<b>5.3</b>	<b>4.2</b>	<b>-2.6</b>	<b>-2.7</b>	<b>-5.6</b>	<b>3.2</b>	<b>3.7</b>
% GDP	1.4%	1.1%	-0.6%	-0.7%	-1.3%		
Less: Special Transfers Excluding Top-ups to Endowment and Trust Funds ***	3.0	3.9	4.4	2.9	2.6	n.a.	n.a.
<b>Basic Surplus / Deficit</b>	<b>2.3</b>	<b>0.3</b>	<b>-7.0</b>	<b>-5.6</b>	<b>-8.2</b>	<b>n.a.</b>	<b>n.a.</b>
Less: Top-ups to Endowment and Trust Funds **	5.6	8.5	6.0	3.6	4.0	n.a.	n.a.
Add: Net Investment Returns Contribution ****	8.3	8.7	8.9	14.4	14.1	n.a.	n.a.
<b>Overall Budget Surplus / Deficit</b>	<b>5.0</b>	<b>0.6</b>	<b>-4.1</b>	<b>5.2</b>	<b>1.9</b>	<b>n.a.</b>	<b>n.a.</b>
% GDP	1.3%	0.1%	-1.0%	1.3%	0.4%	n.a.	n.a.

\* Total Expenditure consists of operating expenditure and development expenditure.

\*\* The government endowment fund is a fund established with an injection of government monies as principal, for which only the income earned will be used to finance specific programs on an ongoing basis. Examples include the Community Care Endowment Fund and Edusave Endowment Fund. The government trust fund is a fund established with an injection of government monies as principal, for which both the principal and income earned on the principal could be drawn down to finance specific programs on an ongoing basis. Examples include the National Research Fund and the GST Voucher Fund.

\*\*\* Refers to discretionary transfers made by the Government and these include one-off direct transfers to businesses and households.

\*\*\*\* Contributions from investment returns on Singapore's reserves, where Net Investment Returns (NIR) is the sum of: (1) up to 50 percent of the expected long-term real returns on the relevant assets specified in the Constitution; and (2) up to 50 percent of the Net Investment Income (NII) on the remaining assets. Through the NIR contributions that supplement the annual Budget, Singaporeans benefit from the investments of GIC and Temasek.

Source: Ministry of Finance, Department of Statistics Singapore

## Appendix 1C. Balance of Payments, 2012-2017

	2012	2013	2014	2015	2016	2017	
						Q1	Q2
<b>Current Account (% of GDP)</b>							
Current Account (CA) Balance	17.4	16.9	19.7	18.1	19.0	19.0	20.0
Goods: Balance	24.6	24.8	26.5	27.9	27.9	26.0	27.9
Goods: Exports	153.1	148.0	143.7	127.9	121.8	125.2	128.2
Goods: Imports	128.5	123.2	117.1	100.0	93.9	99.2	100.3
Services: Balance	-1.2	-2.4	-2.0	-2.0	-2.0	-2.3	-2.3
Services: Exports	44.0	46.2	49.8	50.1	50.4	49.2	51.3
Services: Imports	45.3	48.6	51.7	52.1	52.4	51.5	53.7
Primary Income Balance	-3.7	-3.3	-2.6	-4.4	-3.2	-1.4	-2.0
Secondary Income Balance	-2.4	-2.2	-2.3	-3.4	-3.7	-3.4	-3.7
<b>Capital and Financial Account (% of GDP)</b>							
Capital and Financial Account Balance	8.5	11.2	17.0	17.4	20.0	2.9	15.9
Direct Investment	-12.7	-7.0	-7.1	-13.2	-12.7	-18.5	-11.9
Direct Investment: Assets	6.7	14.4	16.9	10.6	8.0	6.2	5.9
Direct Investment: Liabilities	19.4	21.4	24.0	23.8	20.7	24.7	17.9
Portfolio Investment	27.2	21.0	15.7	18.3	7.0	-0.5	16.9
Portfolio Investment: Assets	28.8	20.5	17.6	16.5	8.2	5.3	22.4
Portfolio Investment: Liabilities	1.6	-0.5	1.9	-1.8	1.3	5.7	5.5
Other Investments	0.0	1.5	8.7	16.4	24.1	31.8	18.0
Other Investments: Assets	6.7	33.8	25.9	14.3	28.5	21.0	-2.2
Other Investments: Liabilities	6.7	32.3	17.1	-2.1	4.4	-10.9	-20.2
Financial Derivatives	-6.0	-4.3	-0.3	-4.2	1.6	-9.9	-7.0
<b>Overall Balance (% of GDP)</b>							
Overall Balance	9.0	6.0	2.2	0.4	-0.6	15.7	4.2
<b>International Investment Position</b>							
IIP: Net (SGD bn, end period)	719.3	759.1	752.9	790.4	918.8	955.6	964.1
IIP: External Assets (SGD bn, end period)	3,355.2	3,696.3	4,000.3	4,200.1	4,451.0	4,498.9	4,559.6
IIP: External Liabilities (SGD bn, end period)	2,635.9	2,937.2	3,247.4	3,409.7	3,532.1	3,543.3	3,595.5
<b>Memorandum items</b>							
Foreign Reserves (SGD bn, end period)	316.7	344.7	340.4	351.0	356.3	362.8	366.6
Real GDP Growth (%yoy)	3.9	5.0	3.6	1.9	2.0	2.5	2.9
Exchange Rate (USD/SGD, end period)	1.22	1.27	1.32	1.41	1.45	1.40	1.38
Nominal GDP (USD bn)	289.2	302.5	308.1	296.8	297.0	74.8	75.6

Source: The Singapore authorities, CEIC, AMRO staff calculations

## Appendix 1D. Monetary Survey, 2012-2017

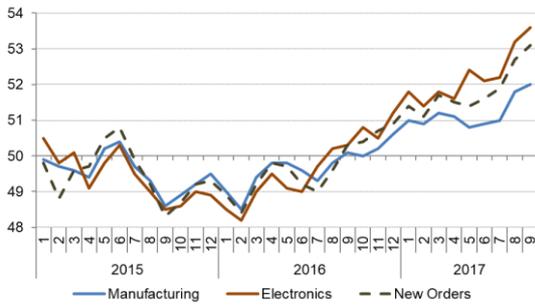
	2012	2013	2014	2015	2016	2017	
						Q1	Q2
<b>Exchange Rates</b>							
SGD NEER (Jan 1999=100, end period)	120.4	121.8	122.9	124.0	123.6	125.3	124.9
USDSGD (end period)	1.22	1.27	1.32	1.41	1.45	1.40	1.38
<b>Interest Rates (% per annum)</b>							
3-Month SGD SIBOR (end period)	0.38	0.40	0.46	1.19	0.97	0.95	1.00
3-Month SGD SOR (end period)	0.35	0.22	0.74	1.70	1.01	0.88	0.75
3-Month USD LIBOR (end period)	0.31	0.25	0.26	0.61	1.00	1.15	1.30
Banks' Savings Deposits Rates	0.11	0.10	0.11	0.14	0.14	0.16	0.16
Banks' 12-Month Fixed Deposits Rates	0.32	0.32	0.31	0.34	0.35	0.33	0.33
<b>Money Supply</b>							
Narrow Money M1 (SGD bn, end period)	140.7	154.6	160.2	160.4	172.8	174.0	178.2
Broad Money M2 (SGD bn, end period)	475.4	495.9	512.4	520.2	562.1	573.0	573.7
M1 (%yoy)	7.7	9.9	3.6	0.1	7.7	8.9	10.8
M2 (%yoy)	7.2	4.3	3.3	1.5	8.0	7.5	7.3
<b>Memorandum items</b>							
Domestic Liquidity Indicator (end period)	0.20	0.21	0.02	0.24	-0.23	0.32	—
Outstanding MAS Bills (SGD bn, end period)	30.3	64.2	96.1	77.5	83.1	88.1	94.4

Source: MAS, IMF, CEIC, AMRO staff calculations

Appendix 2. Selected Charts

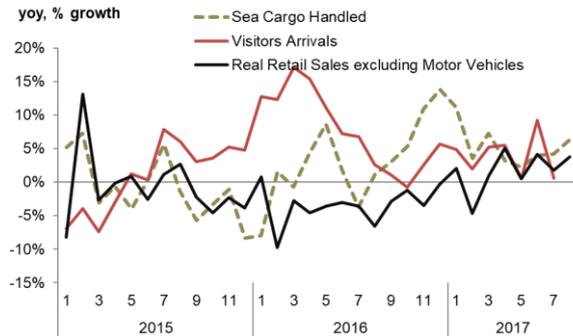
A. Real Sector

The PMI rebounded strongly.



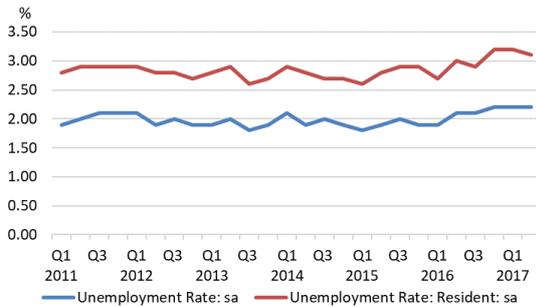
Source: Singapore Institute of Purchasing and Materials Management

Transportation and tourism indicators showed improvement, and retail sales rebounded.



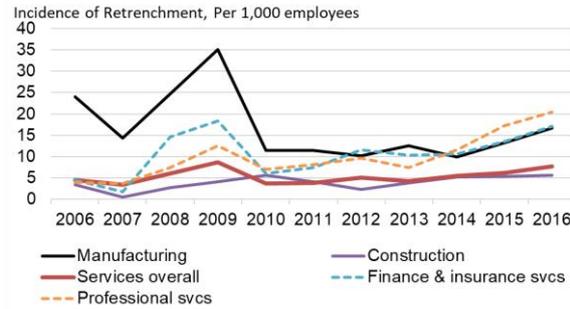
Source: Maritime and Port Authority of Singapore, Singapore Tourism Board, DOS, CEIC

The unemployment rate increased slightly.



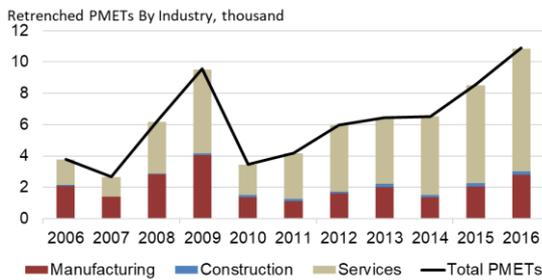
Source: Manpower Research & Statistics Department, MOM

The incidence of retrenchment increased.



Source: Manpower Research & Statistics Department, MOM

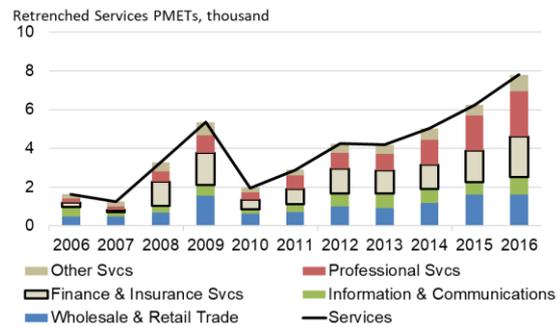
The number of retrenched PMETs increased significantly.



Note: PMETs refers to Professionals, Managers, Executives and Technician

Source: Manpower Research & Statistics Department, MOM

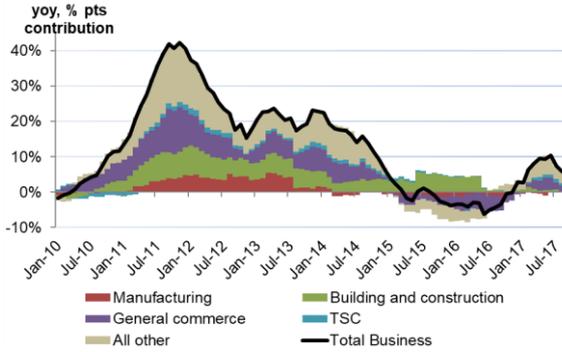
The number of services retrenched PMETs has exceeded the level seen immediately after the GFC.



Source: Manpower Research & Statistics Department, MOM

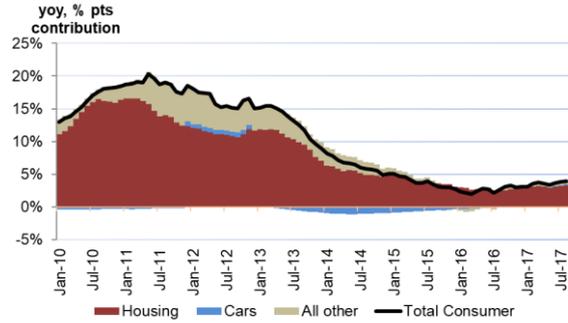
**B. Financial Sector**

(Domestic Banking Unit) DBU business loan growth rebounded.



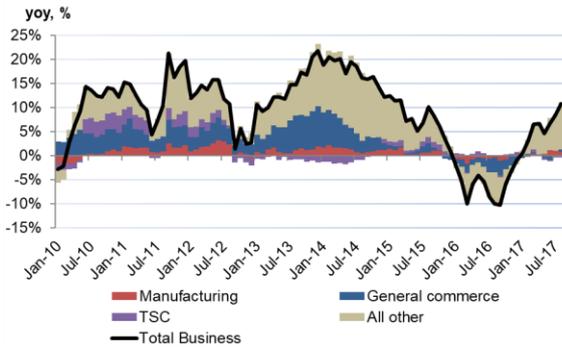
Note: TSC refers to transport, storage and communications.  
Source: MAS, AMRO staff calculations

DBU consumer loan grew steadily.



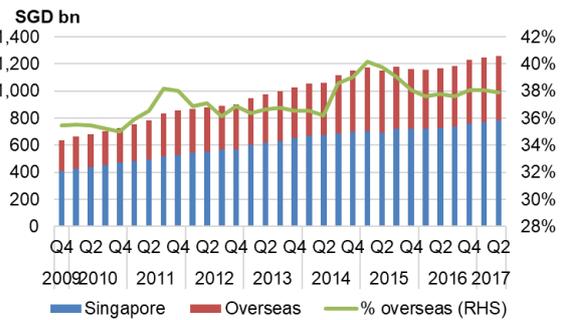
Source: MAS, AMRO staff calculations

ACU business loan growth also rebounded.



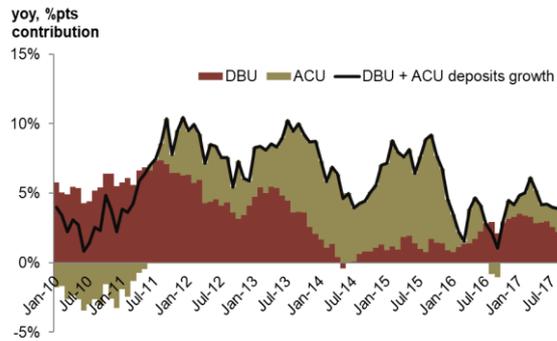
Source: MAS, AMRO staff calculations

Three local banks assets also continued to grow, with the share of foreign assets remain stable.



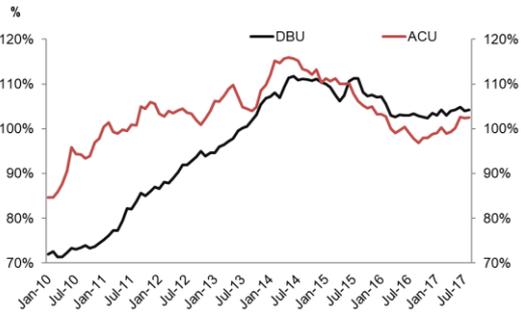
Source: Bloomberg, AMRO staff calculations

Non-bank deposits continued to grow steadily.



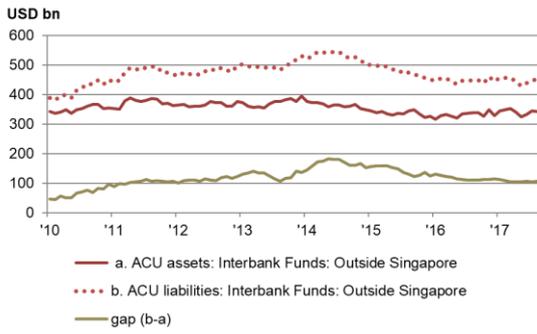
Source: MAS, AMRO staff calculations

The loan-to-deposit ratios remain stable.



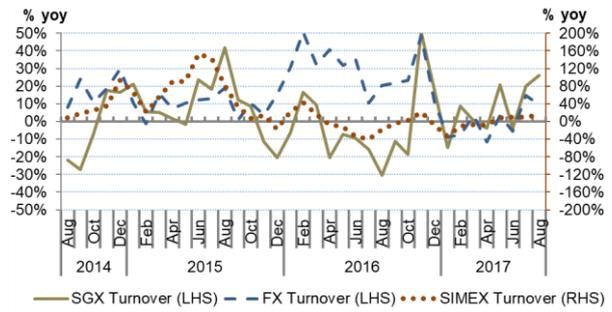
Source: MAS, AMRO staff calculations

The ACU funding gap remained stable.



Source: MAS, AMRO staff calculations

Financial products trading activities were largely flat

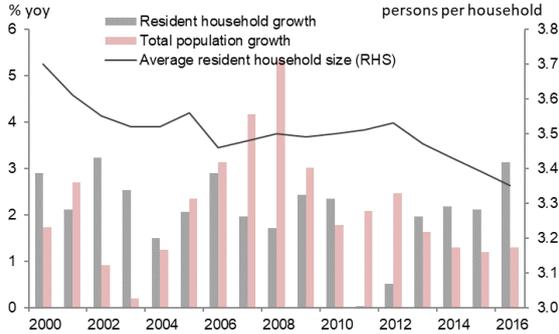


Note: SIMEX turnover is mainly in derivatives such as futures. In 1999 SIMEX merged with SES and SCCS to form the Singapore Exchange (SGX).

Source: Singapore Exchange, MAS, CEIC

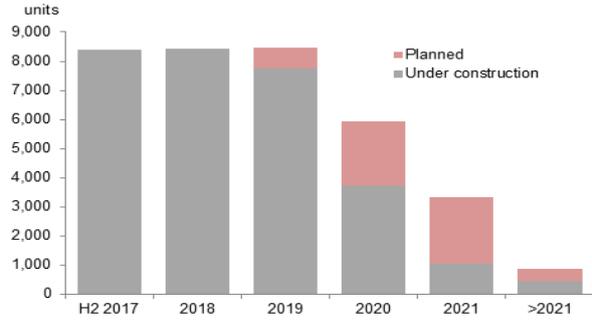
### C. Property Market

The number of resident households continue to increase with population growth and smaller households.



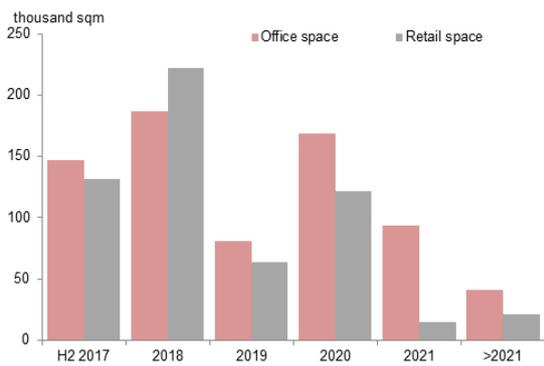
Sources: DOS, CEIC, AMRO staff calculations

It is likely that private residential property supply will not increase by much in the next few years.



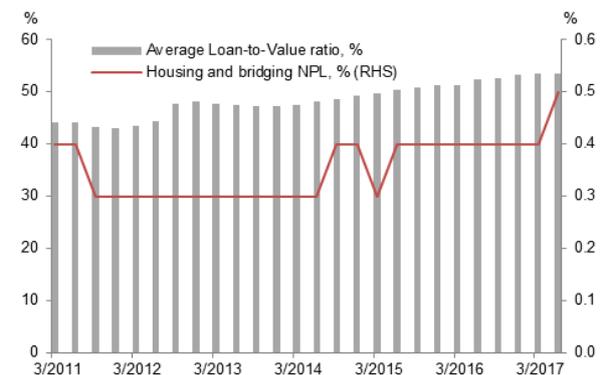
Sources: URA

Commercial property supply is expected to continue rising in 2018, but moderate afterwards.



Sources: URA

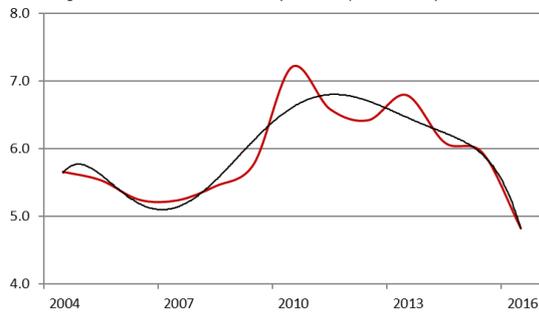
The average loan-to-value ratio has picked up gradually but remained below the 60-percent limit. And the NPL ratio for housing loans remains relatively low.



Sources: MAS, CEIC

The house price-to-income ratio has come down significantly since 2014.

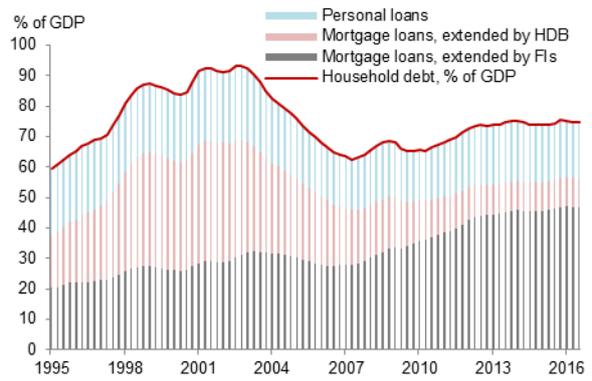
Median non-landed private house price to average annual household income by 81st-90th percentiles, years



Note: The house price to income ratio is calculated by AMRO staff using median non-landed private house price and the average annual household income by the 81<sup>st</sup>-90<sup>th</sup> percentiles. The dotted line is the trend line constructed by using the polynomial function (order=6) in Microsoft Excel.

Sources: URA, DOS, AMRO staff calculations

Mortgage loans extended by financial institutions remain elevated, although loan growth has slowed.



Sources: DOS, CEIC, AMRO staff calculations

## Appendix 3. Data Adequacy for Surveillance Purposes: A Preliminary Assessment

Criteria/ Key Indicators for Surveillance	Availability (i)	Reporting Frequency/ Timeliness <sup>(ii)</sup>	Data Quality <sup>(iii)</sup>	Consistency (iv)	Others, if Any <sup>(v)</sup>
National Account	Available	Quarterly, within 2 months after the end of the reference quarter (for preliminary data)	-	-	-
Balance of Payments (BOP)	Available	Quarterly, within 2 months after the end of the reference quarter (for preliminary estimates)	-	-	-
International Investment Position (IIP)	Available	Quarterly, within 3 months after the end of the reference quarter (for preliminary estimates)	-	-	-
State Budget and Government	Available	Central government revenue (monthly, within two months after the end of the reference period). Central government expenditure (quarterly, within two months after the end of the reference period).	-	-	-
External Debt	Available	Quarterly, within 3 months after the end of the reference quarter (for preliminary estimates)	-	-	-
Money Supply and Credit Growth	Available	Monthly, within one month after the end of the reference period	-	-	-
Financial Sector Soundness Indicators	Available	Quarterly, within 6 months	-	-	-
State-Owned-Enterprises Statistics (vi)	Available if publicly listed on the stock exchange, otherwise limited	Quarterly data available for listed companies within two months of the reference Quarter, but not available for non-listed companies.	-	-	-
Housing Market Indicators	Available	Quarterly, within 2 months after the end of the reference quarter (for preliminary data)	-	-	-

Source: AMRO staff compilations. This preliminary assessment will form the "Supplementary Data Adequacy Assessment" in the EPRD Matrix.

- Notes:
- (i) Data availability refers to whether the official data are available for public access by any means.
  - (ii) Reporting frequency refers to the periodicity that the available data are published. Timeliness refers to how up-to-date the published data are relatively with the publication date.
  - (iii) Data quality refers to the accuracy and reliability of the available data given the data methodologies are taken into account.
  - (iv) Consistency refers to both internal consistency within the data series itself and its horizontal consistency with other data series of either same or different categories.
  - (v) Other criteria might also apply, if relevant. Examples include but are not limited to potential areas of improvement for data adequacy.
  - (vi) This refers to the government linked companies, not SOE.

## Appendix 4. Selected Issue I: Spillover Analysis

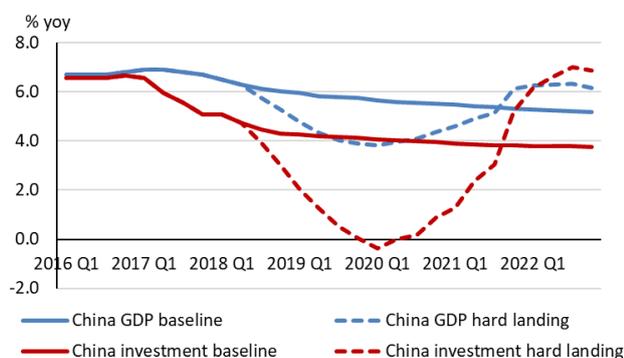
1. **Singapore is sensitive to external shocks.** Singapore is a small open economy, and a financial and trade center. There is also a large stock of foreign direct investment in Singapore and Singapore also has large investments abroad. Moreover, as discussed in the selected issue “Understanding Volatile Trade and Manufacturing Activities in Singapore”, Singapore’s manufacturing output is volatile. The Singapore economy is hence very sensitive to external shocks.

2. **This study employs the models developed by Oxford Economics<sup>27</sup> for sensitivity analysis.** The Oxford model captures the key relationships in the global economy. In the short run, shocks to demand will generate economic cycles, but over the long-run, output is determined by supply side factors. **We consider two main scenarios to study their impacts on Singapore.** They are: a hard landing in China, and a sharp and large Fed rate hike. While the likelihoods of these scenarios are low, the scenarios allow us to study the sensitivity of the economy to external shocks.

### Scenario 1. A Hard Landing in China

3. **Singapore is among the most sensitive to a hard landing in China.** We assume that China’s growth will fall and be 2 percent lower than the baseline in Q1 2020, before bouncing back, and at the same time, investment will stop growing (Figure 4.1). In this region, in terms of GDP, Singapore and Korea are the among most sensitive and next only to Hong Kong.<sup>28</sup> As shown in Figure 4.2, in 2020, Singapore’s growth will be about 0.9 percent lower than the baseline.<sup>29</sup>

Figure 4.1. Scenario 1. China Hard Landing, Chinese GDP



Source: Oxford Economics, AMRO staff assumptions

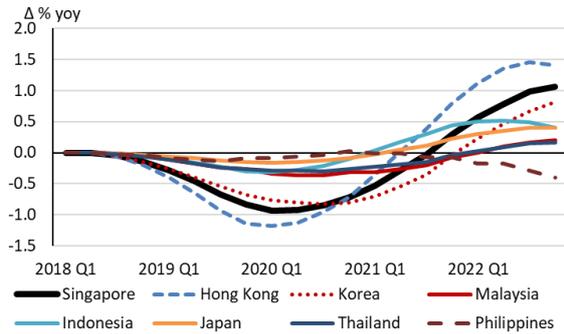
CPI in Singapore will also be 0.4 percent lower than the baseline in H2 2020 (Figure 4.3).

<sup>27</sup> www.oxfordeconomics.com

<sup>28</sup> For brevity, “Hong Kong, China” is referred as “Hong Kong” in the text.

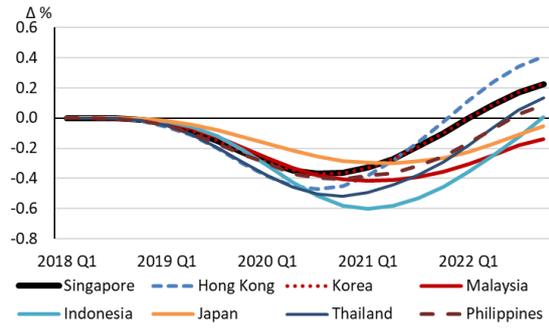
<sup>29</sup> At the same time, industrial production growth will be 1.2 percent lower than baseline.

**Figure 4.2. Scenario 1. Impact on GDP in Regional Economies**



Source: Oxford Economics, AMRO staff calculations

**Figure 4.3. Scenario 1. Impact on CPI Inflation in Regional Economies**

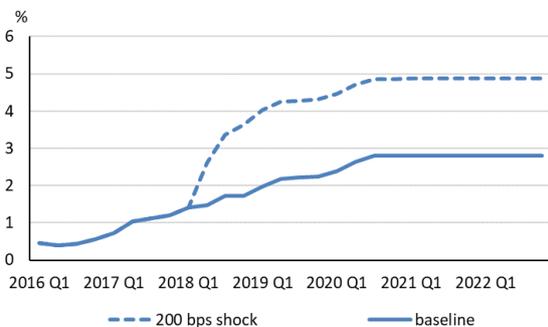


Source: Oxford Economics, AMRO staff calculations

**Scenario 2. An Abrupt and Sizable Hike in U.S. Interest Rates**

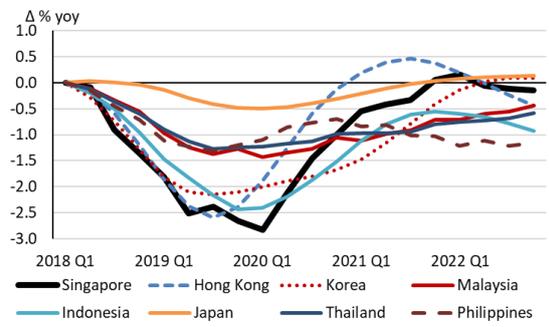
**4. Singapore is quite sensitive to abrupt and sizable hikes in U.S. interest rate hikes.** We assume that U.S. interest rates will be 200 bps higher than the baseline in the period Q3 2019 and beyond (Figure 4.4). This shock depresses U.S. GDP and world trade, and it also lifts central bank policy rate in this region. Again, in terms of GDP, exports, employment and CPI, Singapore is among the most sensitive in the region, and its GDP growth will be about 4 percent lower as compared to the baseline in H1 2021 (Figure 4.5).

**Figure 4.4 Scenario 2. Much Higher U.S. Interest Rates**



Note: the chart plots the target federal funds rate.  
Source: Oxford Economics, AMRO staff assumptions

**Figure 4.5. Scenario 2. Impact on GDP in Singapore, Hong Kong and Korea**



Source: Oxford Economics, AMRO staff calculations

**5. We also consider other risk scenarios and find Singapore among the most sensitive to those shocks.** In addition to the above two scenarios, we also experiment with other shocks: a deep recession in the U.S., a deep recession in the Europe, a much higher emerging market risk premium, a large contraction of China’s exports and imports. We find that (1) Singapore is among the most sensitive to those shocks; (2) the impact on Singapore’s CPI lag GDP by 2-3 quarters. It is therefore important for Singapore to maintain a sufficient buffer to be able to withstand those shocks. Finally, we also experiment with shocks originating from Singapore, and find the impact to be small, which is not surprising, as the size of Singapore economy is relatively small.

## Appendix 5. Selected Issue II: Singapore's Labor Market Challenges

### Background

**1. Singapore's labor market dynamics are changing rapidly, reflecting cyclical and structural forces, as well as policy developments.** On the cyclical front, the global economy is still recovering and remains weak, and global trade, while recovering, has yet to gain full traction. The extended period of low global oil prices is also weighing on growth and job creation. Being predominantly a trade-dependent economy, certain sectors, such as the external-oriented sectors (e.g. wholesale trade and transport engineering) were under pressure, with some degree of spillovers to some domestic-oriented sectors (e.g. retail trade). Apart from cyclical factors, technology advancement and new business models are also disrupting the labor market. Some structural forces are also challenging the traditional way of how labor markets are being organized. Singapore has always adopted a calibrated immigration rate to mitigate its ageing demographics. Recent policy initiatives to progressively tighten foreign workforce policies will also fundamentally change the landscape of Singapore's labor market in the period ahead.

### Recent Developments and Near-Term Outlook

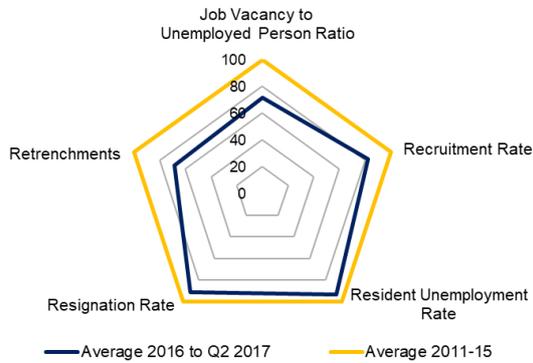
**2. As the economy adjusts to a cyclically lower growth, labor market has slackened, although labor market condition has been stabilizing in recent quarters (see A.3).** Key labor market indicators showed that, relative to the 5-year (2011-15) average, Singapore's labor market has noticeably softened in 2016 and into Q1 2017, resulting in fewer employment opportunities. Figure 5.1 shows that (1) the recruitment rate has dropped, while the (2) ratio of vacancies to unemployed persons has also decreased. In addition, (3) the number of workers retrenched has increased substantially and remains elevated, notably among professionals, managers, executives and technicians (PMETs).<sup>30</sup> A sustained period of low global oil prices has contributed to the high number of retrenchments in the transport equipment manufacturing subsector, which has also affected, to certain extent, those in the fabricated metal products, and machinery and equipment manufacturing subsectors.<sup>31</sup> It is also found that the re-entry rates—proportion of resident workers who return to the workforce 6 months after being laid off— has fallen from 70 percent in Q4 2015 to 64 percent in Q1 2016 and since then stabilized at around 65 percent, highlighting the fact that displaced workers find it more difficult to secure new jobs. Given the labor market slack, turnover rate in

<sup>30</sup> PMETs account for 63 percent of total retrenched permanent employees in 2016-Q1 2017.

<sup>31</sup> Retrenched permanent employees in these manufacturing subsectors account for 48 percent of total retrenched permanent employees.

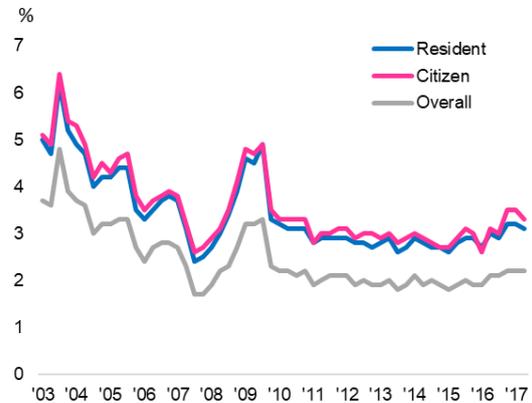
employment has declined, with (4) a lower resignation rate. Accordingly, the (5) seasonally-adjusted resident unemployment rate has trended higher in 2016 and early 2017 (Figure 5.2).

Figure 5.1. Key Labor Market Indicators<sup>32</sup>



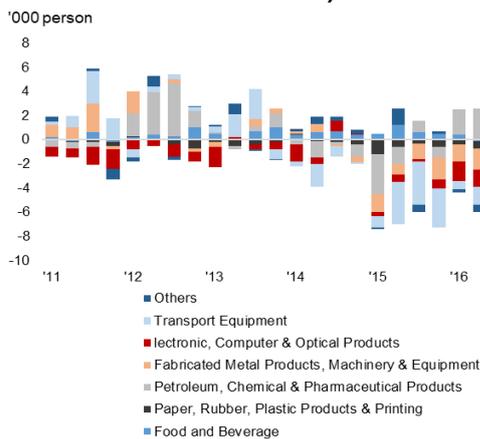
Note: The retrenchments, recruitment and resignation rates are not seasonally-adjusted, and other indicators are seasonally-adjusted, with 5-year historical average (2011-15) set as 100. Reading above 100 suggests an improvement, and vice versa. Source: National Authorities, AMRO Staff Estimates

Figure 5.2. Seasonally-adjusted Unemployment Rate



Source: Ministry of Manpower

Figure 5.3. Employment Change (Manufacturing Sector)



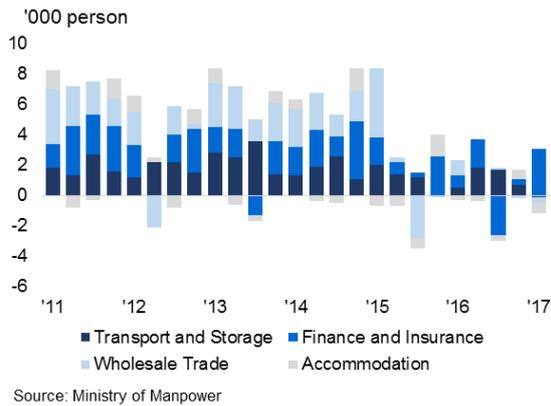
Source: Ministry of Manpower

**3. The near-term labor market outlook has improved, but job growth is uneven across sectors.** The manufacturing sector has been shedding jobs since late 2014, but excluding marine and offshore engineering-related sectors, the picture is becoming brighter (Figure 5.3). In particular, employment growth in the electronics-related and food processing subsector remains robust. In the construction sector, job losses have increased since H2 2016, weighed down by sluggish private sector building activities. Meanwhile, in the services sector, in the external-oriented sectors employment growth in finance and insurance sector has been strong (Figure 5.4). Employment in domestic-oriented services sector also grew,

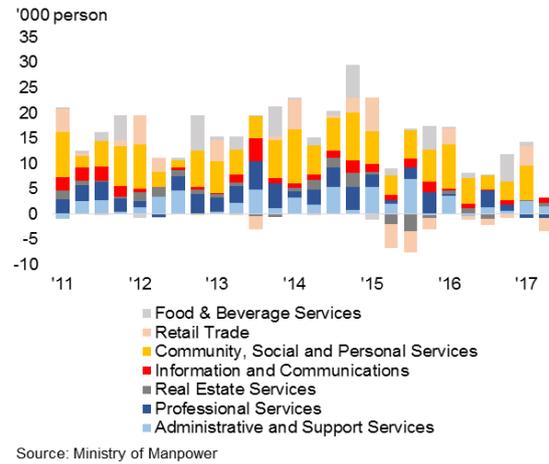
<sup>32</sup> The job vacancy to unemployed person ratio is a ratio of the estimates of the total number of job vacancies for the whole economy to the total number of unemployed persons. The number of job vacancies for the whole economy is estimated based on the assumption that private sector establishments with less than 25 employees have the same vacancy rate as private establishments with 25-49 employees. Estimates on the total number of unemployed persons are obtained from the Labor Force Survey. Retrenchment refers to the termination of permanent employees due to redundancy and early termination of term contract employees due to redundancy. In the public sector, it includes those who left service under the Special Resignation Scheme that allows redundant non-deployable Civil Service or Statutory Board employees to leave their organizations with compensation. Retrenchment of term contract employees refers to early termination of term contract employees due to redundancy. The recruitment (resignation) rate refers to the average number of persons recruited, i.e. new employees (resigned) in a month during the quarter divided by the average number of employees in the establishment.

although less than the 2011-2015 average (Figure 5.5). While the outlook will further improve with the recovery and restructuring of the economy, as reflected by the moderation in retrenchments and increase in overall job vacancy rate in recent quarters, the job growth may continue to be uneven across different sectors and the accumulated slack in the labor market will still take time to be absorbed.

**Figure 5.4. Employment Change (External-Oriented Services Sectors)**

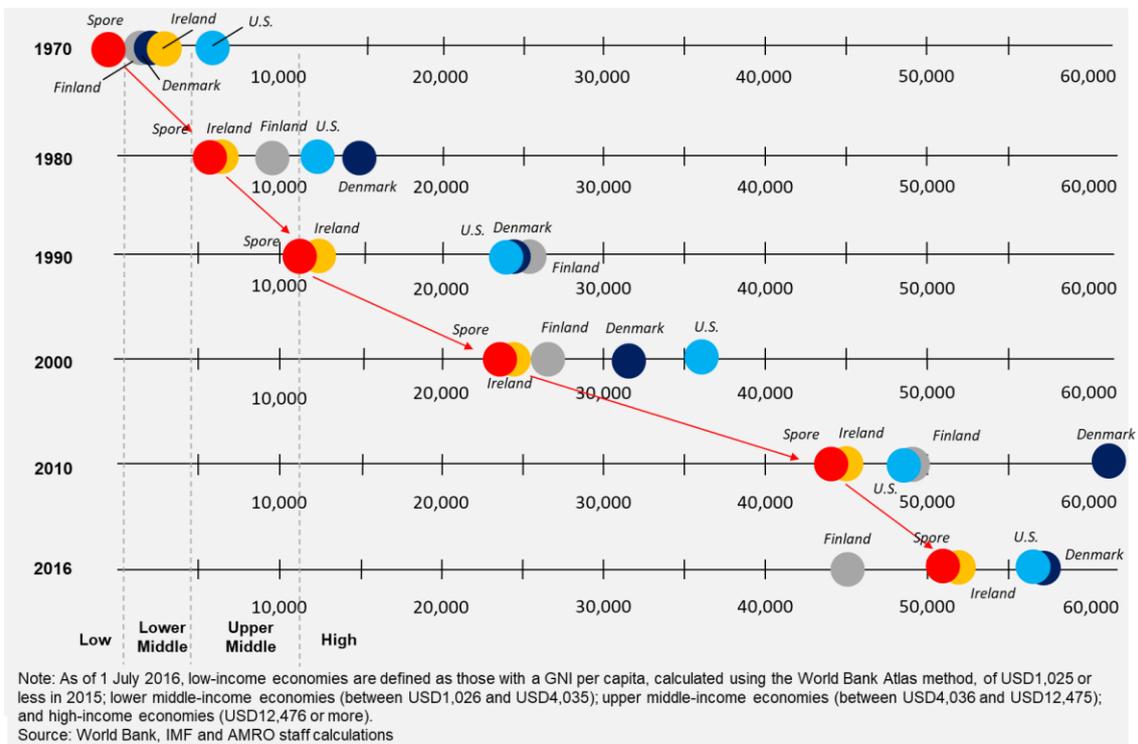


**Figure 5.5. Employment Change (Domestic-Oriented Services Sectors)**



### Challenges from Economic Restructuring

**Figure 5.6. Nominal Per Capita GDP (in USD)**

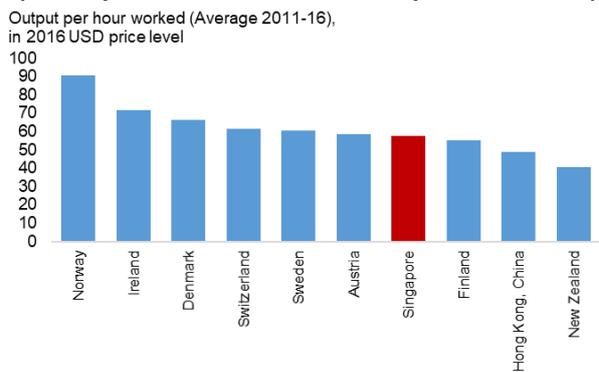


**4. While Singapore has achieved rapid growth over several decades, it is now confronting a different set of challenges as it is now at the production frontier. Figure**

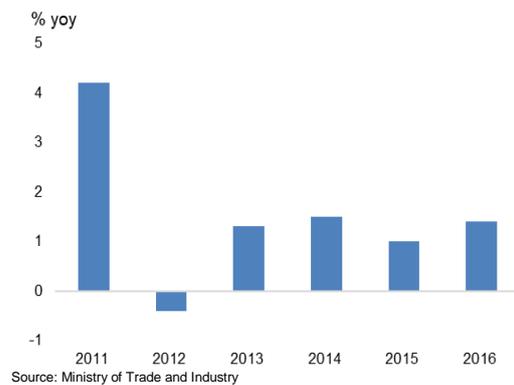
5.6 shows that Singapore’s catch-up has been impressive, resembling that of Ireland, as both economies were in the upper-middle income band in 1980, but moved quickly to high income economies in the 1990s. There are many common factors underpinning the rapid growth in both economies, such as an open policy to foreign talents, as well as the pursuit of quality higher education and training.<sup>33</sup>

**5. Singapore is confronting aging society, at the same time, with tighter immigration policies, the longer term growth would need to be driven more by productivity gains.** Singapore’s level of productivity (referred to as labor productivity)<sup>34</sup> is comparable to other small advanced open economies (Figure 5.7). While productivity growth in Singapore has been low in recent years (Figure 5.8),<sup>35</sup> as shown in Figure 5.9, this sluggish labor productivity growth is not unique to Singapore, but a global phenomenon.

**Figure 5.7. Level of Labor Productivity (A Comparison with Other Small Open Economies)<sup>36</sup>**



**Figure 5.8. Singapore’s Labor Productivity Growth**



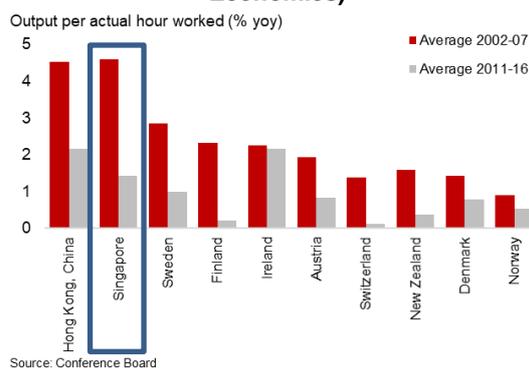
<sup>33</sup> See the World Economic Forum’s Global Competitiveness Reports (various years).

<sup>34</sup> Labor productivity is defined as value-added per actual hour worked.

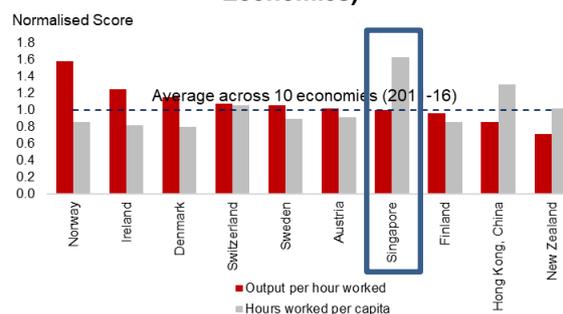
<sup>35</sup> Labor productivity grew by an annual average rate of 1.5 percent from 2011 to 2016.

<sup>36</sup> A comparison with nine other small advanced economies, where the population is between 4 and 10 million.

**Figure 5.9. Average Growth of Labor Productivity (A Comparison with Other Small Open Economies)**



**Figure 5.10. Labor Efficiency (A Comparison with Other Small Open Economies)**



Note: The indicators on output per hour worked, and hours worked per capita for each economy are based on individual economies' average reading from 2011-16. To allow cross country comparison, both the indicators' average reading across all ten economies are normalised to 1, i.e. a reading above 1.0 suggests that output per hour worked, and hours worked per capita for an economy are relatively higher than the sample average.  
Source: Conference Board, AMRO staff estimates

**6. Recognizing the structural challenges, in the past few years, the government has been steering the country towards a labor-lean, high productivity and innovation-based economy.** There are a number of initiatives. For example, through a scheme of targeted incentives, policymakers are encouraging businesses across all spectrums to restructure and become labor-lean and efficient, with the objective of achieving a more competitive economy. In this respect, businesses are urged to focus on boosting innovation and labor productivity gains as the key growth driver. Equation 4.1 shows that annual per capita income (or output) is the product of output per hour worked and hour worked per capita.

$$Per\ capita\ Income\ (Output) = \frac{Total\ Output}{Total\ Hours\ Worked} * \frac{Total\ Hours\ Worked}{Population} \dots Equation\ 4.1$$

where,

Total Output : Total GDP in constant 2016 prices (in USD million)

Total Hours Worked : Total annual hours worked (in millions of hours worked)

Population : Population at mid-year (in millions)

Figure 5.10 shows that Singapore has a higher number of hours worked per capita, but its output per hour worked is similar to the average of these small open economies (the latter refers to labor productivity). There is limited room for Singapore to increase work hours, but there is room for productivity improvement.

**7. In economic restructuring, it is inevitable that some workers will be displaced, or are at risk of retrenchment, underscoring the importance of having sufficient safeguards (or support programs) in place.** As with any restructuring process, there will be job destruction, as well as the creation of new. It could be compounded by rapid technology shifts and the advent of new business models which are becoming more prevalent. While there is a strong push to move towards technology upgrading, as well as the adoption of new technologies, equal emphasis should be place on safeguarding or supporting workers

(particularly older workers and persons with disabilities) during the adjustment period. In this respect, the recommendations of the CFE to strengthen government support schemes such as Adapt and Grow, Workfare Income Supplement (WIS) and Workfare Training Support (WTS) are a welcome development. Considering that displaced workers tend to be susceptible to short term distress (emotionally and financially), as they embark on a journey of learning new skillsets, the “Adapt and Grow” programmes can help to provide the necessary training and income support to facilitate workers’ transition to new jobs. The authorities can consider providing some time-limited income support in order to ease the workers’ transition period, such as WIS and WTS.

**8. Rapid shifts in technology are also challenging the traditional way of job creation and how labor markets are being organized in some sectors.** While technology has led to some job destruction, it has also given rise to new job creation, as evidenced by the pervasiveness of digital technologies and innovation, and their impact on traditional business models. Business and workers need to adapt to the changing environment.

**9. Active policies have been taken to improve the functionality of the labor market and they will also enhance productivity.** The authorities have implemented proactive measures to facilitate the labor market adjustments, such as through the SkillsFuture initiatives, Career Support Programme, Career Advisor Programmes, Professional Conversion Programs and career fairs. The tripartite coordination/collaboration mechanism amongst unions, employers and the government will continue to be important for these initiatives to achieve the results.

## Appendix 6. Selected Issue III: Understanding Volatile Trade and Manufacturing Activities in Singapore

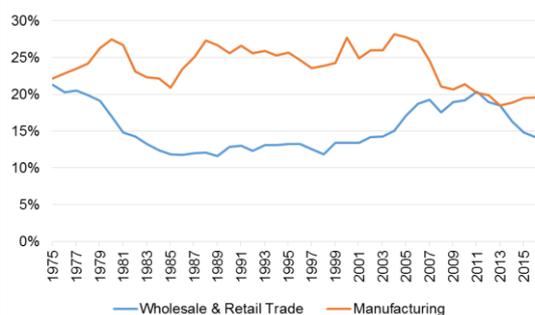
1. **Manufacturing and trade-related activities are key sectors in the Singapore economy, but they are highly volatile and responsible for much of the volatility in the economy.** The nominal value added by manufacturing to overall GDP has declined from about 25% in the 1990s to 20% in recent years, however, the volatility impact has not become smaller. We will discuss reasons for the high volatility of manufacturing and trade and also its policy implications.

### Volatile Manufacturing and Trade

2. **High volatility of Singapore's economy has been documented in the past.** For example, MTI (2010) says "As a small open economy, economic growth in Singapore has been volatile over the past four decades. Business cycle fluctuations appear to have become more pronounced, with Singapore experiencing three recessions (1998, 2001 and 2009) in the past 15 years".

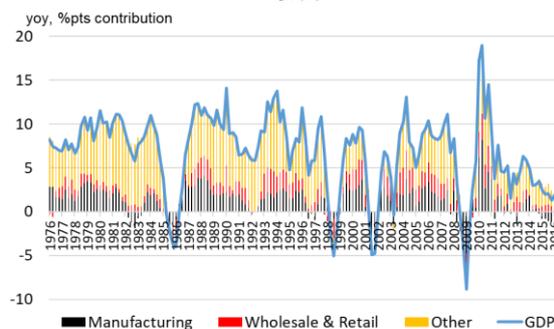
3. **The share of nominal value added by manufacturing to overall GDP has declined.** As shown in Figure 6.1, from late 1980s to the middle of 2000s, the share of manufacturing was about 25%, and it declined to about 20% in recent years.

Figure 6.1. Share of Nominal Value Added to Overall GDP



Source: MTI, CEIC, AMRO staff calculations

Figure 6.2. Singapore GDP Breakdown, Supply Side



Source: MTI, CEIC, AMRO staff calculations

4. **A simple Principal Component Analysis (PCA) suggests that the volatility of the economy is largely driven by manufacturing and trade.** We study the time series of percentage contribution to GDP growth rate by different sector in Singapore (Figure 6.2). A simple PCA breakdown shows that the eigenvalue of the first factor is 3.81 and this factor explains 55%<sup>37</sup> of the overall variance of the economy. As shown in Table 6.1, the eigenvector of this first factor has large loading on manufacturing and also a closely related sector -- wholesale and retail trade. Its factor loadings for transportation & storage and finance &

<sup>37</sup>  $3.81/(3.81+1.11+0.82+0.53+0.41+0.17+0.09+0.01+0.01+0.00) = 55\%$

insurance are also reasonably large, but not for construction<sup>38</sup>, utilities, accommodation & food, information & communications and other services, as these sector are likely driven by other variables such as domestic demand, real estate cycle and government policies.

**Table 6.1. Simple PCA of Singapore GDP by Components, 1975-2016**

Eigenvalues	Sector	First Eigenvector
3.81	<b>Manufacturing</b>	<b>0.882</b>
1.11	Construction	-0.018
0.82	Utilities	0.014
0.53	<b>Wholesale &amp; Retail Trade</b>	<b>0.415</b>
0.41	Transportation & Storage	<b>0.135</b>
0.17	Accommodation & Food	0.048
0.09	Information & Communications	0.008
0.01	Finance & Insurance	<b>0.128</b>
0.01	Business Services	0.092
0.00	Other Services	0.064

Source: AMRO staff calculations

**5. Using a rolling window, the PCA study shows that volatility of the economy is increasingly driven by manufacturing and trade.** As the share of nominal value added by manufacturing dropped, has the impact of manufacturing and its related activities become smaller? To answer this, instead of using the entire sample period from 1975 to 2016, we use a 12-year rolling window for PCA analysis and estimate the contribution of the first factor, and also examine the corresponding factor loadings. As shown in Figure 6.3, the largest factor explains only 39% of the GDP volatility for sample ended in 1987 Q4, and it increases to 80% for the latest sample. For every moving window, we study the eigenvector of the first factor, and find that manufacturing and wholesale & retail trade always have the largest absolute values among all factor loadings, suggesting that the result is robust. Therefore, our simple PCA study shows increasing impact of manufacturing and trade in Singapore's GDP.

**Figure 6.3. Contribution of the Most Dominant Factor to the Overall GDP Volatility, Rolling Window = 12 Year**



Source: AMRO staff calculations

<sup>38</sup> Construction activities are closely linked to the housing cycle. A study by MAS (Macroeconomic review, Oct 2015, Box A) suggests that "Singapore's housing cycle has a longer duration than, and is generally not synchronous with, the overall business cycle". Therefore, while the construction sector activities are also volatile, but the relationship between construction and manufacturing is weak, as the manufacturing is usually more reflective of the overall business cycle.

**6. There are different explanations for the increasing impact of manufacturing and trade.** It is possible because of greater global uncertainties and external demand, which pushes up the volatility of the manufacturing and trade. It is also related to the growing spillover from manufacturing to the service sector. In 2012, every 1 dollar of manufacturing valued added created 0.34 dollar to the rest of the economy<sup>39</sup>, higher than before, as manufacturing has further strengthen its linkages with other sectors, particularly wholesale trade and business services<sup>40</sup>. We think there are other important reasons.

**7. A key reason is because manufacturing and trade has become more volatile, as manufacturing has shifted to more upstream production.** As shown in Table 6.2. The volatility of the industrial production index (IPI) has increased in recent years. There are different reasons, such as the growing share of Biomedical manufacturing, which is the most volatile cluster. We also notice that within the same cluster, the volatility has increased (Table 6.2). We argue that a key reason for this increased volatility within each cluster is that Singapore's manufacturing activities have moved more to upstream production, which tends to be more volatile than downstream.

**Table 6.2. Volatility of Manufacturing Activities by Clusters**

<b>Clusters</b>	<b>Volatility of yoy change, quarterly data</b>	<b>1993 Q1 to 1998 Q4</b>	<b>1999 Q1 to 2007 Q4</b>	<b>2008 Q1 to 2016 Q4</b>
Industrial Production index (IPI)		6.3	9.6	12.9
Electronics IPI		12.0	15.2	20.9
Chemicals IPI		8.0	6.4	9.0
Biomedical IPI		26.7	27.4	31.9
Precision Engineering IPI		10.9	12.3	17.1
Transport Engineering IPI		10.5	15.4	12.1
General Manufacturing IPI		4.5	6.0	5.6

Source: EDB, AMRO staff calculations

### Exports Moved Upstream

**8. To illustrate this, we use Singapore's international trade as a proxy for Singapore's manufacturing activities. The goods are classified as in Table 6.3 to reflect the characteristics of Singapore's trade.** We re-classified the goods based on granular BEC industrial codes, with an emphasis on the Intermediate Capital goods and Intermediate Industrial goods (ICIIG).

<sup>39</sup> According to the Committee on the Future Economy report.

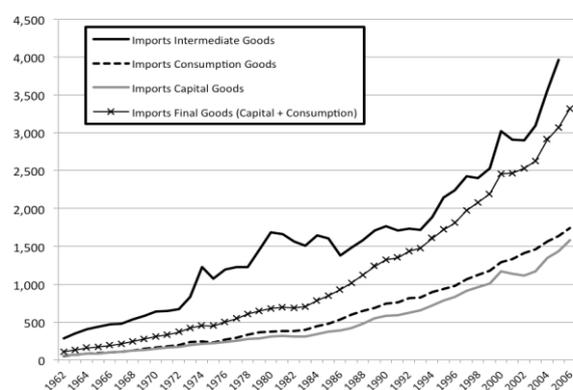
<sup>40</sup> However, fables production, which have gained share in recent years, may reduce the spillover from the manufacturing to the rest of the economy.

**Table 6.3. Classification of Goods**

Intermediate Capital goods and Intermediate Industrial goods (ICIIG)	Sum of categories with BEC code:  21* Industrial supplies not elsewhere specified, primary; 22* Industrial supplies not elsewhere specified, processed; 42* Parts and accessories of capital goods (except transport equipment); 53* Parts and accessories of transport equipment.
Capital and Industrial goods, final (CIG)	Sum of categories with BEC code:  41* Capital goods (except transport equipment); 521* Transport equipment, industrial.
Intermediate Food and Fuels (IFF)	Sum of categories with BEC code:  111* Food and beverages, primary, mainly for industry; 121* Food and beverages, processed, mainly for industry; 31* Fuels and lubricants, primary; 322* Fuels and lubricants, processed (other than motor spirit).
Consumption goods (CG)	Sum of categories with BEC code:  112* Food and beverages, primary, mainly for household consumption; 122* Food and beverages, processed, mainly for household consumption; 522* Transport equipment, non-industrial; 61* Consumer goods not elsewhere specified, durable; 62* Consumer goods not elsewhere specified, semi-durable; 63* Consumer goods not elsewhere specified, non-durable.
Other	Sum of categories with other BEC codes.

Source: UN COMTRADE, AMRO staff assumptions

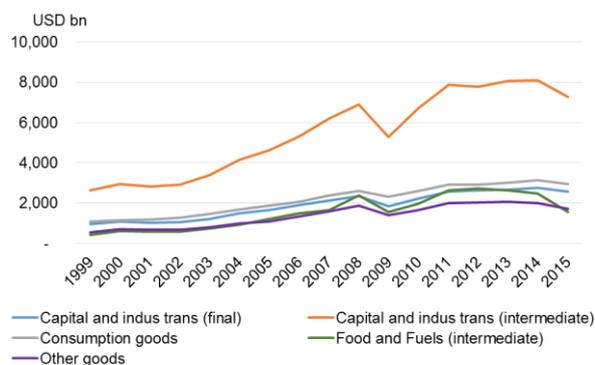
**Figure 6.4. World Imports of Intermediate, Capital and Consumption Goods 1962-2006, USD billion in 2000 Prices**



Note: The definition of intermediate and capital goods in the above chart is different from this article, but it shows some similarities when compared to the definition in Table 6.3.

Source: United Nations Industrial Development Organization, "Mapping Global Value Chains"

**Figure 6.5. World Imports of ICIIG in Recent Years**



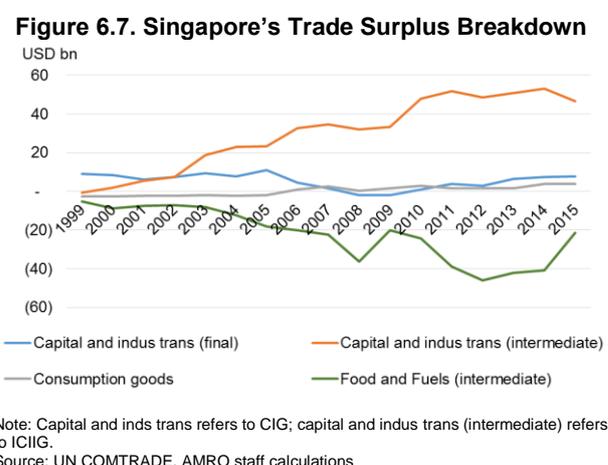
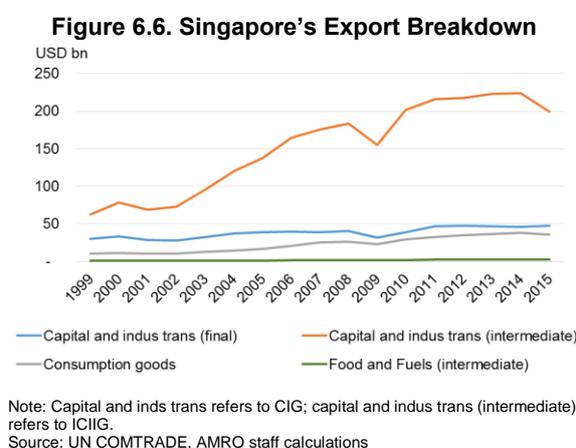
Source: UN COMTRADE, AMRO staff calculations

**9. International trade in ICIIG is very volatile.** As shown in Figure 6.4, a study by the United Nations showed that between 1962 and 2006, trade in intermediate goods was much more volatile than trade in either capital or consumption goods. In addition, the growth of intermediate goods' trade has been notable after recessions. In addition, as shown in Figure 6.5, during the GFC, the world's imports of intermediate capital goods were much more volatile than other goods. In 2009, the world's imports of ICIIG declined by 23 percent yoy, while the

demand for consumption goods declined by only 11 percent. Subsequently, after the GFC, ICIIG exports rebounded strongly.

**10. The volatile trade value in ICIIG supports the notion of ‘bullwhip’ effects of recessions and business cycles.** The ‘bullwhip effect’ is well-documented in the management science literature, it is a phenomenon where demand shocks from downstream consumers are amplified through the supply chain to upstream producers. This is because final goods producers tend to draw down parts inventories and delay re-ordering during and directly after periods of uncertainty (Escaith et al, 2010). The bullwhip effect is named for the way the amplitude of a whip increases down its length. Lee et al. (1997) spell out four causes of the bullwhip effect: demand forecasting, order batching, price fluctuation, and rationing and shortage gaming.

**11. Singapore’s exports of ICIIG are also very volatile and its share of total exports and trade surplus has increased sharply.** As shown in Figure 6.6, Singapore’s exports in ICIIG has increased rapidly since 1999, especially during the period from 2002 to 2007, which is consistent with the global trend. It has also been volatile during the GFC. In addition, as shown in Figure 6.7, Singapore’s trade in ICIIG was largely balanced in 1999, and its surplus in ICIIG was USD 9 billion, but since 2004, Singapore’s trade surplus in ICIIG has grown rapidly and has become the largest component in surplus.



**12. Singapore’s trade now shows a distinct pattern, with a very large surplus in ICIIG.** As shown in Table 6.4, as of 2015, Singapore runs a large trade surplus (USD49.9 billion), and most of the surplus is due to intermediate capital goods and intermediate industrial goods (ICIIG). In particular, its exports in intermediate capital goods and intermediate industrial goods stand at USD199.3 billion in 2015, which is about two-thirds of its GDP. At the same time, Singapore has no natural resources and it runs a large deficit in intermediate food and fuels (USD 21.5 billion in 2015).

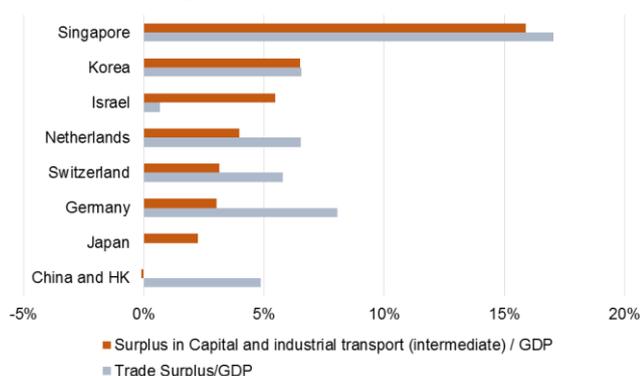
Table 6.4. Singapore's Trade Position as of 2015

In USD billion	Exports	Imports	Surplus
Intermediate Capital goods and Intermediate Industrial goods (ICIIG)	199.3	152.8	46.5
Capital and Industrial goods, final (CIG)	47.2	39.5	7.7
Intermediate Food and Fuels	2.3	23.8	(21.5)
Consumption goods	35.7	31.9	3.8
Other goods	62.2	48.8	13.4
Total	346.6	296.7	49.9

Source: UN COMTRADE, AMRO staff calculations

**13. As a percentage of GDP, Singapore's ICIIG surplus is by far the largest in the world and it is thus sensitive to global demand.** As shown in Figure 6.8, as of 2015, Singapore's surplus in ICIIG stands at 16 percent of GDP, which is by far the largest in the world. Korea—another country with a high trade surplus and limited natural resources—is a distant second (7 percent). If we assume that value added by manufacturers are closely related to the country's trade surplus, then Singapore is most sensitive to the volatility of global demand in ICIIG, which tends to be volatile.

Figure 6.8. Singapore's Trade Position as of 2015 and Comparison with Other Countries



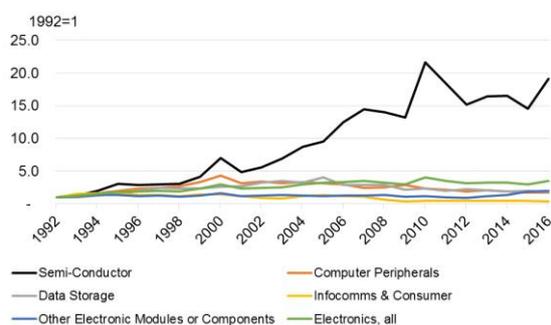
Note: The GDP number for every country in 2015 is from the World Bank, including for Singapore  
Source: UN COMTRADE, World Bank, AMRO staff calculations

**14. Therefore, greater volatility in manufacturing activity is a natural consequence as Singapore moves to upstream production and exports.** For most clusters, there is a tendency for Singapore to move to upstream production. And because of the bullwhip effect, the upstream production tends to be more volatile than downstream production. For example, the global demand for semi-conductor is more volatile than that of mobile phone and personal computer. The high volatility of external demand is a natural consequence as Singapore moves to upstream productions, which tend to require greater technical sophistication.

**15. Electronics and biomedical cluster are good examples of such shift to greater upstream production.** As shown in Figure 6.9, Singapore's semi-conductor has been growing much faster than other electronics products. Figure 6.10 shows that Singapore has been exporting an increasing amount of vaccine products and the growth has been much more

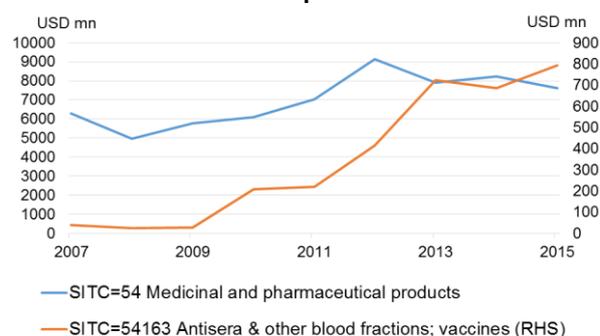
rapid than other pharmaceutical products. Such compositional change of production within each cluster also help to push up the manufacturing industries volatility.

**Figure 6.9. Singapore's Electronics Production**



Source: EDB, CEIC and AMRO staff calculations

**Figure 6.10. Singapore's Pharmaceutical Products Exports**



Source: UN COMTRADE

**16. Other study also indicates that Singapore's manufacturing exports have shown a tendency to move upstream.** Davin Chor (Oct, 2016), in a featured article to MAS Macroeconomic Review also estimates that Singapore's manufacturing exports have moved upstream from 1995 to 2014.

**17. A caveat for this study is that we do not consider the fabless production in Singapore.** Fabless production has become more popular in the semi-conductor sector in recent few years, with R&D and some highly value-added activities in Singapore while the actual production is outside of Singapore. This study does not show if the fabless production increase or dampen the volatility of GDP and trade.

### Policy Implications

**18. High volatility of GDP is a natural result of upgrading the manufacturing sectors and has been compensated by high productivity.** High volatility is hence a natural consequence as Singapore is determined to have a significant and strong manufacturing sector. It will remain so, as the CFE report assesses that "a globally competitive manufacturing sector, at around 20 per cent of GDP", is still key to Singapore's future economy. Singapore should therefore continue to live with its consequence of higher volatility.

**19. High volatility of GDP does not cause high volatility in employments, especially resident employment, and the negative impact is hence limited.** Fortunately, while Singapore's manufacturing is volatile, the labor markets have been more stable, and the unemployment rate has been low. In particular, as manufacturing sectors hire more foreign workers in a boom and shed them in a downturn, and such mechanism also reduces the impact on resident employment.

**20. High volatility of the manufacturing activities and exports lead to high volatility of current account balance, and Singapore should keep strong external position to mitigate such shocks.** As Singapore's current account surplus is mostly in high value-added goods trade, and international demand is volatile, hence Singapore's current account surplus is also volatile, peaking in Q1 2007 at 32 percent of GDP and plunging to 9 percent in Q4 2008. Therefore, it is important to continue to have strong buffers to mitigate the impact of such volatility.

**21. Better adoption of technology will help to reduce the manufacturing and trading activity volatility.** Information and communication technologies (ICT) and the usage of backorders have greatly reduced the bullwhip effect globally in the past and will continue to do so. As Singapore will further embrace advanced ICT and digitization, it could help to dampen the bullwhip effect to a certain degree.

**22. Sound funding stability will help to reduce the manufacturing and trading volatility.** In the GFC, some studies have shown that the shortage of stable funding is also a key reason for the collapse in international trade. Singapore's banking system has been sound, and in future, to mitigate the effect of volatile manufacturing and trade and be able to channels savings to productive uses even in a global or regional crisis, Singapore need to continue to keep a sound banking system and ensure its capacity, especially in trade financing.

**23. The high volatility of manufacturing activities is a challenge to economic forecast and policy makers and a high quality survey would be useful for forecasting.** The Singapore Department of Statistics and EDB compile statistics on the business expectations of the services and manufacturing sectors respectively. We find that manufacturing and services business expectation surveys conducted by the EDB and Department of Statistics are quite predictive. Singapore Business Federation and DP Information Group also an SME Index. These are valuable inputs to policy makers.

**24. Policymakers should focus on the changes of a range of key factors instead of focusing unduly on the volatile headline growth number.** While the volatile growth often causes anxieties or exuberance in the market, policy makers should rather qualify the past growth number by looking at a range of indicators and factors. There are different models proposed by various scholars, such as Chow and Choy (2009)<sup>41</sup>.

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<sup>41</sup> For instance, Chow and Choy (2009) showed that for Singapore's business cycle, "The empirical results suggest that four common factors are present in the quarterly time series, which can broadly be interpreted as world, regional, electronics and domestic economic cycles."

**Reference:**

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## Appendix 7. Selected Issue IV: The Changing Dynamics of Singapore Capital Goods Exports

1. **Singapore's economy is sensitive to external investment demand, at the same time, it is affected by the compositional change from investment to consumption demand in this region.** Therefore, it is important to quantitatively investigate the nature of the external demand shocks as well as future growth potentials, such as the rapid growth of China, Cambodia, Lao PDR, Myanmar, Vietnam and Brunei (CLMVB).

2. **Singapore is a very open economy and its trading partners are concentrated in this region.** As shown in Table 7.1, Singapore is a very open economy with its exports value in 2015 at USD 347 billion, higher than Singapore's GDP. Of these exports, 63 percent (USD220 billion) goes to the rest of ASEAN, the Plus 3 and Hong Kong (A+3), making the A+3 the most important export destination for Singapore. This ratio (63 percent) is also among the highest in this region (Table 7.1, last column).

**Table 7.1. Exports Value among Different Group of Countries in 2015 (in USD billion)**

Exporter\Importer	SGP	ASEAN-4	CN&HK	JP&KR	USA	CLMVB	Rest of world	A+3 total	World total	Share of A+3
SGP	-	86	87	30	23	16	104	220	347	63%
ASEAN-4	53	67	100	90	68	33	210	343	620	55%
CN&HK	63	163	622	261	455	93	1,136	1,201	2,792	43%
JP&KR	35	91	312	70	197	44	404	551	1,152	48%
USA	29	39	153	106	-	8	1,170	334	1,504	22%
CLMVB	4	18	31	29	36	4	72	86	194	44%

Note 1: ASEAN-4 refers to Indonesia, Thailand, Malaysia and Philippines. CN&HK refers to China and Hong Kong, China. JP&KR refers to Japan and Korea. CLMVB refers to Cambodia, Laos, Myanmar, Vietnam and Brunei. A+3 refers to ASEAN, China, Hong Kong, Japan and Korea.

Note 2: Country A reports its exports to country B, and at the same time, country B also reports its imports from country A. These two numbers in theory should be the same, but in practice are different. In this case, for consistency, this study always uses the number reported by the exporting country. For example, Japan reported that its exports in food and beverages to Singapore in 2015 were at USD161,469,048, while Singapore reported that its imports from Japan were at USD 219,083,526 – in this case, we use the number reported by the exporting country – Japan.

Note 3: Two countries in this region do not report their export numbers to UN COMTRADE. They are Lao PDR and Myanmar. Therefore, for these two countries, we use the importing value reported by other countries. For example, to determine the value of Lao PDR exports to Singapore, we use the value reported by Singapore as its imports from Lao PDR.

Source: UN COMTRADE, AMRO staff calculations

3. **A large share of Singapore's export is comprised of capital goods, and the share is higher than that of other ASEAN economies.** As shown in Table 7.2, in 2015, Singapore's exports in capital goods is USD 169 billion, or 49 percent of total exports, and of which, USD 118 billion (or 70% of total capital goods exports) goes to A+3. In particular, 65 percent of Singapore's exports to China and Hong Kong, China (USD 57 billion) are in the form of capital goods. Therefore, Singapore is most sensitive to external investment demand, and especially sensitive to investment demand from China. Such high sensitivity is a strength as it benefits most to the growing demand for investment and hence capital goods in this region; at the same time, it is also a source of vulnerability as manufacturing output becomes extremely volatile as the external investment demand is sensitive to business cycles.

**Table 7.2. Capital Goods Exports Value among Different Group of Countries in 2015 (in USD billion)**

Exporter\Importer	SGP	ASEAN-4	CN&HK	JP&KR	USA	CLMVB	Rest of world	A+3 total	World total	Share of A+3
SGP	-	36	57	18	13	6	38	118	169	70%
ASEAN-4	22	15	43	20	27	5	46	105	178	59%
CN&HK	28	58	422	113	182	28	395	648	1,226	53%
JP&KR	12	33	163	22	61	22	126	253	440	57%
USA	11	16	42	29	-	2	295	100	395	25%
CLMVB	1	4	8	5	7	0	29	17	53	32%

Note. Capital goods is defined as the sum of the two categories:

BEC codes: 41\* Capital goods (except transport equipment);

BEC codes: 42\* Parts and accessories of capital goods (except transport equipment).

The mapping between HS, SITC and BEC can be found in

<http://unstats.un.org/unsd/tradekb/knowledgebase/50020/HS-SITC-and-BEC-conversion-and-correspondence-tables>

Source: UN COMTRADE, AMRO staff calculations

**4. Singapore's exports in capital goods have grown most rapidly to the destinations such as China and Hong Kong, China and CLMVB, but declined to the U.S.** As shown in Table 7.3, from 2003 to 2015, Singapore's exports to in capital goods to the world have increased by 76%. In particular, its exports to CLMVB and China and Hong Kong, China have grown by 503% and 299%. However, its exports to USA declined by 17%. From 2003 to 2015, Singapore's exports in capital goods to ASEAN-4 increased by only 23%, which is also lagging behind other regions.

**Table 7.3. Growth of Capital Goods Exports from 2003 to 2015**

Exporter\Importer	SGP	ASEAN-4	CN&HK	JP&KR	USA	CLMVB	Rest of world	A+3 total	World total
SGP	-	23%	299%	61%	-17%	503%	56%	110%	76%
ASEAN-4	21%	59%	154%	29%	13%	693%	56%	73%	56%
CN&HK	264%	400%	386%	263%	319%	2729%	493%	369%	394%
JP&KR	18%	19%	139%	-6%	19%	1231%	48%	91%	64%
USA	32%	-10%	146%	14%	-	635%	72%	45%	64%
CLMVB	603%	771%	8208%	852%	6343%	1902%	10283%	1378%	3326%

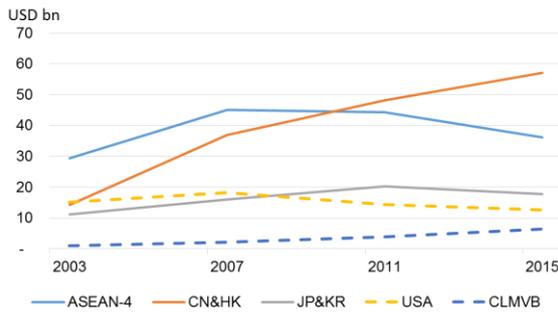
Note: Data treatment is the same as in Table 7.1 and Table 7.2.

Source: UN COMTRADE, AMRO staff calculations

**5. As a result, as a share of Singapore's total exports, the share of capital goods increased to destinations such as CLMVB countries and China and Hong Kong, China, but it fell for trading partners such as the US.** As shown in Figures 7.4 and 7.5, from 2003 to 2015, Singapore's exports in capital goods declined for destinations such as the US. From 2011 to 2015, it also fell destinations such as ASEAN-4<sup>42</sup>. At the same time, it grew tremendously for destinations such as CLMVB countries and China. Singapore thus have benefited greatly from the industrialization in the high-growing economies in CLMVB and China.

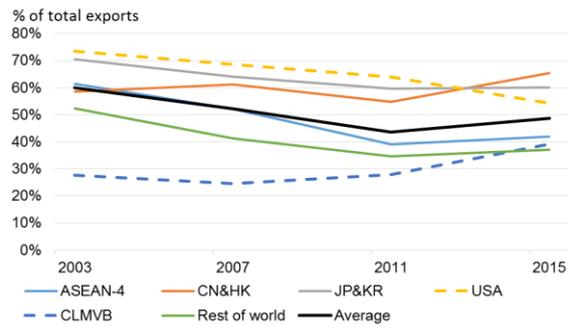
<sup>42</sup> From 2011 to 2015, Singapore's exports of "Parts and accessories of capital goods" to both Indonesia and Malaysia fell sharply, while exports in "capital goods" held up well.

**Figure 7.1. Singapore Capital Goods Exports to Different Countries**



Note: Data treatment is the same as in Tables 7.1 and 7.2.  
Source: UN COMTRADE, AMRO staff calculations

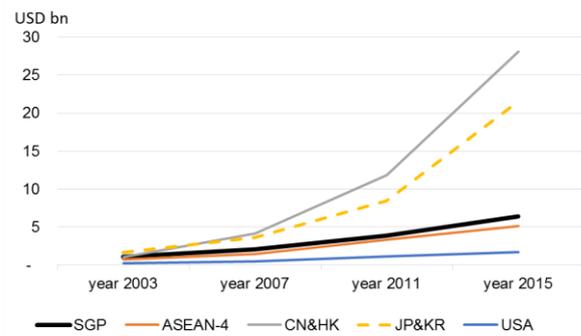
**Figure 7.2. Share of Singapore's Capital Goods Exports to Singapore's Total Exports**



Note: Data treatment is the same as in Tables 7.1 and 7.2.  
Source: UN COMTRADE, AMRO staff calculations

**6. The rapid growth of the CLMVB economies has benefited all countries in terms of capital goods production, including Singapore.** As shown in Figure 7.3, all countries—including Singapore—have greatly increased their capital goods exports to the CLMVB economies from 2003 to 2015. However, the export growth is most pronounced for China, Hong Kong, China, Japan and Korea (also shown in Table 7.3), instead of Singapore and ASEAN-4. In this regard, there is large room for Singapore and ASEAN-4 to increase their shares.

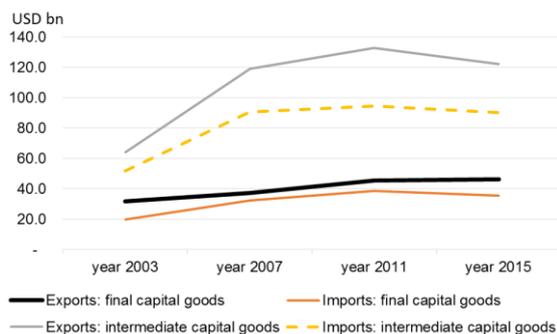
**Figure 7.3. CLMVB's Capital Goods Imports**



Note: Data treatment is the same as in Tables 7.1 and 7.2.  
Source: UN COMTRADE, AMRO staff calculations

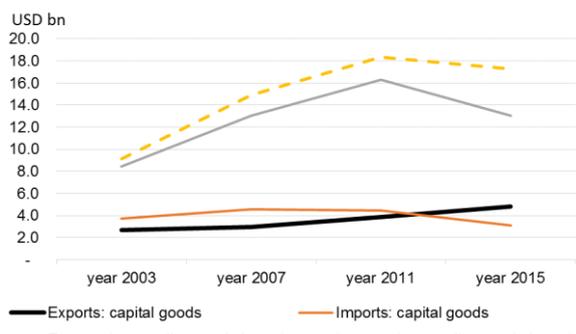
**7. Most of Singapore's trade surplus in capital goods is in the form of intermediate capital goods, reflecting its general upstream-ness in the global value chain.** As shown in Figure 7.4, in 2015, Singapore ran a sizable trade surplus in capital goods, especially in intermediate capital goods. The dominance of intermediate capital goods reflected Singapore's strength in upstream production in the global value chain compared to its trading partners, especially in electronics products, and this is most pronounced when compared to the CLMVB economies. However, as shown in Figure 7.5, Japan and Korea, the developed economies in the region, seem to also show strength in upstream production.

Figure 7.4. Singapore’s Capital Goods Trade with the World



Note: Both exports and imports are based on data reported by Singapore. Final capital goods consist of goods with BEC codes: 41\* Capital goods (except transport equipment); Intermediate capital goods consist of BEC codes: 42\* Parts and accessories of capital goods (except transport equipment)  
Source: UN COMTRADE, AMRO staff calculations

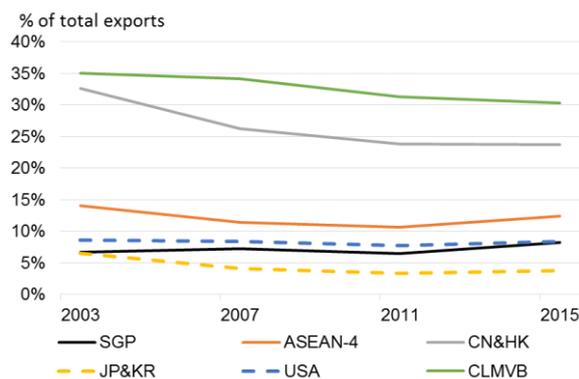
Figure 7.5. Singapore’s Capital Goods Trade with Japan and Korea



Note: Data treatment is the same as in Tables 7.1 and 7.2.  
Source: UN COMTRADE, AMRO staff calculations

8. At the same time, as shown in Table 7.4 and Figure 7.6, the share of consumption goods in Singapore’s total exports was small (8 percent) in 2015, much lower than that of the CLMVB economies (30 percent), and China and Hong Kong, China (24 percent). This ratio has always been low (Figure 7.6). This is also true for most advanced economies such as Japan and Korea (4 percent) and the U.S. (8 percent). This is largely because it is difficult for an advanced economy with labor constraints to boost the export of consumption goods. Therefore, the recently buoyant consumer demand in this region has limited positive spillover effects on Singapore’s exports, but rather, it could have benefited CLMVB countries the most.

Figure 7.6. Share of Consumption Goods Exports to Total Exports



Source: UN COMTRADE, AMRO staff calculations

Table 7.4. Share of Consumption Goods in Total Exports in 2015

Exporter\Importer	SGP	ASEAN-4	CN&HK	JP&KR	USA	CLMVB	Rest of world	Average
SGP	-	7%	6%	12%	14%	7%	9%	8%
ASEAN-4	8%	8%	5%	10%	27%	10%	15%	12%
CN&HK	16%	17%	9%	23%	37%	12%	29%	24%
JP&KR	3%	3%	4%	5%	4%	4%	3%	4%
USA	5%	4%	7%	9%	-	3%	9%	8%
CLMVB	8%	6%	11%	35%	62%	7%	30%	30%

Note: Consumption goods is defined as the sum of the following BEC categories:

61\* Consumer goods not elsewhere specified, durable

62\* Consumer goods not elsewhere specified, semi-durable

63\* Consumer goods not elsewhere specified, non-durable

The number in this table is the ratio between consumer goods exports to the total exports (in Table 7.1).

Source: UN COMTRADE, AMRO staff calculations

**9. In summary, Singapore is dependent on capital goods exports. It has benefited greatly from higher investment demand in this region, in particular China.** Capital goods exports comprise almost half of Singapore's exports (Table 7.1 and Table 7.2). Singapore has benefited greatly from regional growth, and its capital goods exports to China and Hong Kong, China have increased from USD 14 billion in 2003 to USD 57 billion in 2015. Therefore, Singapore is sensitive to demand for capital goods from China. In the future, as the Chinese economy will be driven more and more by consumption demand and there could be further supply chain consolidation, the growth of capital goods export to China will more moderate. In addition, the threat of rising trade protectionism in the U.S. could dampen the export outlook for China and also Singapore's capital goods export to China.

**10. Singapore shall also continue benefit more from capital goods exports to ASEAN, including the CLMVB economies.** Singapore's capital goods exports to ASEAN-4 grew by only 23% from 2003 to 2015. To achieve a higher level of income, ASEAN-4 should continue to industrialize and this will support Singapore's capital goods exports. At the same time, Singapore capital goods exports to CLMVB countries have grown from USD1 Billion in 2003 to USD 6 billion in 2015, and Singapore should also position itself to capture a bigger pie of the growing demand for capital goods in the CLMVB economies. Singapore has also been working toward enhancing the Initiative for ASEAN Integration (IAI) programme in Cambodia, Laos, Myanmar and Vietnam, to accelerate their economic integration into ASEAN. These IAI efforts will also open up new opportunities for Singapore residents in these countries, including trade.

## Appendix 8. Summary of Report of the Committee on the Future Economy

### Strategy 1: Deepen and diversify our international connections

“We must not only resist protectionism but forge ahead to deepen linkages with our overseas partners and seek opportunities in new markets.”

#### Recommendation 1.1: Press on with trade and investment cooperation

“Singapore must continue to work with like-minded partners to advance the liberalisation of trade and investment.”

“We need to strengthen trade cooperation, and reduce tariff and non-tariff barriers to trade.”

#### Recommendation 1.2: Set up a Global Innovation Alliance (GIA)

“To spearhead this, our Institutes of Higher Learning (IHLs) and companies should link up with overseas partners in major innovation hubs and in key demand markets to form a GIA.”

“In-market partners can come on board the GIA to set up innovation launchpads.”

“In addition, the GIA can serve as welcome centres where Singapore-based enterprises and institutions can collaborate with overseas partners.”

#### Recommendation 1.3: Deepen knowledge of our markets

“We should use the SkillsFuture Leadership Development Initiative (LDI) to expose potential corporate leaders to quality overseas assignments. We can also do better to ease the concerns of Singaporean parents over their children’s education when taking on overseas assignments.”

“We should build on these assets, and encourage more specialised market research firms and consultancies to develop wider and deeper market knowledge of the region. More internationalisation programmes can be developed for students to acquire Global-Asia market insights and immerse themselves in overseas markets. Trade associations and economic agencies should undertake more study trips to help businesses gain insights into the region.”

### Strategy 2: Acquire and utilise deep skills

#### Recommendation 2.1: Facilitate acquisition of deeper skills

“To stay relevant, our workers need to continuously deepen and refresh their skills. To facilitate this process, our training providers and IHLs should offer more modularised and technology enabled training programmes.”

“The Government should consider setting up an online one-stop education, training, and career guidance portal.”

#### Recommendation 2.2: Strengthen nexus between acquisition and utilisation of skills

“Another potential opportunity is in urban solutions, where the Government can support place-and-train schemes in firms throughout the value chain.”

“Existing companies should give more attention to in-house training. This could be supported by extending work-learn programmes beyond fresh graduates to existing employees in companies.”

“The Government should facilitate training and employment of workers via initiatives such as the Professional Conversion Programme and Career Support Programme.”

### Strategy 3: Strengthen enterprise capabilities to innovate and scale up

#### Recommendation 3.1: Strengthen our innovation ecosystem

“The Government has invested significantly in research and development (R&D). The CFE recommends establishing commercially-oriented entities that have the technical expertise, business networks, and instincts to better commercialise the research findings and intellectual property (IP) of our research institutions. We also recommend developing a standardised IP protocol for all public agencies and publicly-funded research performers, to simplify the commercialisation process.”

#### Recommendation 3.2: Support enterprises to scale up

“We should help high-growth enterprises scale up and internationalise with targeted assistance, including access to networks, mentors, technology and financing.”

“We should also encourage partnerships among enterprises, especially between large and small enterprises.”

**Recommendation 3.3: Catalyse the private sector to provide more growth capital**

“For enterprises based in Singapore to scale up, they need more smart and patient growth capital”

“The Government should simplify the regulatory framework for VCs, in particular the authorisation process for VC managers. We should also encourage more PE firms to be based here”

**Strategy 4: Build strong digital capabilities**

**Recommendation 4.1: Help small and medium enterprises (SMEs) adopt digital technologies**

“SMEs form the bulk of our enterprises, and we should help them adopt digital technologies. We can do so by providing expertise as well as financing support. We can also accelerate the pace of adoption of digital technologies among SMEs through national initiatives like the National Trade Platform and a National Payments Council.”

**Recommendation 4.2: Build deep capabilities in data analytics and cybersecurity**

“The Government should support the development of digital capabilities such as applied data analytics by establishing joint laboratories with industry players.”

**Recommendation 4.3: Harness data as an asset**

“The Government should establish a dedicated programme office to support enterprises in making the most of data as an asset.”

**Strategy 5: Develop a vibrant and connected city of opportunity**

**Recommendation 5.1: Invest in our external connectivity**

“The Government should continually invest in new international connections.”

“In the future economy, Singapore must also be digitally connected”

**Recommendation 5.2: Continue to plan boldly for growth and city rejuvenation**

“We must also develop ways to create new space, such as by developing an underground masterplan to expand underground infrastructure. We can also use our existing space better, for example by creating an urban logistics system that will reduce congestion.”

**Recommendation 5.3: Build partnerships for a vibrant city**

“We should create dense clusters of mutually-reinforcing economic activities— such as in Punggol and JID – by siting companies of varying sizes with synergistic activities together to encourage partnerships.”

“The private sector can partner Government in such projects by taking on the role of a “master developer””

**Recommendation 5.4: Develop exportable capabilities**

“Partnerships between the Government and the private sector will also help Singapore-based enterprises develop exportable capabilities in the field of urban solutions.”

**Strategy 6: Develop and implement Industry Transformation Maps (ITMs)**

**Recommendation 6.1: Tailor ITMs for each industry**

“We should continue to adopt a tailored approach for each industry, so we are focused on where the potential can be best realised in each case.”

**Recommendation 6.2: Adopt a cluster approach to maximise synergies across industries**

“We should enhance our ITMs by adopting a cluster approach, to foster synergies across industries, not just within industries. We can take advantage of skills adjacencies between industries to support the provision of skilled manpower in both.”

**Strategy 7: Partner each other to enable innovation and growth**

**Recommendation 7.1: A greater role for TACs and unions**

“More TACs should step forward to lead similar initiatives. They can tap on the Local Enterprise and Association Development (LEAD) programme to do so.”

“Our unions too must continue to do their part to nurture a sense of ownership among workers and help them prepare for jobs of the future.”

**Recommendation 7.2: Create a regulatory environment to support innovation and risk taking**

“The Government should therefore design a regulatory environment that supports innovation and risk-taking, even as it balances this against risk.”

“The Government should streamline its support schemes for enterprises.”

**Recommendation 7.3: Use Government lead demand to support the development of promising industries**

“The Government should consider using lead demand more systematically to support the development of promising industries, especially where this coincides with our own strategic national needs.”

**Recommendation 7.4: Review and reshape Singapore’s tax system**

“Our tax system should remain broad-based, progressive, and fair.”

“Singapore’s tax regime should remain competitive and pro-growth.”

**Recommendation 7.5: Create a sustainable environment**