

[illegible]

February 2017

**Ministry of Trade and Industry  
Republic of Singapore**

website: [www.mti.gov.sg](http://www.mti.gov.sg)  
email: [mti\\_email@mti.gov.sg](mailto:mti_email@mti.gov.sg)

*All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanised, photocopying, recording or otherwise, without the prior permission of the copyright holder.*

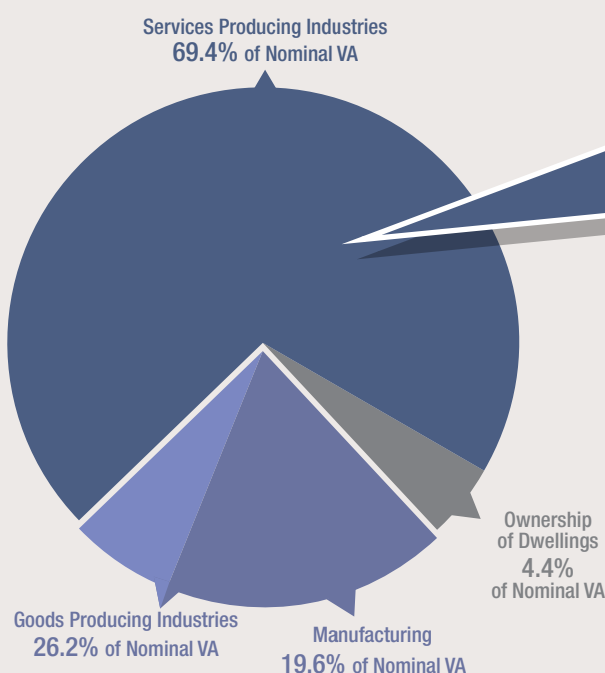
<b>MAIN INDICATORS</b>	<b>02</b>
<b>CHAPTER 1</b> Economic Performance	<b>04</b>
<b>CHAPTER 2</b> Labour Market and Productivity	<b>12</b>
<b>CHAPTER 3</b> Costs, Investments and Prices <b>Box 3.1</b> Business Costs of Singapore's Manufacturing & Services Sectors	<b>18</b>    <b>25</b>
<b>CHAPTER 4</b> International Trade	<b>36</b>
<b>CHAPTER 5</b> Balance of Payments	<b>44</b>
<b>CHAPTER 6</b> Sectoral Performance 6.1 Manufacturing 6.2 Construction 6.3 Wholesale & Retail Trade 6.4 Accommodation & Food Services 6.5 Transportation & Storage 6.6 Information & Communications 6.7 Finance & Insurance 6.8 Business Services 6.9 Overview of Sectors in 2016 <b>Box 6.1</b> Drivers of Growth in the Manufacturing Sector	<b>50</b>                     <b>76</b>
<b>CHAPTER 7</b> Economic Outlook	<b>82</b>
<b>FEATURE ARTICLE</b> Drivers of Labour Productivity Growth Trends in Singapore: An Update Using Value-Added Per Actual Hour Worked	<b>86</b>

# MAIN INDICATORS OF THE SINGAPORE ECONOMY

## OVERALL ECONOMY

GDP at Current Market Price		Real GDP (Year-on-Year-Growth)		Per Capita GNI	
<b>\$408.1</b> billion 2015	<b>\$410.3</b> billion 2016	<b>+1.9%</b> 2015	<b>+2.0%</b> 2016	<b>\$70,450</b> 2015	<b>\$70,828</b> 2016

## STRUCTURE OF THE ECONOMY IN 2016



### BREAKDOWN OF SERVICES PRODUCING INDUSTRIES

Business Services 15.8% of Nominal VA	Wholesale & Retail Trade 14.2% of Nominal VA	Finance & Insurance 13.1% of Nominal VA
Transportation & Storage 7.6% of Nominal VA	Information & Communications 4.2% of Nominal VA	Accommodation & Food Services 2.2% of Nominal VA
Other Services Industries account for 12.2% of Nominal VA		

## LABOUR MARKET

Employment (as at year end)	
<b>3,656.2</b> thousand 2015	<b>3,672.6</b> thousand 2016
Unemployment Rate	
<b>1.9%</b> 2015	<b>2.1%</b> 2016
Value-Added per Actual Hour Worked (Year-on-Year Growth)	
<b>1.0%</b> 2015	<b>1.4%</b> 2016

## COSTS

Unit Labour Cost of Overall Economy (Year-on-Year Growth)	
<b>+3.6%</b> 2015	<b>+2.4%</b> 2016
Unit Business Cost of Manufacturing (Year-on-Year Growth)	
<b>+0.4%</b> 2015	<b>-8.5%</b> 2016
Unit Labour Cost of Manufacturing (Year-on-Year Growth)	
<b>+5.5%</b> 2015	<b>-4.5%</b> 2016

## PRICES

Consumer Price Index - All Items (Year-on-Year Growth)	
<b>-0.5%</b> 2015	<b>-0.5%</b> 2016
Domestic Supply Price Index (Year-on-Year Growth)	
<b>-15.3%</b> 2015	<b>-6.9%</b> 2016
Singapore Manufactured Products Price Index (Year-on-Year Growth)	
<b>-9.2%</b> 2015	<b>-5.5%</b> 2016

# MAIN INDICATORS OF THE SINGAPORE ECONOMY

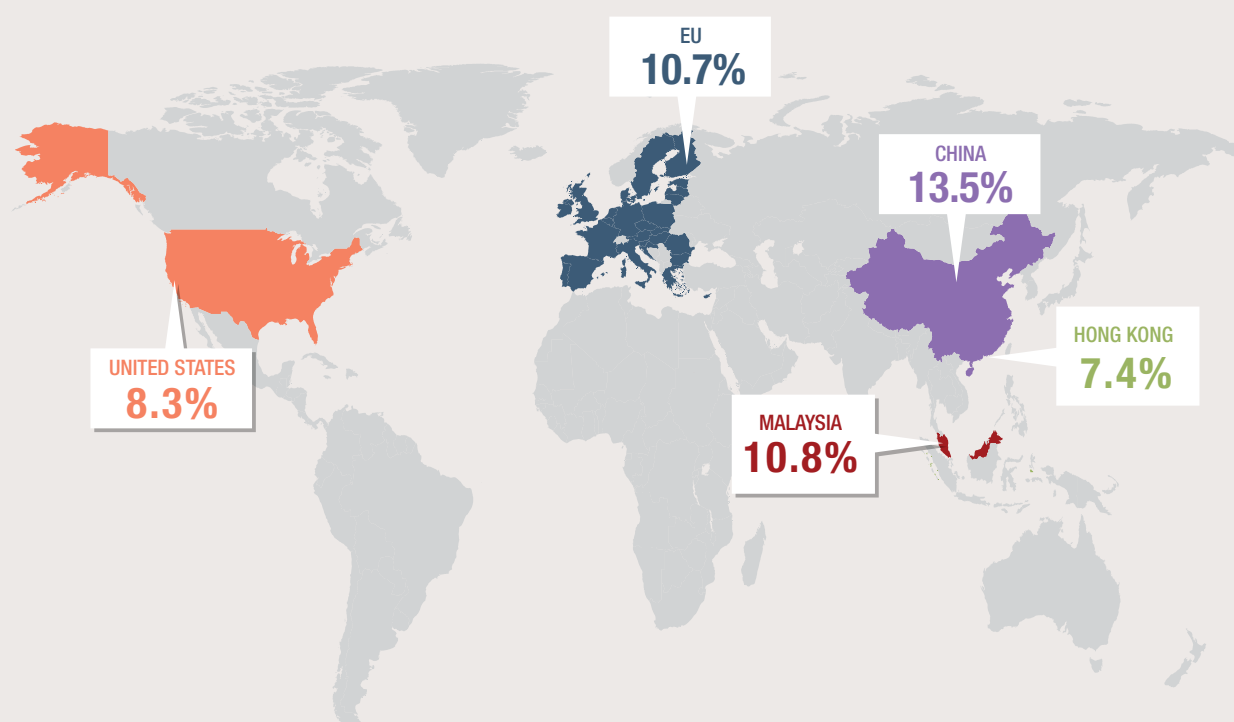
## MERCHANDISE TRADE

Merchandise Exports		Merchandise Imports		Share of Exports by Top 5 Export Destinations in 2016		
<b>\$491,816</b> million	<b>\$466,912</b> million	<b>\$423,403</b> million	<b>\$403,305</b> million	 <b>13.1%</b> China	 <b>12.8%</b> Hong Kong	
<b>-6.5%</b> Year-on-Year Growth	<b>-5.1%</b> Year-on-Year Growth	<b>-11.5%</b> Year-on-Year Growth	<b>-4.7%</b> Year-on-Year Growth	 <b>10.5%</b> Malaysia	 <b>8.6%</b> EU	 <b>7.9%</b> Indonesia
2015	2016	2015	2016			

## SERVICES TRADE

Services Exports		Services Imports		Top 5 Services Exports Categories (Share of Total Services Exports)		
<b>\$204,297</b> million	<b>\$206,738</b> million	<b>\$212,417</b> million	<b>\$214,942</b> million	<b>32%</b> Transport Services	<b>25%</b> Other Business Services	
<b>+5.1%</b> Year-on-Year Growth	<b>+1.2%</b> Year-on-Year Growth	<b>+5.2%</b> Year-on-Year Growth	<b>+1.2%</b> Year-on-Year Growth	<b>13%</b> Financial Services	<b>12%</b> Travel Services	<b>5%</b> Maintenance & Repair Services
2015	2016	2015	2016			

## TOP 5 TRADING PARTNERS AND SHARE OF TOTAL MERCHANDISE TRADE IN 2016



# CHAPTER 1

## Economic Performance





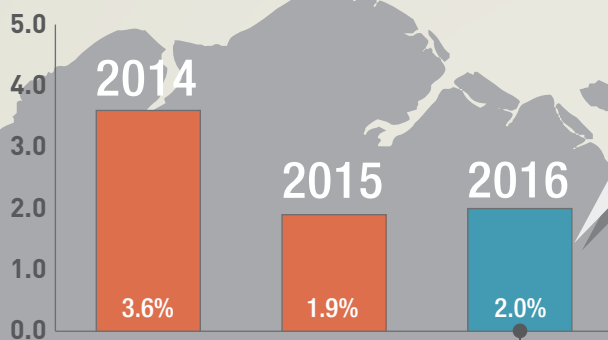


# CHAPTER 1

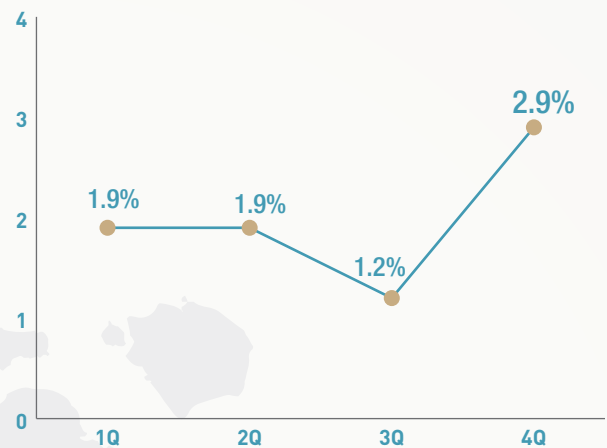
# ECONOMIC PERFORMANCE

Real GDP grew by

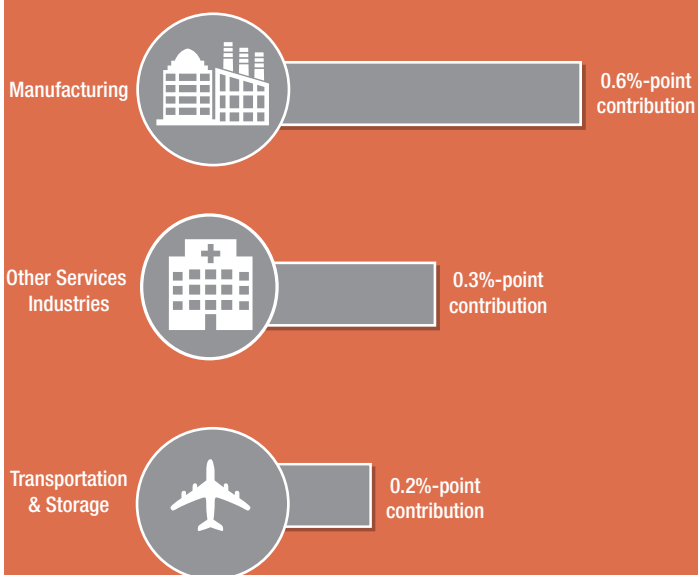
**2.0%** in 2016



QUARTERLY TREND FOR 2016

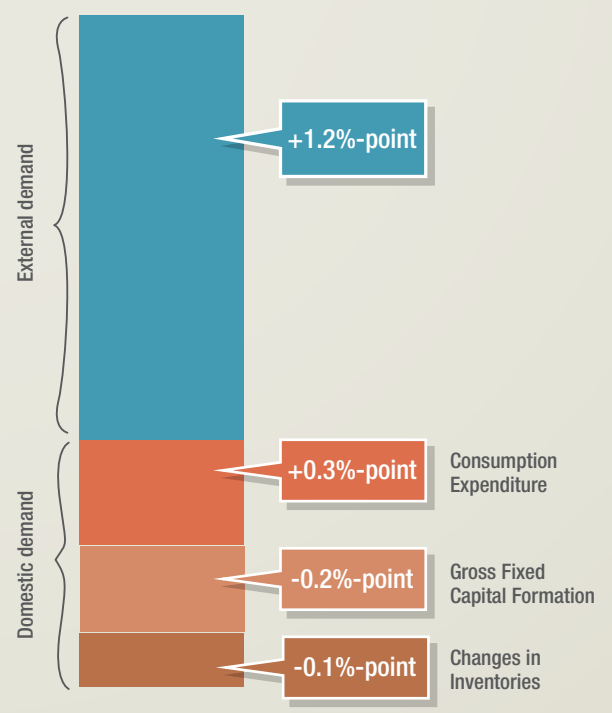


## MAIN DRIVERS OF GROWTH IN 2016



In total, these sectors accounted for  
**56%** of GDP growth

## SOURCES OF GROWTH IN 2016





## OVERVIEW

In the fourth quarter of 2016, the economy grew by 2.9 per cent on a year-on-year basis, up from the 1.2 per cent growth in the previous quarter. The sectors which contributed the most to growth were the manufacturing and transportation & storage sectors.

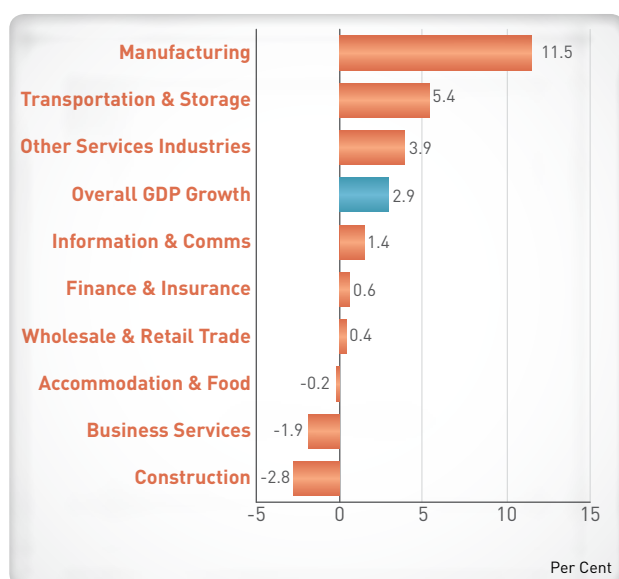
For the whole of 2016, the economy expanded by 2.0 per cent, similar to the 1.9 per cent growth in 2015. All sectors grew in 2016, with the exception of the business services sector. The manufacturing sector and “other services industries” were the key contributors to overall GDP growth.

## OVERALL PERFORMANCE

### Fourth Quarter 2016

The economy grew by 2.9 per cent in the fourth quarter, faster than the 1.2 per cent growth in the previous quarter (Exhibit 1.1). On a quarter-on-quarter seasonally-adjusted annualised basis, the economy expanded by 12 per cent, a strong turnaround from the 0.4 per cent contraction in the preceding quarter.

*Exhibit 1.1: GDP and Sectoral Growth Rates in 4Q 2016*



Growth in the manufacturing sector accelerated to 11 per cent in the fourth quarter, from 1.8 per cent in the third quarter. The faster pace of growth was primarily due to the electronics and biomedical manufacturing clusters.

The services producing industries saw a modest pace of growth in the fourth quarter, collectively expanding by 1.0 per cent compared to 0.4 per cent in the previous quarter. All services sectors expanded, with the exception of the business services sector.

Among the services sectors, the transportation & storage sector registered the fastest pace of growth in the fourth quarter. Growth in the sector came in at 5.4 per cent, higher than the 0.7 per cent in the previous quarter, largely supported by the water transport segment.

On the other hand, the business services sector contracted by 1.9 per cent, following the 1.8 per cent decline in the previous quarter. The sector's performance was weighed down by both the real estate and professional services segments.

Meanwhile, the construction sector contracted by 2.8 per cent, extending the 2.2 per cent contraction in the third quarter. The output of the sector was pulled down largely by private sector construction activities, which shrank on the back of a decline in private residential and private industrial works.

### Full Year of 2016

For the whole of 2016, the economy expanded by 2.0 per cent, similar to the 1.9 per cent growth in 2015 (Exhibit 1.2).

The manufacturing sector grew by 3.6 per cent, rebounding from the 5.1 per cent contraction in 2015. Growth was primarily supported by the electronics and biomedical manufacturing clusters, while a decline in the output of the transport engineering cluster placed a drag on growth.

The services producing industries expanded by 1.0 per cent in 2016, slowing from the 3.2 per cent growth in 2015. “Other services industries” registered the strongest pace of growth, at 3.1 per cent, supported largely by the education, health & social services segment. By contrast, the business services sector shrank by 0.9 per cent, weighed down by the weakness in the real estate segment.

Exhibit 1.2: GDP and Sectoral Growth Rates in 2016

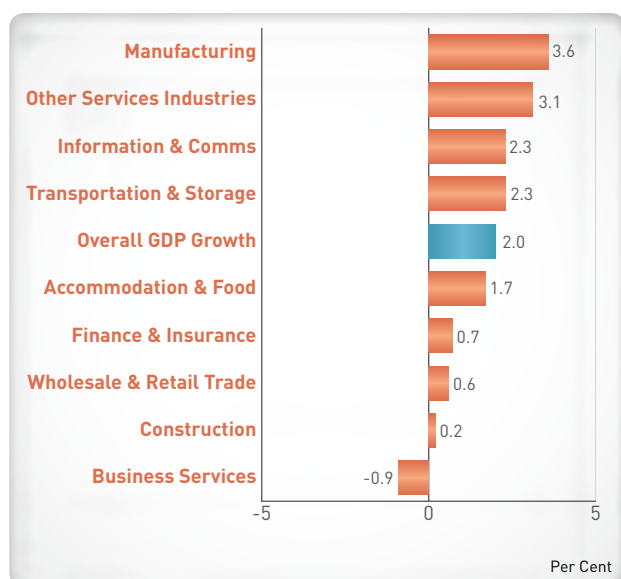
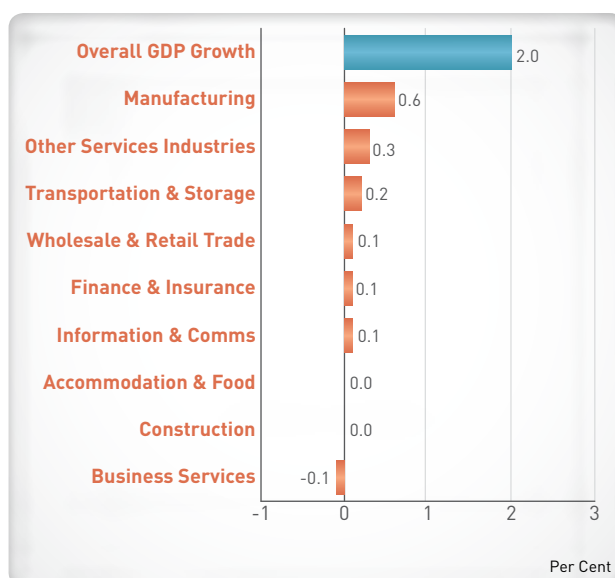


Exhibit 1.4: Percentage-Point Contribution to Growth in Real GDP in 2016 (By Industries)

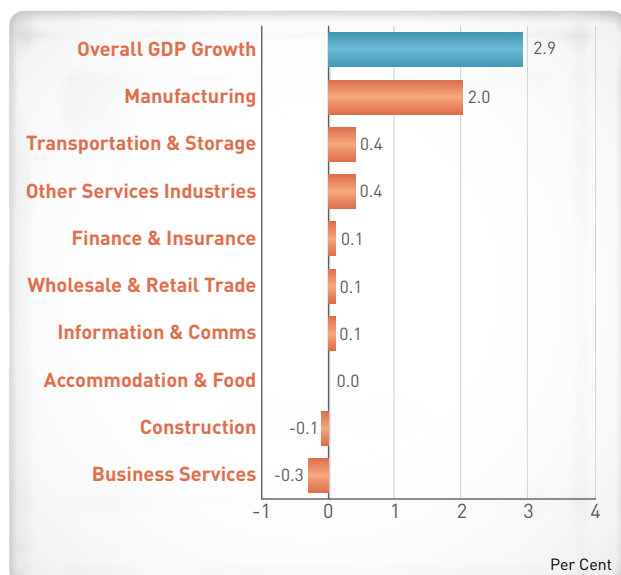


## Contribution to Growth

In the fourth quarter, the manufacturing sector, the transportation & storage sector and “other services industries” collectively accounted for 95 per cent of overall GDP growth (Exhibit 1.3). All other sectors, with the exception of the construction and business services sectors, also contributed positively to growth in the quarter.

For the whole of 2016, all sectors contributed positively to overall GDP growth, except for the business services sector (Exhibit 1.4). The manufacturing sector was the largest contributor (0.6 percentage-points), followed by “other services industries” (0.3 percentage-points) and the transportation & storage sector (0.2 percentage-points).

Exhibit 1.3: Percentage-Point Contribution to Growth in Real GDP in 4Q 2016 (By Industries)



## SOURCES OF GROWTH

Total demand rose by 2.8 per cent in the fourth quarter, a reversal from the 0.7 per cent decline in the preceding quarter (Exhibit 1.5). The rebound was due to a turnaround in domestic demand.

For the whole of 2016, growth in total demand eased to 1.2 per cent, from 2.5 per cent in 2015. External demand was the key contributor to total demand growth, while the contribution from domestic demand was flat.

Exhibit 1.5: Percentage-Point Contribution to Total Demand Growth

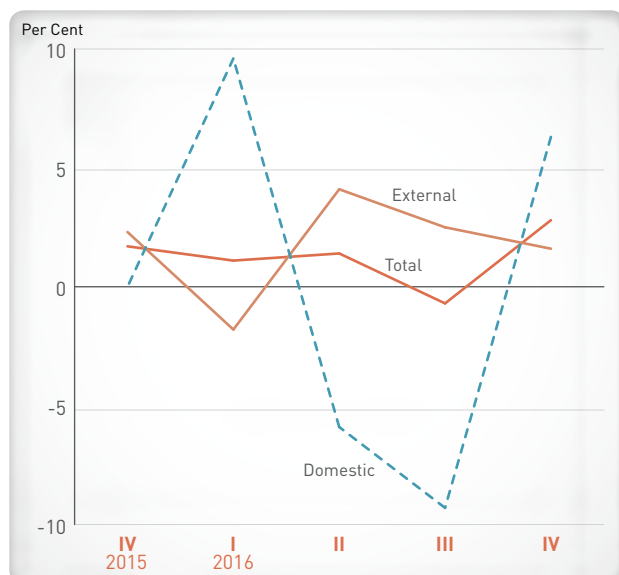
	2015	2016			2016
		II	III	IV	
Total Demand	2.5	1.4	-0.7	2.8	1.2
External Demand	1.9	3.0	1.8	1.2	1.2
Total Domestic Demand	0.5	-1.6	-2.5	1.6	0.0
Consumption Expenditure	0.8	0.5	0.0	0.0	0.3
Public	0.3	0.3	0.0	0.3	0.2
Private	0.6	0.2	0.0	-0.3	0.1
Gross Fixed Capital Formation	0.1	0.1	-0.4	-0.5	-0.2
Changes in Inventories	-0.4	-2.2	-2.1	2.2	-0.1

## External Demand

External demand rose by 1.6 per cent in the fourth quarter, slower than the 2.5 per cent growth in the preceding quarter (Exhibit 1.6). The growth in external demand was supported by both real merchandise exports and real services exports.

For the full year, external demand grew at a slower pace of 1.6 per cent, compared to the 2.6 per cent growth in the previous year, amidst sluggish global economic conditions. The growth in external demand was largely driven by real merchandise exports, of which miscellaneous transactions, mineral fuels and chemicals & chemical products were the key contributors. Real services exports also contributed positively to growth, supported mainly by robust growth in the exports of transport and travel.

**Exhibit 1.6: Changes in Total Demand at 2010 Market Prices**



## Domestic Demand

Total domestic demand rose by 6.3 per cent in the fourth quarter, reversing the 9.3 per cent decline in the preceding quarter. This was due to a build-up in inventories, which more than offset a decline in gross fixed capital formation.

For 2016 as a whole, total domestic demand saw a slight contraction of 0.1 per cent, compared to the 2.1 per cent increase in 2015. Domestic demand was weighed down by a decline in gross fixed capital formation and a smaller build-up in inventories, which together offset an increase in consumption expenditure.

## Consumption Expenditure

In the fourth quarter, total consumption expenditure fell at a slightly faster pace of 0.3 per cent, compared to the 0.1 per cent drop in the previous quarter.

For the full year, total consumption expenditure rose by 1.8 per cent, moderating from the 5.3 per cent growth in 2015, on the back of a slowdown in both public and private consumption. Public consumption increased at a slower pace of 6.3 per cent, compared to 8.0 per cent growth in 2015. Similarly, growth in private consumption decelerated to 0.6 per cent, from 4.6 per cent in the previous year. Expenditure on transport and housing & utilities were the main contributors to private consumption growth, while declines in the expenditure on miscellaneous goods & services and recreation & culture posed the largest drag on growth.

## Gross Fixed Capital Formation

Gross fixed capital formation (GFCF) declined by 5.0 per cent in the fourth quarter, extending the 4.3 per cent decline in the preceding quarter. The decline in GFCF was mainly due to private GFCF, which fell by 6.5 per cent in the quarter. Meanwhile, public GFCF grew by 0.6 per cent.

For the full year, GFCF declined by 2.5 per cent as investors' confidence continued to be weighed down by global economic uncertainties. In particular, private GFCF fell at a faster pace of 5.5 per cent, compared to the 0.4 per cent decline in 2015 (Exhibit 1.7). The fall in private GFCF was largely due to a decrease in investment spending on private construction & works, transport equipment and machinery & equipment (Exhibit 1.8).

**Exhibit 1.7: Annual Changes in Gross Fixed Capital Formation at 2010 Market Prices, 2016**

	Total	Public	Private
<b>TOTAL</b>	-2.5	9.0	-5.5
Construction & Works	-3.5	10.5	-10.4
Transport Equipment	-8.1	0.9	-8.4
Machinery & Equipment	-1.6	-3.8	-1.5
Intellectual Property Products	1.6	3.6	1.4

**Exhibit 1.8: Percentage-Point Contribution to Growth of Gross Fixed Capital Formation at 2010 Market Prices, 2016**

	Total	Public	Private
<b>TOTAL</b>	-2.5	1.8	-4.4
Construction & Works	-1.8	1.8	-3.6
Transport Equipment	-0.6	0.0	-0.6
Machinery & Equipment	-0.4	0.0	-0.3
Intellectual Property Products	0.3	0.1	0.2

## NATIONAL SAVING

Singapore's nominal GDP amounted to \$410 billion in 2016, an increase of 0.5 per cent over 2015. With factor income outflows exceeding inflows by \$13 billion, gross national income (GNI) came in at \$397 billion, higher than the \$390 billion in 2015.

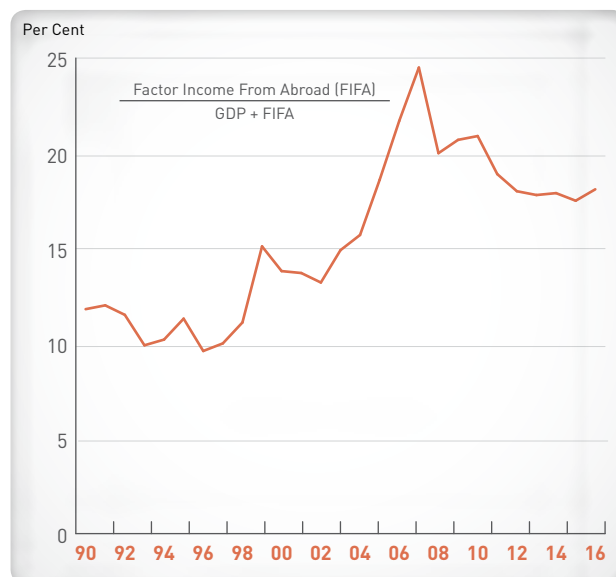
Gross national savings (GNS) declined by 0.6 per cent to \$182 billion in 2016. This comprised a net \$78 billion that was lent or transferred abroad, and \$104 billion in gross capital formation. The national savings rate was 46 per cent of GNI, similar to the year before.

## GNI AND THE EXTERNAL ECONOMY

Factor income from abroad reached \$90 billion in 2016, up slightly from \$87 billion in 2015. The contribution of overseas operations to the total economy was 18 per cent in 2016, similar to 2015 (Exhibit 1.9).

Based on the Survey of Singapore's Investment Abroad, the stock of direct investment abroad increased from \$621 billion in 2014 to \$637 billion in 2015.

**Exhibit 1.9: Singapore's Earnings from External Economy as a Proportion of Total Income**







# CHAPTER 2

## Labour Market and Productivity







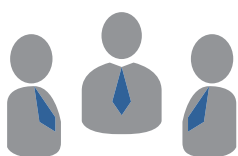


## CHAPTER 2

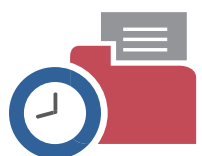
# LABOUR MARKET AND PRODUCTIVITY

### EMPLOYMENT AND VA PER ACTUAL HOUR WORKED GROWTH IN 2016

**+0.4%** **+1.4%**

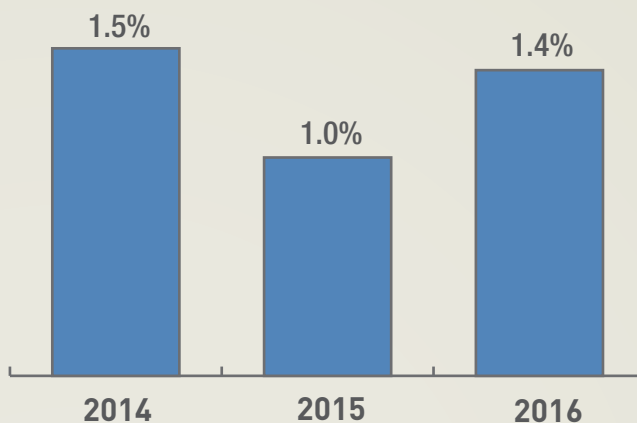


EMPLOYMENT



VA PER ACTUAL HOUR WORKED

### VA PER ACTUAL HOUR WORKED GROWTH



### MAIN DRIVERS OF EMPLOYMENT GROWTH IN 2016

**+20,700**  
employed



Other Services Industries

**+8,500**  
employed



Business Services

**+5,500**  
employed



Accommodation & Food Services

### SECTORS WITH THE HIGHEST VA PER ACTUAL HOUR WORKED GROWTH IN 2016

**+7.9%**



Manufacturing

**+2.4%**



Transportation & Storage

**+2.1%**



Wholesale & Retail Trade

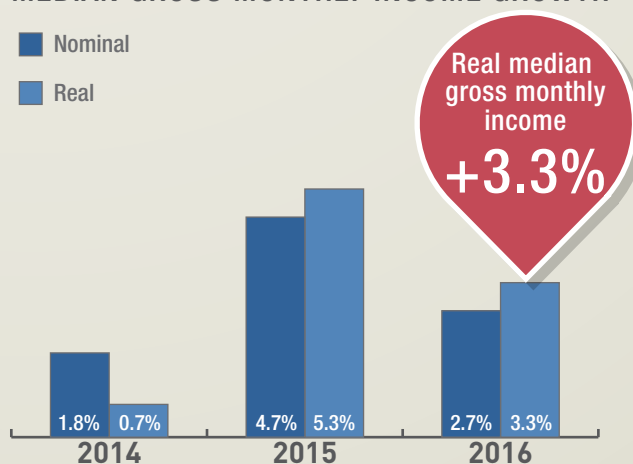
### RESIDENT UNEMPLOYMENT RATE REMAINED LOW AT

**3.0%** in 2016



### MEDIAN GROSS MONTHLY INCOME GROWTH

■ Nominal  
■ Real



## OVERVIEW

Total employment growth moderated to 16,400 in 2016, from 32,300 in 2015, amidst sluggish economic growth and the continued moderation in foreign manpower growth. In addition, the unemployment rates for both residents and citizens increased.

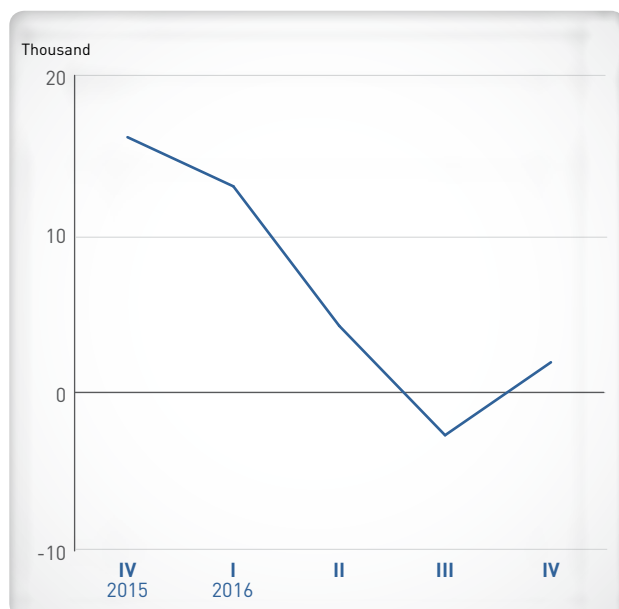
Labour productivity, as measured by value-added per actual hour worked, grew by 1.4 per cent in 2016, higher than the 1.0 per cent growth in 2015. Real gross median income rose by 3.3 per cent in 2016, slower than the growth of 5.3 per cent in 2015.

## EMPLOYMENT<sup>1</sup>

Total employment grew in the fourth quarter (1,900), a reversal from the decline in the third quarter (-2,700), supported by hiring for year-end festivities. However, the employment gain was lower than that seen in the fourth quarter of 2015 (16,100) (Exhibit 2.1).

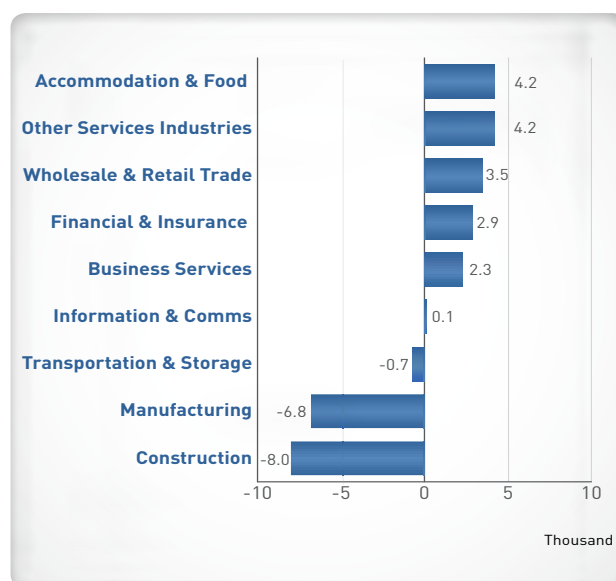
At the sectoral level, manufacturing employment declined for the ninth consecutive quarter (-6,800) (Exhibit 2.2). In particular, employment in the marine & offshore engineering segment continued to be weighed down by sluggish demand for oil rigs and oilfield equipment amidst low oil prices. Employment in the construction sector fell for the second consecutive quarter (-8,000), in part due to continued weakness in private sector construction works.

**Exhibit 2.1: Changes in Total Employment**



Nonetheless, these declines were offset by employment gains in the services industries (16,700) in the fourth quarter. Sectors such as the accommodation & food industry registered stronger employment growth in the quarter (4,200), reflecting hiring for year-end festivities.

**Exhibit 2.2: Changes in Employment by Industry in 4Q 2016**



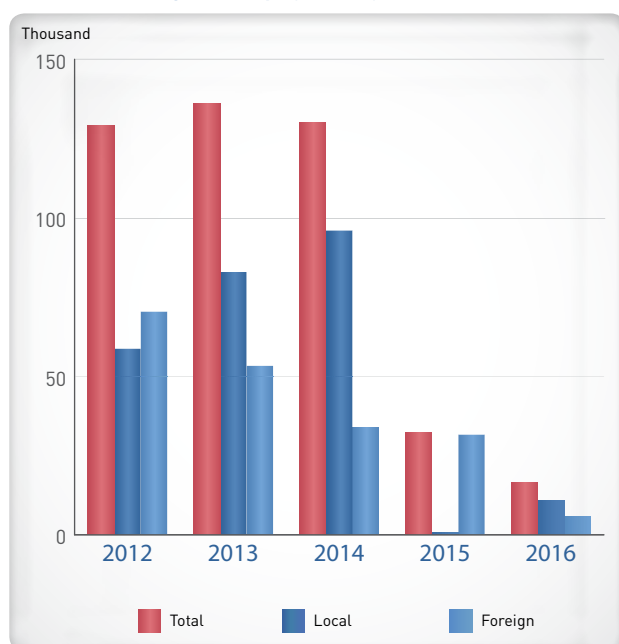
For the whole of 2016, total employment increased by an estimated 16,400, lower than the growth of 32,300 in 2015. Growth was also the slowest since 2003 (-12,900), and came on the back of sluggish economic growth and the continued moderation in foreign manpower growth.

The slower growth in total employment was due to a slowdown in foreign employment growth (Exhibit 2.3). Local employment grew by an estimated 10,700 in 2016, higher than the 700 increase in 2015. On the other hand, foreign employment growth moderated from 31,600 in 2015 to 5,700 in 2016 (Exhibit 2.3). Excluding foreign domestic workers, foreign employment fell in 2016 (-2,500), the first time since 2009.

As at December 2016, there were 3,672,600 employed persons in Singapore, with 2,279,700 locals and 1,393,000 foreigners.

<sup>1</sup> Figures for the fourth quarter of 2016 are based on preliminary estimates.

**Exhibit 2.3: Changes in Employment by Residential Status**

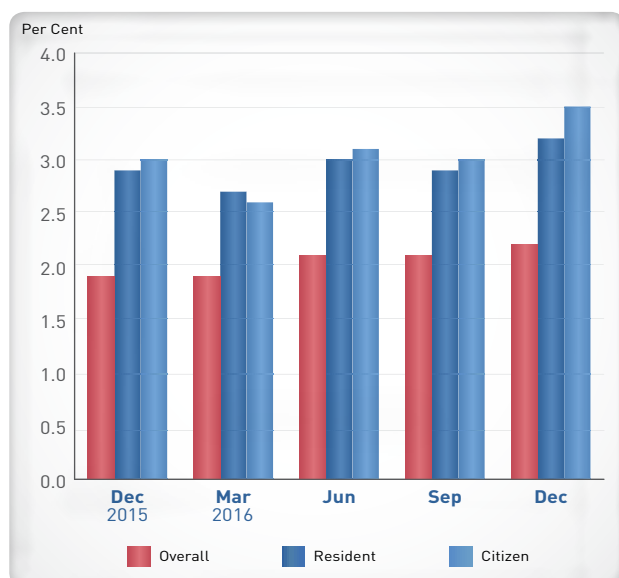


## UNEMPLOYMENT

The seasonally-adjusted overall unemployment rate rose from 2.1 per cent in September 2016 to 2.2 per cent in December 2016 (Exhibit 2.4). Over the same period, both the resident and citizen unemployment rates increased (2.9 per cent to 3.2 per cent, and 3.0 per cent to 3.5 per cent respectively). This occurred as the number of people entering the labour force to look for work exceeded the growth in employment.

In December 2016, there were 74,000 unemployed residents, of whom 67,400 were Singapore citizens. These were higher than the number of unemployed residents (66,600) and citizens (58,500) in September 2016.

**Exhibit 2.4: Unemployment Rates (Seasonally-Adjusted)**



For the full year, the annual average overall unemployment rate rose from 1.9 per cent in 2015 to 2.1 per cent in 2016. Similarly, the unemployment rate for residents and citizens increased from 2.8 per cent to 3.0 per cent and 2.9 per cent to 3.1 per cent respectively. The increase was broad-based across most age and education groups.

In 2016, 67,400 residents were unemployed on average, of whom 59,200 were Singapore citizens. The corresponding figures in 2015 were slightly lower, at 62,500 and 55,700 respectively.

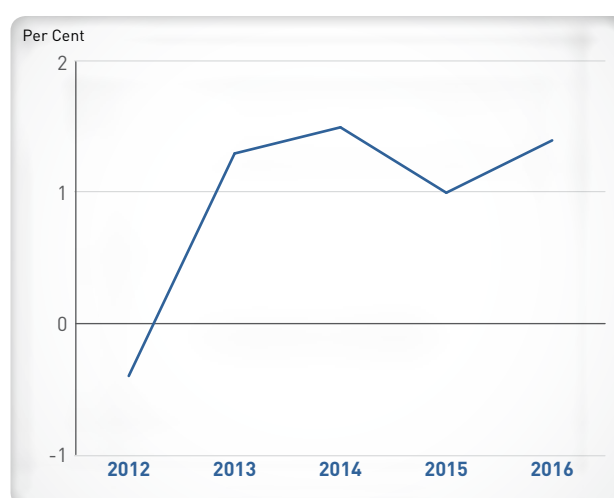
## PRODUCTIVITY

### Value-Added per Actual Hour Worked

Overall labour productivity, as measured by value-added per actual hour worked, increased by 1.4 per cent in 2016, an improvement from the 1.0 per cent growth in the previous year (Exhibit 2.5). Productivity of the manufacturing, transportation & storage, wholesale & retail trade, finance & insurance and information & communications sectors rose, while that for the other sectors declined (Exhibit 2.6).

Productivity growth of outward-oriented sectors as a whole continued to outperform that of domestically-oriented sectors in 2016. Specifically, the productivity of outward-oriented sectors rose by 3.0 per cent, while that of domestically-oriented sectors fell by 1.4 per cent.<sup>2</sup>

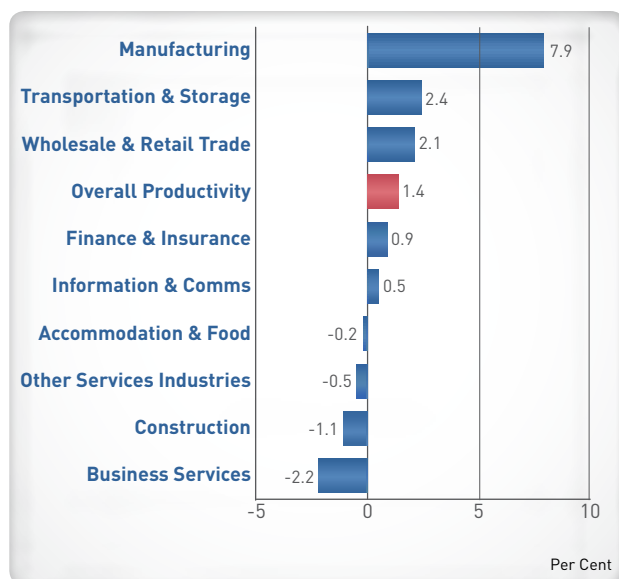
**Exhibit 2.5: Changes in Value-Added per Actual Hour Worked for the Overall Economy**



<sup>2</sup> Based on MTI estimates. Outward-oriented sectors refer to manufacturing, wholesale trade, transportation & storage, accommodation, information & communications, finance & insurance, and professional services. Domestically-oriented sectors refer to construction, retail trade, food & beverage services, other business services, and other services industries.



**Exhibit 2.6: Changes in Value-Added per Actual Hour Worked by Industry in 2016**



## Value-Added per Worker

Value-added per worker grew by 2.4 per cent in the fourth quarter. For 2016 as a whole, value-added per worker grew by 1.0 per cent, reversing the decline of 0.2 per cent in 2015.

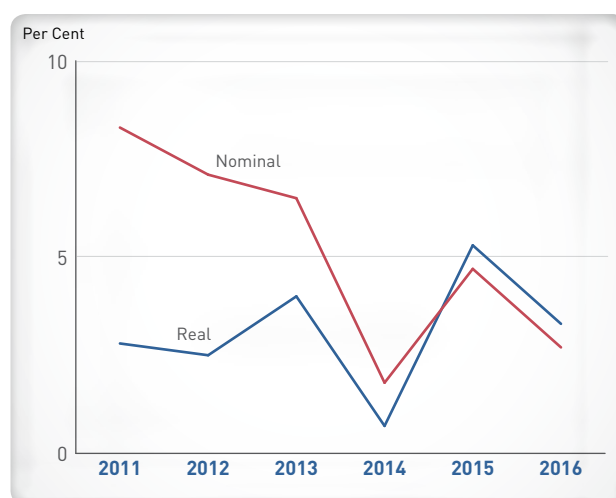
The stronger growth in value-added per actual hour worked compared to value-added per worker was due to a fall in the number of actual hours worked per worker.<sup>3</sup>

## INCOME FROM WORK

Real and nominal median gross monthly income grew at a slower pace in 2016. The nominal median gross monthly income (including employer CPF contributions) of full-time employed residents rose by 2.7 per cent to \$4,056 in 2016, compared to the increase of 4.7 per cent in 2015.

After adjusting for negative inflation<sup>4</sup>, real median income grew by 3.3 per cent in 2016, slower than the growth of 5.3 per cent in 2015 (Exhibit 2.7).

**Exhibit 2.7: Change in Median Gross Monthly Income from Work of Full-Time Employed Residents**



<sup>3</sup> Based on MTI estimates.

<sup>4</sup> The Consumer Price Index (CPI) for all items fell by 0.5 per cent in 2016.

# CHAPTER 3

## Costs, Investments and Prices





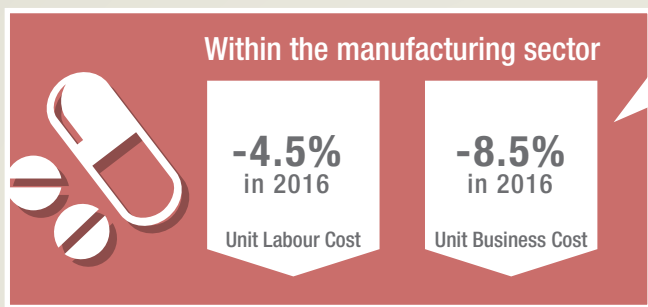


## CHAPTER 3

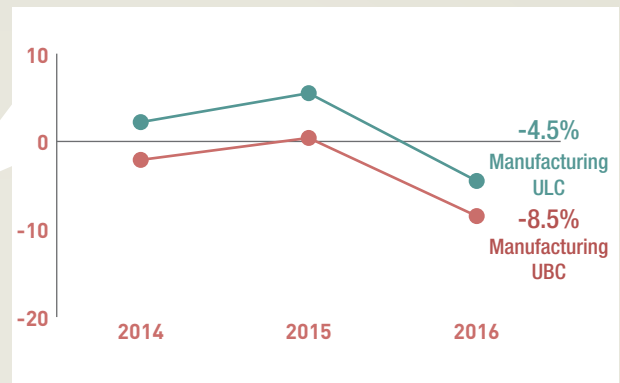
# COSTS, INVESTMENTS AND PRICES

Overall Unit Labour Cost grew by

**2.4%** in 2016

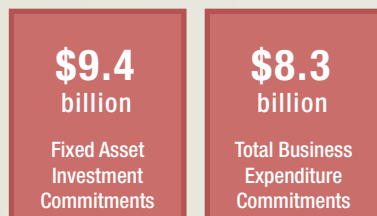


GROWTH RATES OF UNIT LABOUR COST (ULC) AND UNIT BUSINESS COST (UBC)



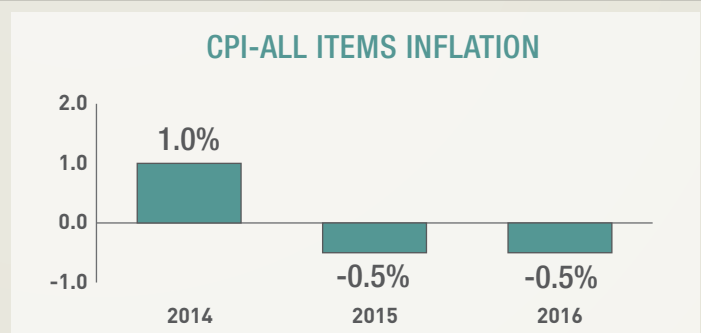
### INVESTMENT COMMITMENTS

Manufacturing and Services attracted

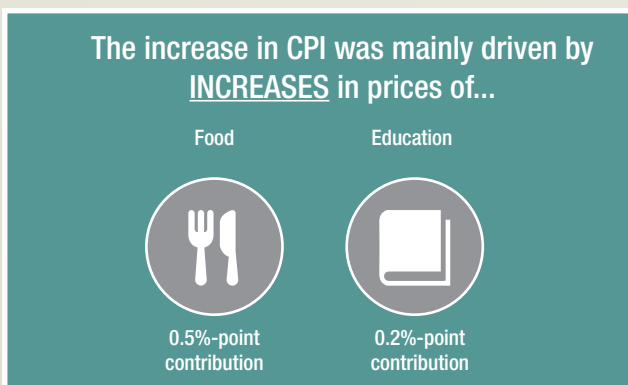


The Consumer Price Index (CPI) decreased by

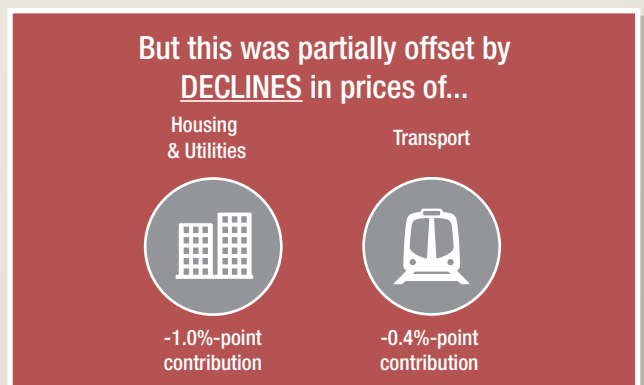
**0.5%** in 2016



The increase in CPI was mainly driven by INCREASES in prices of...



But this was partially offset by DECLINES in prices of...



## OVERVIEW

Overall Unit Labour Cost (ULC) rose at a slower pace of 0.7 per cent in the fourth quarter of 2016, compared to 3.1 per cent in the preceding quarter. For the whole of 2016, the ULC increased by 2.4 per cent, as the rise in total labour cost per worker exceeded labour productivity gains.

Total investment commitments in the manufacturing and services sectors were stable in 2016. Among the manufacturing clusters, the electronics cluster attracted the largest amount of commitments in fixed asset investments (FAI). On the other hand, the headquarters & professional services segment was the biggest contributor to commitments in total business expenditure (TBE).

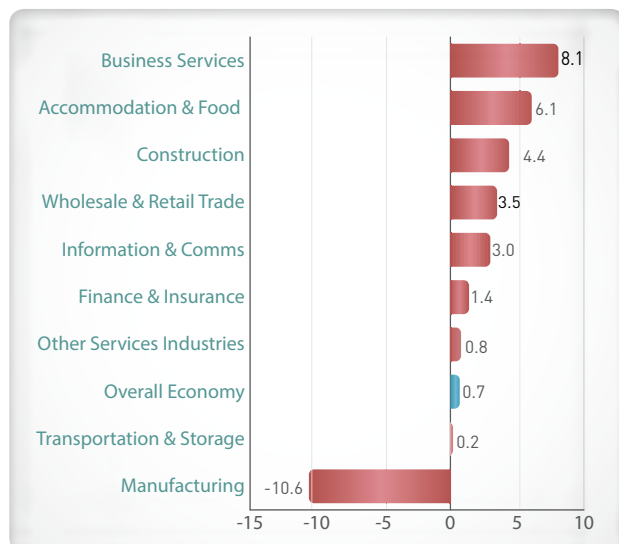
The Consumer Price Index-All Items (CPI-All Items) was unchanged on a year-on-year basis in the fourth quarter. For the full year, the CPI-All Items fell by 0.5 per cent, the same rate of inflation as in 2015.

Producer prices, as measured by the domestic supply price index (DSPI) and Singapore manufactured products price index (SMPPI), as well as import prices, rose in the fourth quarter. On the other hand, export prices remained unchanged. For the whole of 2016, the DSPI, SMPPI, import and export price indices fell by 6.9 per cent, 5.5 per cent, 5.3 per cent and 5.4 per cent respectively.

## COSTS

Overall ULC rose by 0.7 per cent in the fourth quarter, a slowdown from the 3.1 per cent increase in the third quarter. The slowdown in ULC growth came on the back of an improvement in labour productivity growth.

**Exhibit 3.1: Changes in Unit Labour Cost in 4Q 2016**



Across broad sectors, the ULC for the manufacturing sector declined by 11 per cent, the fourth consecutive quarter of decline. The fall in the manufacturing ULC was due to productivity gains in the sector. By contrast, the construction and services ULCs increased by 4.4 per cent and 3.4 per cent respectively. All the services sectors registered positive ULC growth, with the largest increases seen in the business services (8.1 per cent) and accommodation & food services (6.1 per cent) sectors (Exhibit 3.1).

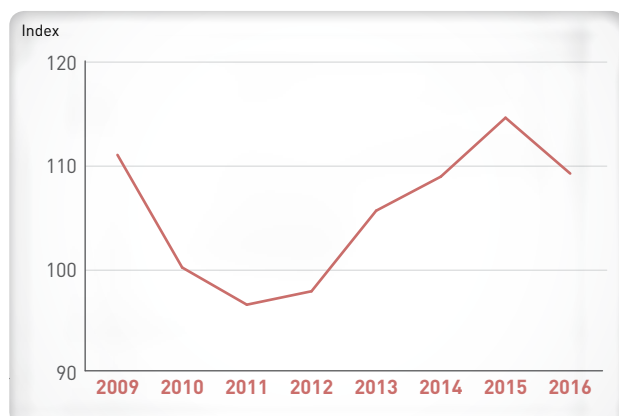
For the whole of 2016, overall ULC rose by 2.4 per cent, as the increase in total labour cost per worker outpaced the growth in labour productivity for the economy.

Manufacturing unit business cost (UBC) fell by 9.8 per cent in the fourth quarter, extending the 8.3 per cent decline in the previous quarter (Exhibit 3.2). All components of the UBC (i.e., manufacturing ULC, unit services cost and unit non-labour production taxes) fell. For the whole of 2016, the manufacturing UBC decreased by 8.5 per cent, a reversal from the 0.4 per cent increase in 2015.



**Exhibit 3.2: Changes in Unit Business Cost for Manufacturing**

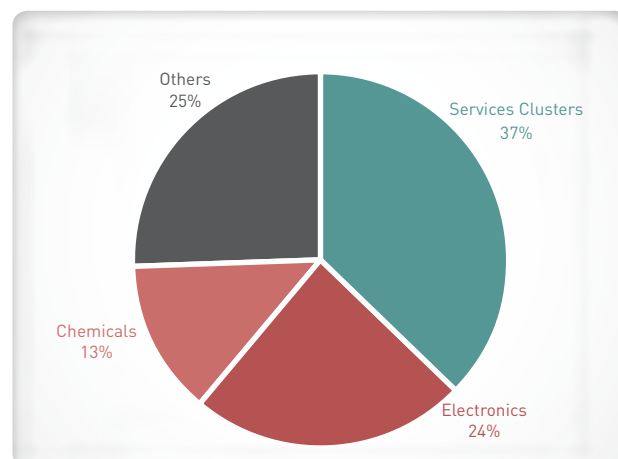
Singapore's relative unit labour cost (RULC) for manufacturing – a measure of Singapore's competitiveness against 16 economies<sup>1</sup> – declined in 2016 compared to 2015 (Exhibit 3.3). This was due to a decline in Singapore's manufacturing ULC compared to other economies, which more than offset the effect of the appreciation of the Singapore dollar against the trade-weighted currencies of our competitors.

**Exhibit 3.3: Singapore's Relative Unit Labour Cost in Manufacturing Against Selected 16 Economies**

## INVESTMENT COMMITMENTS

On the whole, investment commitments were stable in 2016, amidst slower global growth. In particular, investment commitments were supported by total TBE which increased to \$8.3 billion, up from \$5.6 billion in 2015. By contrast, total FAI attracted fell to \$9.4 billion from \$11 billion a year ago.

The manufacturing sector garnered the most FAI commitments. Within the manufacturing sector, the electronics cluster attracted the largest amount of commitments, at \$2.2 billion, mainly in the semiconductors segment. This was followed by the chemicals cluster, which registered \$1.3 billion in commitments (Exhibit 3.4). Investors from the United States were the largest source of FAI commitments (37 per cent). They were followed by investors from Asia Pacific (ex-Japan) who contributed about \$1.8 billion of total FAI commitments (19 per cent).

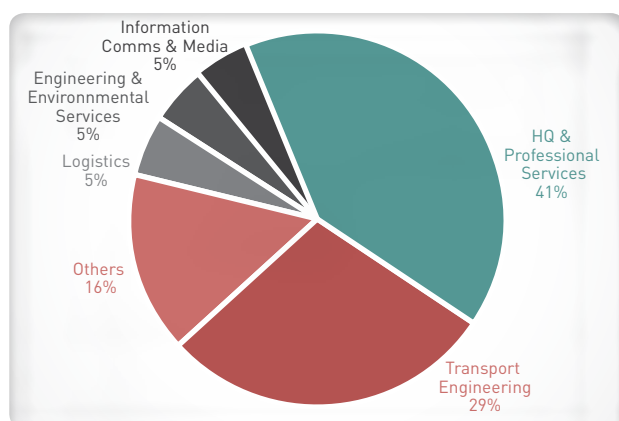
**Exhibit 3.4: Fixed Asset Investments by Industry Clusters in 2016**

For TBE, the headquarters & professional services segment attracted the highest amount of commitments in 2016, at \$3.4 billion, or 41 per cent of total TBE commitments. The transport engineering cluster came next, contributing about \$2.4 billion in TBE commitments (Exhibit 3.5). Investors from Asia Pacific (ex-Japan) contributed \$1.6 billion, or 19 per cent of the total TBE commitments, followed by investors from the United States who accounted for \$1.5 billion, or 18 per cent of total TBE commitments.

When fully operational, these FAI and TBE commitments are estimated to generate \$13 billion of value-added per annum and create approximately 20,075 jobs.

<sup>1</sup> The 16 economies are Australia, China, France, Germany, Hong Kong, India, Indonesia, Japan, Malaysia, Netherlands, South Korea, Taiwan, Thailand, the United Kingdom, the United States and Vietnam.

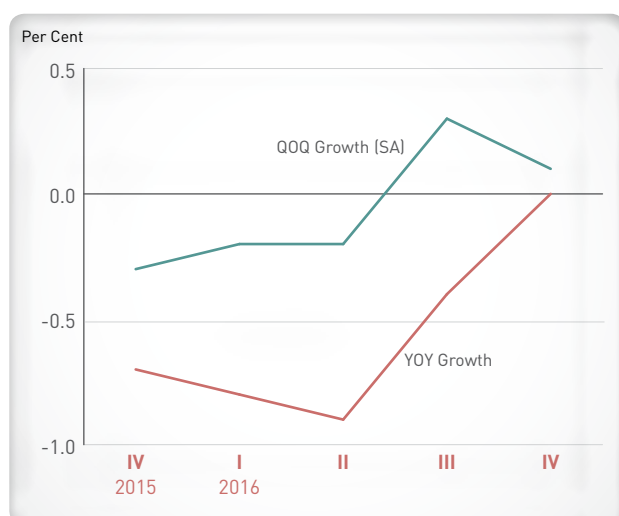
**Exhibit 3.5: Total Business Expenditure by Industry Clusters in 2016**



## CONSUMER PRICE INDEX

Singapore's CPI-All Items was unchanged on a year-on-year basis in the fourth quarter, following the 0.4 per cent decline in the third quarter (Exhibit 3.6). On a quarter-on-quarter seasonally-adjusted basis, the CPI-All Items rose by 0.1 per cent, easing from the 0.3 per cent increase in the preceding quarter.

**Exhibit 3.6: Changes in Overall CPI**



For 2016 as a whole, the CPI-All Items fell by 0.5 per cent, the same rate of inflation as in 2015. Among the CPI categories, food was the largest positive contributor to headline inflation, with prices increasing by 2.1 per cent (Exhibit 3.7). This was on account of more expensive hawker food and restaurant meals, as well as non-cooked food items such as fish & seafood, vegetables and meat.

**Exhibit 3.7: Changes in CPI by Category in 2016**



Education costs increased by 3.1 per cent as a result of higher fees at commercial institutions, universities, polytechnics, kindergartens and childcare centres. The prices of household durables & services rose by 1.8 per cent as higher salaries for foreign domestic workers outweighed the dampening effect of lower concessionary levies for these workers. Recreation & culture costs increased by 0.9 per cent on account of the higher costs of holiday travel and newspapers, which more than offset the fall in the cost of cinema tickets. Healthcare costs rose by 1.1 per cent on the back of the higher costs of outpatient and hospital services.

The prices of miscellaneous goods & services edged up by 0.3 per cent due to the higher cost of personal effects. Prices of clothing & footwear increased by 0.2 per cent as more expensive ready-made garments more than offset the impact of cheaper footwear.

The price gains in these CPI categories were outweighed by price declines in other categories. In particular, housing & utilities posed the largest drag on headline inflation, with prices declining by 4.1 per cent as the fall in accommodation costs and electricity tariffs more than offset the increase in housing maintenance charges. Transport costs fell by 2.4 per cent as lower petrol and car prices outweighed the effect of higher vehicle repair & maintenance fees. Communications costs fell by 0.4 per cent due to the lower cost of telecommunication services.

## PRODUCER PRICE INFLATION

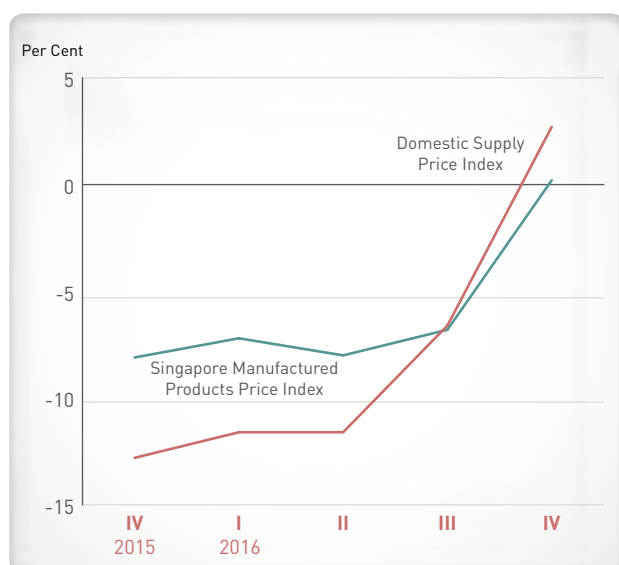
Producer prices - as measured by the DSPI and SMPPI - as well as the import price index rose in the fourth quarter (Exhibits 3.8 and 3.9). This was largely due to an increase in the prices of mineral fuels on the back of the pick-up in oil prices. On the other hand, the export price index remained unchanged as the increase in the prices of mineral fuels was offset by a fall in the prices of machinery & transport equipment and chemicals & chemical products.

For the whole of 2016, the DSPI and SMPPI fell by 6.9 per cent and 5.5 per cent respectively, mainly on account of the lower prices of mineral fuels. The fall in the prices of mineral fuels also contributed to the bulk of the decline in import prices (-5.3 per cent) and export prices (-5.4 per cent).

**Exhibit 3.9: Changes in Import and Export Price Indices**



**Exhibit 3.8: Changes in Domestic Supply Price and Singapore Manufactured Products Price Indices**



# Business Costs of Singapore's Manufacturing and Services Sectors

In 2016, the unit business cost (UBC) for the manufacturing sector fell sharply on the back of a decline in all components of the UBCI, while the unit business cost for the services sector registered a slower pace of increase.

## Definition of UBC:

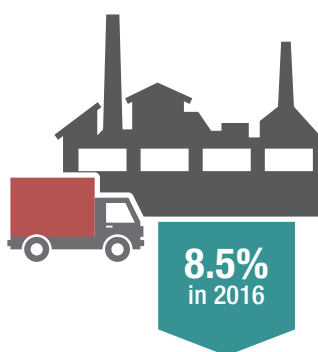


Total Business Cost

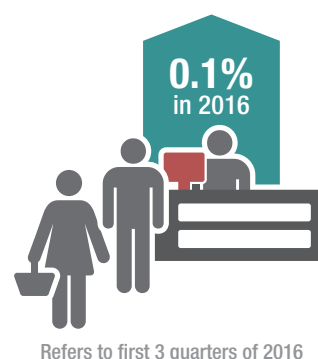


Gross Real Value-Added

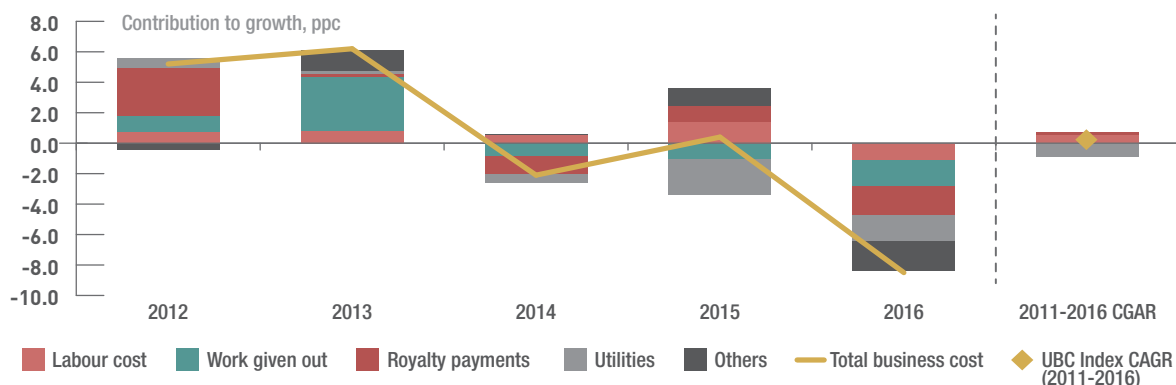
## UBC FOR MANUFACTURING



## UBC FOR SERVICES



Labour cost, work given out, royalty payments and utilities were the key drivers of business cost changes in the manufacturing sector in the last five years.



Looking ahead, overall unit labour cost and utilities cost are likely to increase, while rental cost is expected to continue to ease.

## UNIT LABOUR COST



Wages are expected to rise at modest pace

## UTILITIES COST



Uptick in global oil prices

## RENTAL COST

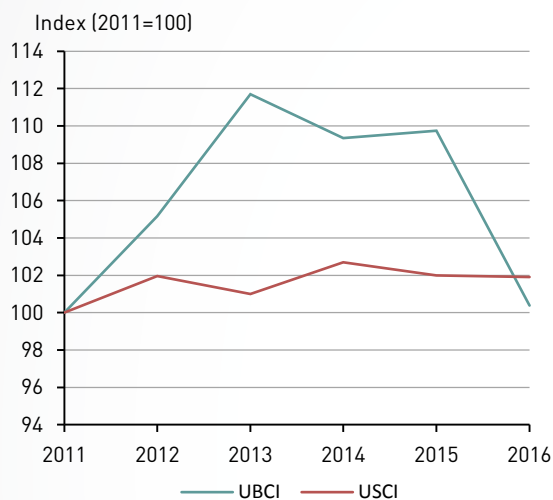


Strong supply of industrial and commercial space coming on-stream

## Unit business costs in both the manufacturing and services sectors moderated in recent quarters

Over the five-year period from 2011 to 2016, the unit business cost index for the manufacturing sector (UBCI) rose marginally by 0.1 per cent on a compounded annual growth rate (CAGR) basis, while that for the services sector (USCI) increased by 0.4 per cent on a CAGR basis (Exhibit 1).<sup>1,2</sup> However, more recently, the UBCI declined throughout the four quarters of 2016, bringing the UBCI for the year to a level that is 8.5 per cent lower than that in 2015 (Exhibit 2). Although the USCI rose in the first three quarters of 2016<sup>3</sup>, the increase of 0.1 per cent year-on-year over this period is a more moderate pace of increase than the average increase seen in the four years before, at 0.5 per cent per annum.

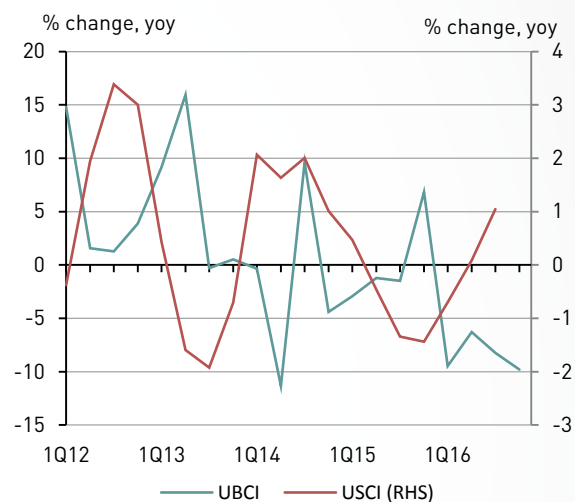
**Exhibit 1: Manufacturing Sector UBCI and Services Sector USCI**



Source : Department of Statistics, Monetary Authority of Singapore

Note: Due to rebasing to Base Year 2010=100, the UBCI series starts in 2010. The USCI series is also rebased to 2012=100.

**Exhibit 2: Year-on-Year (YoY) % Change of the UBCI and USCI**



We next examine the business cost structure of the manufacturing and services sectors before discussing the drivers of recent business cost trends.

## Labour cost, work given out and royalty payments are the main components of business costs in the manufacturing sector, while non-production taxes only account for a very small share

In the manufacturing sector, labour cost, work given out and royalty payments constitute the largest components of total business costs. These three components account for around 67 per cent of the business costs of large enterprises and 68 per cent of the business costs of small- and medium-sized enterprises (SMEs) in the sector.<sup>4</sup>

<sup>1</sup> Only operating expenses (except material costs and depreciation) are included in business costs. This follows the definition adopted by the Department of Statistics (DOS) in its computation of the Unit Business Cost for Manufacturing. See DOS' Information Paper, "Methodological Review on the Unit Business Cost Index for Manufacturing Industry (Base Year 2010=100)". The manufacturing UBCI series based on the revised methodology is available from 1Q10.

<sup>2</sup> The USCI is estimated by MAS to assess cost conditions in the services sector. It is a composite index of proxy cost indicators for each component of business cost, combined using the weights derived from the 2012 Input-Output tables.

<sup>3</sup> Latest available USCI is up to 3Q16.

<sup>4</sup> Based on SPRING's definition, SMEs refer to firms with annual sales turnover of not more than S\$100 million or employment size of not more than 200 workers.



The other services cost components, including utilities, fuel, rental of building/premises and charges paid to other firms for inland transportation and ocean/air/other freight, make up a smaller share of business costs, at 12 per cent for large enterprises and 11 per cent for SMEs. Notably, non-labour production taxes<sup>5</sup>, which include property, road and other indirect taxes, account for around 1 per cent or less of the business costs of both the large enterprises and SMEs in the sector.

Details of the cost structure of the large enterprises and SMEs in the manufacturing sector, as well as in the various manufacturing clusters, are in Annex A, Exhibit A1.

### *Similarly, labour cost constitutes a major cost component for the services sectors*

Labour cost constitutes a major cost component for the services sectors, with its share of total business costs ranging from around 15 per cent for firms in the transportation & storage and finance & insurance sectors, to more than 30 per cent for firms in labour-intensive sectors such as retail trade and accommodation & food services. Across all services sectors, except for the transportation & storage sector, the labour cost share of total business costs is larger for SMEs than for large enterprises.

On the other hand, utilities cost is a relatively small cost component for services sectors, accounting for less than 1 per cent of total business costs for most sectors. A key exception is the accommodation & food services sector, where utilities cost constitutes around 5 per cent of total business costs. Similarly, rental cost generally accounts for a small share of business costs for most services sectors. Key exceptions include the retail trade and accommodation & food services sectors, where the rental cost share of business costs for SMEs is 30 per cent and 22 per cent respectively.

Like in the manufacturing sector, non-labour production taxes account for less than 1 per cent of total business costs for most services sectors. Even for the business services and accommodation & food services sectors, where the share of non-labour production taxes is the highest, it is small at around 2 per cent or less.

Further details of the cost structure of the large enterprises and SMEs in the various services sectors are in Annex A, Exhibit A2.

### *Labour cost, work given out, royalty payments and utilities were the key drivers of business cost changes in the manufacturing sector in the last five years*

As labour cost, work given out and royalty payments constitute a large part of business costs in the manufacturing sector, they were some of the key drivers of UBCI changes in the past five years (Exhibit 3). In particular, the contribution of manufacturing unit labour cost (ULC) to the average increase in UBCI between 2011 and 2016 (i.e., 0.1 per cent per annum) was positive at 0.5 percentage-points (pp).

Utilities cost also contributed significantly to UBCI changes over the five-year period despite its relatively small share in total business costs due to the sharp changes in oil prices. In 2015, for example, utilities cost contributed -2.4pp to the 0.4 per cent increase in UBCI on the back of a drop in electricity tariffs due to sharply lower global oil prices, as well as greater competition in the wholesale and retail electricity markets with the increase in new generation capacity.<sup>6</sup> Between 2011 and 2016, the contribution of utilities cost to the average annual increase in UBCI was negative, at -0.9pp.

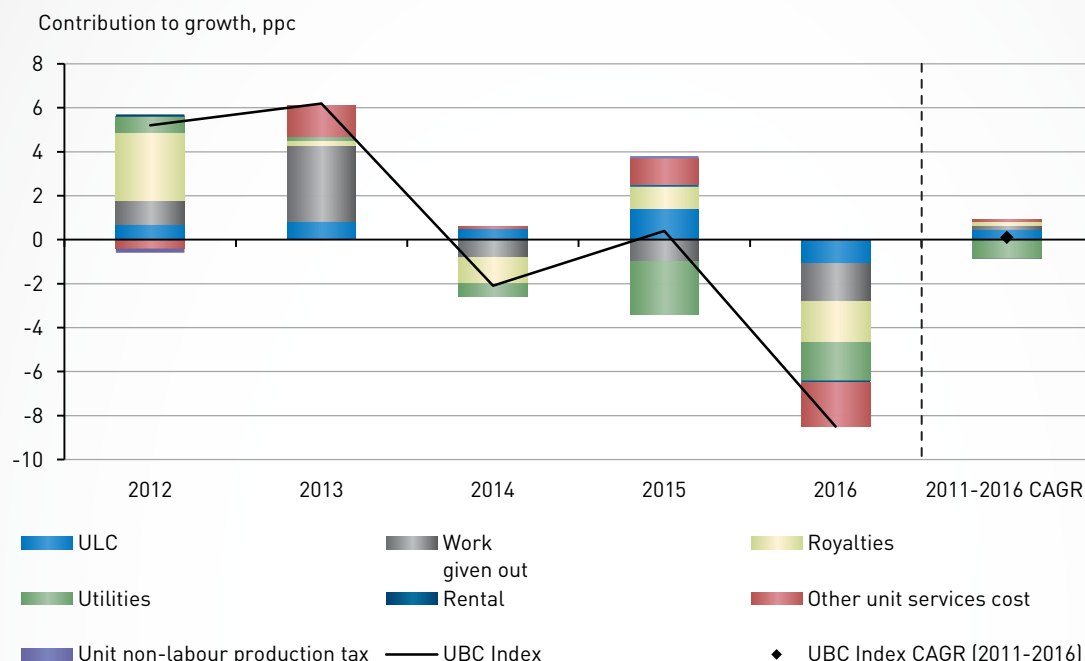
<sup>5</sup> "Government Rates and Fees" has been renamed as "Non-Labour Production Taxes". Labour-related taxes on production (e.g., foreign worker levy) are classified under labour cost. Taxes on income (e.g., corporate income tax) are excluded. For details, refer to information paper on "Methodological Review on the Unit Business Cost Index for Manufacturing Industry (Base Year 2010=100)" [http://www.singstat.gov.sg/docs/default-source/default-documentlibrary/publications/publications\\_and\\_papers/labour\\_employment\\_wages\\_and\\_productivity/ip-e39.pdf](http://www.singstat.gov.sg/docs/default-source/default-documentlibrary/publications/publications_and_papers/labour_employment_wages_and_productivity/ip-e39.pdf).

<sup>6</sup> The UK Brent spot prices fell by 2.8 per cent in 2013, 9.1 per cent in 2014, 47 per cent in 2015 and 16 per cent in 2016.

The other cost components like rentals and unit non-labour production taxes had a relatively small impact on business costs from 2011 to 2016 due to their low share of business costs.

For 2016, all components of the UBCI contributed to the 8.5 per cent decline in the UBCI. In particular, the ULC, work given out, royalty payments and utilities cost contributed the most to the decline.

**Exhibit 3: Contribution to UBCI Changes by Key Cost Components**



Source : Department of Statistics

Note: "Other unit services cost" consists of sub-components such as professional fees, advertising, commission and agency fees, sundry expenses etc

For the services sectors, the ULC was also a key positive contributor to the increase in USCI, accounting for 0.9pp of the average USCI increase of 0.4 per cent per annum from 2011 to 2016, even as most of the other broad cost components (e.g., other services costs) contributed negatively to the increase.<sup>7</sup> Similarly, in the first three quarters of 2016, the ULC contributed 2.0pp to the 0.1 per cent year-on-year increase in the USCI.

We next describe in greater detail the recent trends in labour, rental and utilities costs, as well as the outlook for these cost components.

### **High remuneration growth and weak productivity growth led to an increase in ULC over the last five years**

From 2011 to 2016, the overall ULC for the economy increased at a CAGR of 2.7 per cent. This came on the back of a 3.0 per cent per annum increase in total labour cost (TLC) per worker and weak real labour productivity growth (gross real value-added per worker) of 0.3 per cent per annum (Exhibit 4).<sup>8</sup> (An increase in TLC per worker raises the ULC, while an increase in real labour productivity reduces the ULC.)

<sup>7</sup> Detailed cost component breakdowns for the USCI are not available.

<sup>8</sup> Changes in overall ULC can be decomposed as the difference of the change in TLC per worker and the change in gross real value-added per worker (i.e., excluding taxes on products). The official real VA per worker statistics for the overall economy are computed based on GDP at 2010 market prices (i.e., including taxes on products). Growth in gross real VA per worker is similar to the growth in real VA per worker, and may be used to approximate labour productivity growth. Based on the decomposition, an increase in TLC per worker will raise ULC, while an improvement in labour productivity will lead to a fall in ULC.

In turn, the increase in TLC per worker was primarily due to higher remuneration per worker.<sup>9</sup> Over the last five years, remuneration per worker increased by 3.0 per cent per annum amidst a tight labour market, and contributed around 2.9pp to the rise in TLC per worker.<sup>10</sup> By contrast, the increase in foreign worker levy (FWL) only accounted for 0.3pp of the increase in TLC per worker, and this was largely offset by the increase in wage subsidies per worker provided by the government (around -0.3pp contribution).<sup>11</sup>

At the sectoral level, most sectors registered positive ULC growth in recent years (Exhibit 5). The ULC for the services sectors as a whole rose by 2.3 per cent on a CAGR basis from 2011 to 2016, in part due to weak productivity growth. Among the services sectors, the ULC growth was the strongest for sectors with negative productivity growth, such as accommodation & food services (4.4 per cent per annum) and business services (4.1 per cent per annum). Manufacturing ULC also increased by 1.9 per cent on a CAGR basis from 2011 to 2016. However, in the latest year of 2016, the manufacturing ULC declined by 4.5 per cent due to productivity gains in the sector.

**Exhibit 4: Decomposition of ULC Growth  
Growth for Overall Economy, 2011-2016 CAGR**

	2011-2016 CAGR [% p.a.]
ULC	2.7
TLC per worker	3.0
Remuneration per worker	2.9 pp
FWL per worker	0.3 pp
Wage subsidies per worker	-0.3 pp
Other labour costs	0.1 pp
Gross real labour productivity	0.3

Source: MTI Staff estimates using data from Department of Statistics and Ministry of Manpower

**Exhibit 5: ULC Growth by Sectors, 2011-2016 CAGR**



For 2017, the ULC for the overall economy is likely to face continued upward pressures. Wages are expected to continue to rise, albeit at a more modest pace given dampened hiring expectations in several sectors which could persist into the early part of 2017. At the same time, productivity growth in 2017 is likely to be moderate, as the improvement in external economic outlook is expected to be marginal.

Over the longer term, it is important to continue with efforts to raise productivity, so as to sustain wage growth without eroding our competitiveness.

<sup>9</sup> The TLC comprises remuneration and other labour-related costs, including the skills development levy, foreign worker levy, wage subsidies, and recruitment and net training cost.

<sup>10</sup> Growth in remuneration per worker moderated from 3.2 per cent per annum from 2011 to 2015, to 2.4 per cent in 2016 as tightness in the labour market eased.

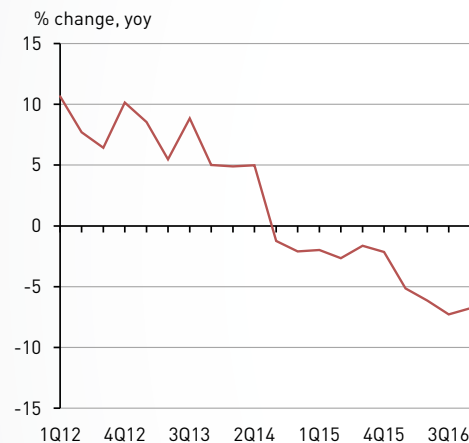
<sup>11</sup> Examples of wage subsidies provided to companies include the Special Employment Credit and the Wage Credit Scheme. These subsidies are generally applicable only for the Singaporean workers hired by these companies.

## *Pressure on industrial and commercial rentals is likely to continue to ease due to the strong supply coming on-stream*

From 2011 to 2016, rentals of industrial space rose at a CAGR of 1.6 per cent. This was due to the increase in rentals seen in the earlier years of this period (Exhibit 6). Since the third quarter of 2014, industrial rentals have been on a decline. For instance, in the fourth quarter of 2016, industrial rentals fell by 6.8 per cent year-on-year, continuing the 7.3 per cent decline in the preceding quarter. For 2016 as a whole, industrial rentals decreased by 6.3 per cent, extending the 2.1 per cent decline in 2015. The decline in industrial rentals in 2016 generally came on the back of a fall in the occupancy rate of industrial space, although there was a slight uptick in the occupancy rate in the last quarter of 2016 (Exhibit 7).

For 2017, a strong supply of industrial space is expected to come on-stream. In total, an additional 2.4 million gross square metres of industrial space is expected to be completed within the year, significantly higher than the average annual increase of 1.8 million gross square metres of industrial space in the past five years (Annex B, Exhibit B1). On the other hand, as reflected in recent falls in the occupancy rate, the demand for industrial space may not increase at the same pace as supply. Against this backdrop, downward pressures on industrial rentals are likely to continue in the year ahead.

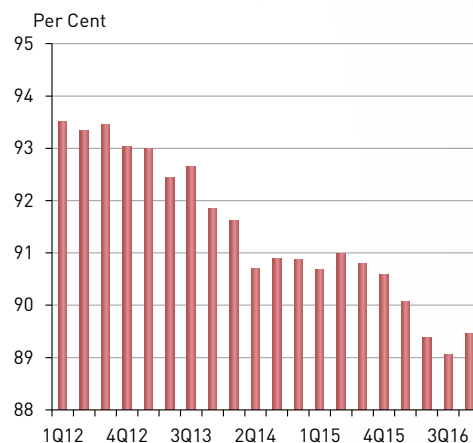
**Exhibit 6: Industrial Rental Index**



Source : JTC Corporation

Note: Both the industrial rental index and the industrial occupancy rate cover multiple-user factory space, single-user factory space, business parks and warehouses

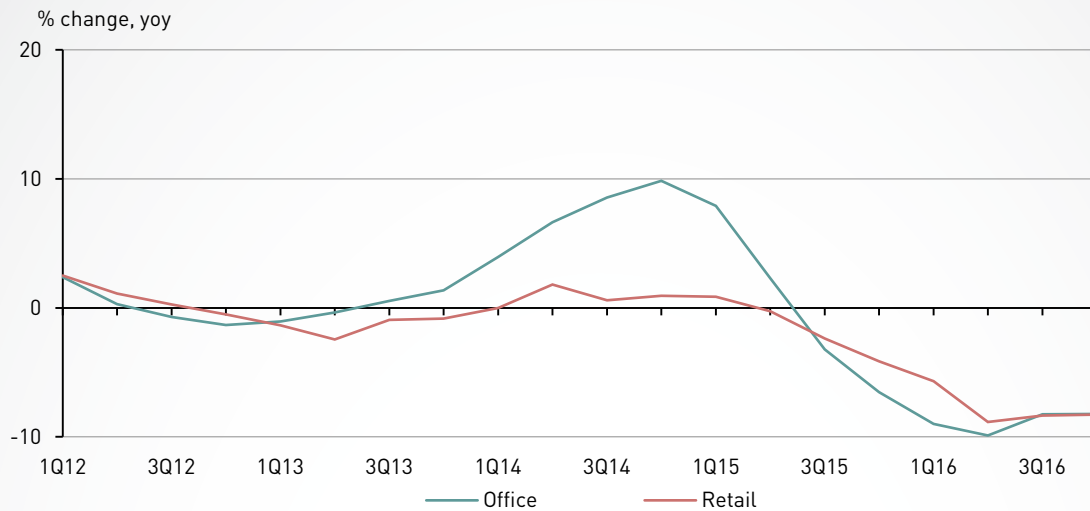
**Exhibit 7: Industrial Occupancy Rate**



As for commercial space, the rentals of retail and office space declined by 1.9 per cent and 0.4 per cent respectively on a CAGR basis in the five-year period from 2011 to 2016. This was on account of the fall in retail and office rentals since the second and third quarters of 2015 respectively (Exhibit 8), due to lacklustre demand and an increase in the supply of retail and office space.

In 2017, cautious sentiments and manpower constraints among retailers could continue to weigh on the demand for retail space. Similarly, there may not be a significant increase in demand for office space given sluggish business conditions in some services segments like banking. On the other hand, there remains a large supply of retail and office space in the pipeline. In particular, 0.17 million gross square metres of retail space and 0.37 million gross square metres of office space are expected to come on-stream within the year, significantly higher than the average annual increases of 0.12 million and 0.10 million gross square metres of retail and office space respectively between 2011 and 2016 (Annex B, Exhibit B2). Taken together, these factors are likely to result in continued downward pressures on retail and office rentals in 2017.

**Exhibit 8: Office and Retail Rental Indices**



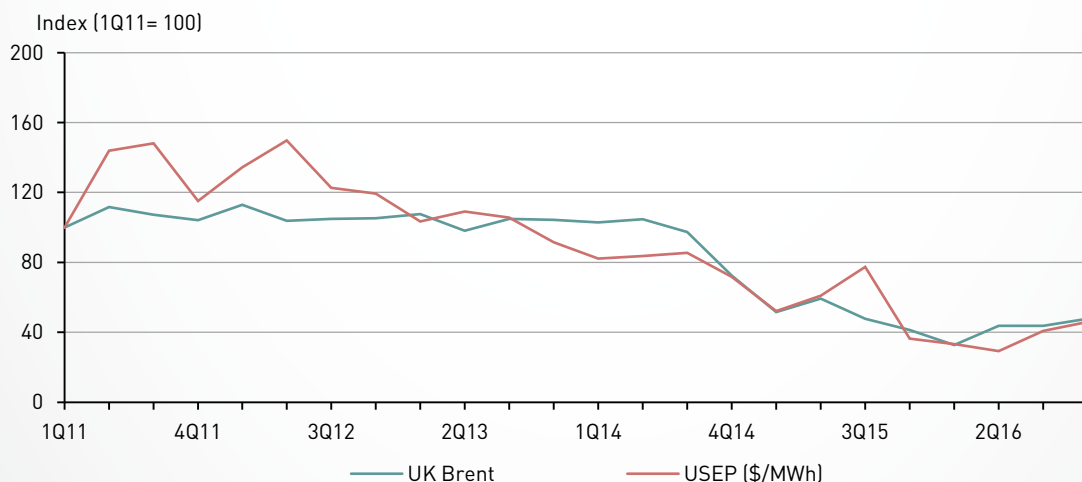
Source : Urban Redevelopment Authority  
 Note: Retail rental index is only available from 1Q11

### *An expected increase in global oil prices could translate to slightly higher utilities cost in 2017*

The cost of utilities borne by manufacturers is closely linked to electricity tariffs,<sup>12</sup> which are in turn influenced by movements in global oil prices.<sup>13</sup> Oil prices also contribute to business costs indirectly through transportation costs.

Following a period of sustained increases, global oil prices started to decline in 2013 (Exhibit 9). In 2016, the UK Brent averaged US\$44 per barrel, 15 per cent lower than the average price of US\$52 per barrel in 2015. Lower oil prices, along with increased competition in the wholesale and retail electricity markets, contributed to a 22 per cent per annum fall in the average wholesale electricity price between 2011 and 2016.<sup>14</sup> This in turn helped to lower utilities cost for businesses over this period.

**Exhibit 9: Global Oil Prices and Uniform Singapore Energy Prices**



Source : International Monetary Fund, Energy Market Company

<sup>12</sup> Electricity cost accounts for 86% of the utilities cost in the manufacturing sector.

<sup>13</sup> About 90 per cent of our electricity is generated from natural gas, the price of which is indexed to oil prices. This is the common market practice in Asia. As fuel cost is a key cost component accounting for around half of the electricity tariff, the tariff moves in tandem with oil prices.

<sup>14</sup> The Uniform Singapore Energy Price (USEP) is the average wholesale energy price in the National Electricity Market of Singapore (NEMS).

For 2017, the US Energy Information Administration (EIA) is forecasting that oil prices will average around US\$55 per barrel, an increase compared to 2016 levels.<sup>15</sup> The projected increase in oil prices is expected to translate to slightly higher utilities cost for businesses.

## *Conclusion*

Between 2011 and 2016, unit business costs for both the manufacturing and services sectors increased, driven to a large extent by ULC increases in the respective sectors. However, in 2016, the unit business cost for the manufacturing sector fell sharply on the back of a decline in all components of the UBCI, while the unit business cost for the services sector registered a slower pace of increase.

Looking ahead, the ULC for the overall economy is likely to face upward pressures in 2017 as wages are expected to continue to rise, albeit at a slower pace, while productivity growth is expected to remain moderate. An uptick in global oil prices could also lead to slightly higher utilities cost this year. However, the strong supply of industrial and commercial space coming on-stream would continue to help to rein in rental costs in 2017.

*Contributed by:*  
Economics Division  
Ministry of Trade and Industry

## *REFERENCES*

Singapore Department of Statistics (2014), "Methodological Review on the Unit Business Cost Index for Manufacturing Industry (Base Year 2010=100)" November. [http://www.singstat.gov.sg/docs/default-source/default-document\\_library/publications/publications\\_and\\_papers/labour\\_employment\\_wages\\_and\\_productivity/ip-e39.pdf](http://www.singstat.gov.sg/docs/default-source/default-document_library/publications/publications_and_papers/labour_employment_wages_and_productivity/ip-e39.pdf).

U.S. Energy Information Administration (2017), "Short-Term Energy Outlook (STEO)" February. <https://www.eia.gov/outlooks/steo/>.

<sup>15</sup> EIA Short-Term Energy Outlook Report, 7 February 2017



## ANNEX A: BUSINESS COST STRUCTURE OF LARGE ENTERPRISES AND SMEs IN THE MANUFACTURING AND SERVICES SECTORS

Exhibit A1: Business Cost Structure of the Manufacturing Sector by Firm Size, 2015

	Total		Electronics		Chemicals		Biomedical Services Manufacturing		Precision Engineering		Transport Engineering		General	
	Large Enterprises	SMEs	Large Enterprises	SMEs	Large Enterprises	SMEs	Large Enterprises	SMEs	Large Enterprises	SMEs	Large Enterprises	SMEs	Large Enterprises	SMEs
<b>Labour Cost</b>	<b>20.4</b>	<b>34.4</b>	<b>15.1</b>	<b>8.2</b>	<b>18.1</b>	<b>28.2</b>	<b>16.2</b>	<b>16.5</b>	<b>21.5</b>	<b>44.0</b>	<b>34.6</b>	<b>44.5</b>	<b>40.3</b>	<b>48.3</b>
<b>Services Cost</b>	<b>79.2</b>	<b>65.0</b>	<b>84.7</b>	<b>91.7</b>	<b>81.2</b>	<b>70.5</b>	<b>83.6</b>	<b>83.1</b>	<b>78.2</b>	<b>55.5</b>	<b>64.9</b>	<b>54.9</b>	<b>58.7</b>	<b>50.7</b>
Work given out	20.4	20.0	26.2	38.9	6.4	2.1	3.1	16.5	7.0	15.0	42.2	36.1	7.6	12.4
Royalty payments	26.3	13.9	35.1	20.2	4.9	4.1	50.3	45.8	42.5	20.2	2.0	0.6	3.1	1.4
Utilities	3.9	3.2	3.6	0.6	9.4	11.3	1.4	1.4	1.7	2.5	1.6	1.1	6.5	3.2
Fuel	5.1	1.6	0.7	0.0	29.7	9.4	0.7	0.2	0.1	0.3	0.4	0.4	2.4	1.1
Rental of building/ premises	0.8	2.5	0.4	0.7	0.9	1.6	0.4	1.1	0.6	2.7	1.3	2.9	3.6	4.8
Charges paid to other firms for inland transportation and ocean/air/other freight	2.5	3.9	1.7	2.2	5.5	12.6	1.2	3.8	2.6	2.1	1.4	1.1	6.8	4.1
Others	20.2	19.9	17.2	29.2	24.5	29.4	26.3	14.3	23.7	12.8	16.1	12.8	28.6	23.8
<b>Non-Labour Production Taxes</b>	<b>0.3</b>	<b>0.6</b>	<b>0.2</b>	<b>0.1</b>	<b>0.7</b>	<b>1.3</b>	<b>0.2</b>	<b>0.4</b>	<b>0.2</b>	<b>0.5</b>	<b>0.5</b>	<b>0.6</b>	<b>1.0</b>	<b>0.9</b>

Source: Economic Development Board

## Exhibit A2: Business Cost Structure of the Services Sector by Firm Size, 2015

	Wholesale Trade		Retail Trade		Accommodation & Food Services		Transportation & Storage		Finance & Insurance		Information & Communications		Business Services	
	Large Enterprises	SMEs	Large Enterprises	SMEs	Large Enterprises	SMEs	Large Enterprises	SMEs	Large Enterprises	SMEs	Large Enterprises	SMEs	Large Enterprises	SMEs
<b>Labour Cost</b>	<b>20.0</b>	<b>22.3</b>	<b>33.4</b>	<b>38.7</b>	<b>40.9</b>	<b>43.6</b>	<b>16.5</b>	<b>9.1</b>	<b>15.0</b>	<b>15.9</b>	<b>14.5</b>	<b>34.5</b>	<b>23.5</b>	<b>27.5</b>
<b>Services Cost</b>	<b>77.8</b>	<b>75.5</b>	<b>59.4</b>	<b>56.2</b>	<b>50.3</b>	<b>47.7</b>	<b>73.1</b>	<b>85.2</b>	<b>83.1</b>	<b>83.0</b>	<b>80.8</b>	<b>59.1</b>	<b>70.5</b>	<b>64.3</b>
Utilities	0.3	0.3	3.1	1.6	5.0	5.1	0.9	0.2	0.1	0.1	0.5	1.4	0.4	1.2
Freight & Transport	14.2	30.8	1.4	1.8	0.9	0.3	34.5	56.5	-	-	-	0.7	-	4.1
Financial Services	2.0	1.6	2.1	2.3	1.1	1.6	0.7	0.7	3.2	5.6	0.4	0.2	0.1	0.7
Communications	0.7	0.5	0.5	0.8	0.4	0.5	0.5	0.3	0.3	0.3	3.2	8.7	0.3	0.4
Renting of Premises	4.4	4.5	32.7	29.7	15.3	22.3	1.0	1.9	1.1	1.4	1.2	3.9	1.0	3.3
Professional Services	3.8	3.7	1.5	2.2	1.0	1.2	0.9	0.7	2.8	2.7	11.1	6.9	3.3	3.5
Other Services	52.3	34.2	18.2	17.7	26.6	16.8	34.7	24.9	75.5	72.9	64.4	37.2	65.4	51.0
Advertising & Entertainment	6.3	6.1	5.6	4.1	3.7	2.6	0.6	0.3	1.6	0.5	3.2	8.0	1.7	3.6
Admin & Management Fees	11.5	7.0	3.8	2.0	3.6	3.7	2.6	4.4	6.1	8.7	11.7	6.3	2.7	7.4
Contract labour & work given out	7.7	2.2	1.3	3.1	2.3	2.7	2.0	1.7	0.6	0.4	3.0	8.8	36.5	20.8
Commission	9.0	5.4	1.0	3.0	0.9	1.1	3.7	1.8	3.7	7.2	7.9	1.8	0.7	2.0
Royalties	10.7	5.4	1.2	0.8	6.6	0.8	0.1	-	1.3	0.2	30.9	5.2	1.4	1.5
Maintenance & repairs	0.9	1.0	2.7	1.9	3.4	2.9	5.7	1.9	0.6	0.4	1.1	1.9	1.1	2.4
Fuel	-	0.1	-	0.1	0.1	-	13.9	9.8	-	-	-	-	-	0.2
Others	6.2	7.0	2.6	2.6	6.1	2.9	6.1	4.9	61.6	55.5	6.7	5.2	21.4	13.0
<b>Non-Labour Production Taxes</b>	<b>0.2</b>	<b>0.3</b>	<b>0.6</b>	<b>0.6</b>	<b>1.6</b>	<b>1.1</b>	<b>0.7</b>	<b>0.3</b>	<b>0.2</b>	<b>0.3</b>	<b>0.4</b>	<b>0.3</b>	<b>1.2</b>	<b>2.1</b>

Notes:

- SMEs refer to enterprises with operating receipts of not more than \$100 million or employment of not more than 200 workers. Large enterprises refer to enterprises with operating receipts of more than \$100 million and employment of more than 200 workers.
- The cost components do not sum to 100% as depreciation cost is excluded.
- "-" refers to nil or negligible.

Source: Department Of Statistics and Monetary Authority of Singapore

## ANNEX B: SUPPLY OF INDUSTRIAL AND COMMERCIAL SPACE

Exhibit B1: Supply of Industrial Space

	Total	2017	2018	2019	2020	2021	>2021
Factory Space ('000 sqm gross)							
<b>Total</b>	<b>3,250</b>	<b>1,520</b>	<b>743</b>	<b>646</b>	<b>281</b>	<b>60</b>	-
Under Construction	2,381	1,326	428	564	63	-	-
Planned	869	194	315	82	218	60	-
Warehouse Space ('000 sqm gross)							
<b>Total</b>	<b>1,144</b>	<b>923</b>	<b>97</b>	<b>74</b>	<b>50</b>	-	-
Under Construction	1,094	912	81	65	36	-	-
Planned	50	11	16	9	14	-	-
<b>Total Industrial Space</b>	<b>4,394</b>	<b>2,443</b>	<b>840</b>	<b>720</b>	<b>331</b>	<b>60</b>	-

Source: JTC Corporation

Exhibit B2: Supply of Commercial Space

	Total	2017	2018	2019	2020	2021	>2021
Office Space ('000 sqm gross)							
<b>Total</b>	<b>786</b>	<b>367</b>	<b>185</b>	<b>20</b>	<b>138</b>	<b>36</b>	<b>40</b>
Under Construction	617	367	185	5	60	-	-
Planned	169	-	-	15	78	36	40
Retail Space ('000 sqm gross)							
<b>Total</b>	<b>595</b>	<b>169</b>	<b>229</b>	<b>62</b>	<b>109</b>	<b>5</b>	<b>21</b>
Under Construction	482	169	229	47	33	4	-
Planned	113	-	-	15	76	1	21
<b>Total Commercial Space</b>	<b>1,381</b>	<b>536</b>	<b>414</b>	<b>82</b>	<b>247</b>	<b>41</b>	<b>61</b>

Source: Urban Redevelopment Authority

# CHAPTER 4

## International Trade



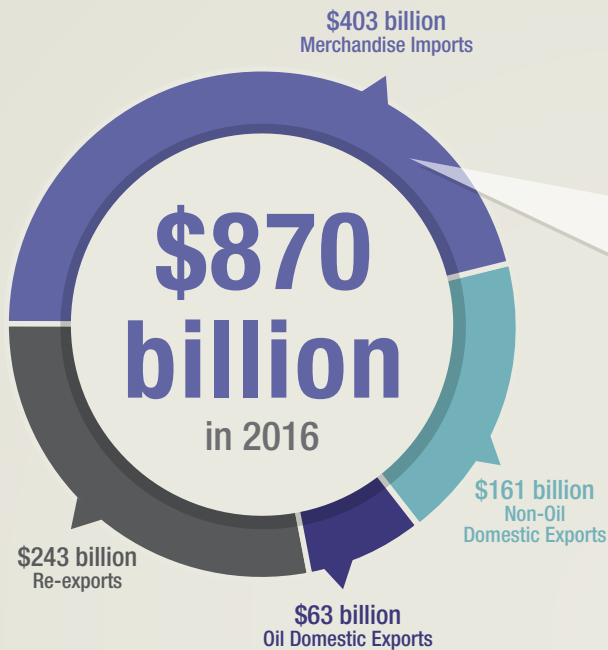




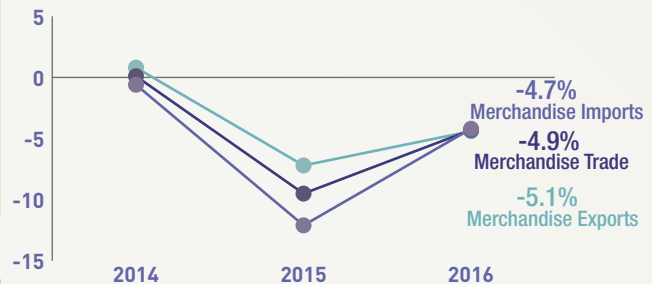
## CHAPTER 4

# INTERNATIONAL TRADE

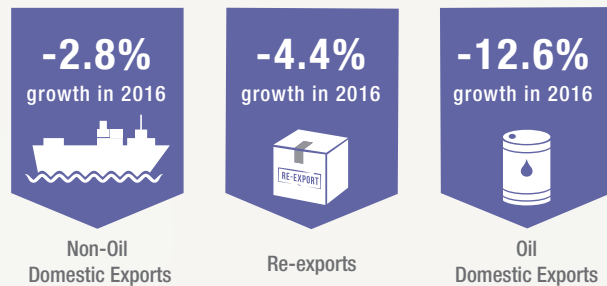
Total Merchandise Trade  
Amounted to...



### GROWTH IN MERCHANDISE TRADE



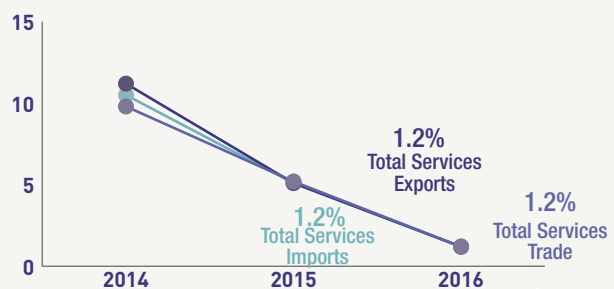
Total Merchandise Exports decreased by  
**5.1%** in 2016



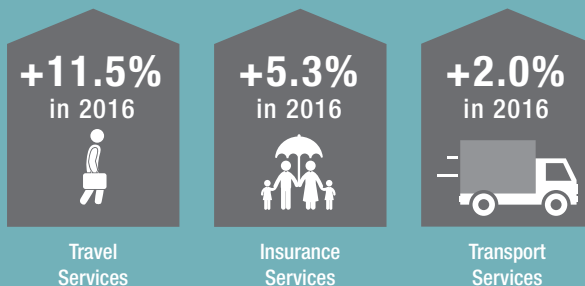
Total Services Trade  
Amounted to...



### GROWTH IN SERVICES TRADE



Main Drivers of Services Export Growth were...





## OVERVIEW

Singapore's total merchandise trade grew by 4.0 per cent in the fourth quarter of 2016, a turnaround from the 6.6 per cent decline in the preceding quarter. Meanwhile, total services trade increased by 3.4 per cent in the fourth quarter, following the 0.4 per cent growth in the third quarter.

For the whole of 2016, Singapore's total merchandise trade declined by 4.9 per cent to \$870 billion, compared to \$915 billion in 2015. Oil trade contracted by 18 per cent and non-oil trade decreased by 1.9 per cent. Merchandise exports fell by 5.1 per cent and merchandise imports declined by 4.7 per cent.

Services trade grew by 1.2 per cent to \$422 billion in 2016, from \$417 billion in 2015. Both services exports and imports saw their growth ease to 1.2 per cent in 2016.

## MERCHANDISE TRADE

### Merchandise Exports

Total merchandise exports rose by 2.1 per cent in the fourth quarter, rebounding from the 4.5 per cent decline in the preceding quarter (Exhibit 4.1). The increase was due to a turnaround in domestic exports, from the 8.0 per cent decline in the third quarter to a 7.6 per cent expansion in the fourth quarter. By contrast, re-exports decreased by 2.4 per cent, extending the 1.0 per cent decline in the preceding quarter.

**Exhibit 4.1: Growth Rates of Total Merchandise Trade, Merchandise Exports and Merchandise Imports (In Nominal Terms)**

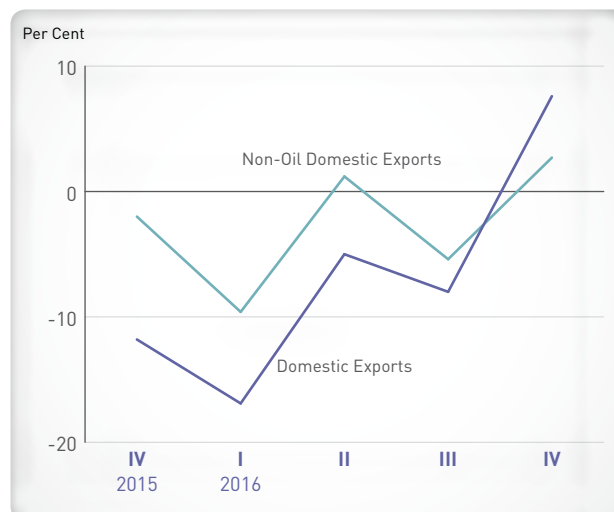
	2015	2016			2016
		II	III	IV	
<b>Total Merchandise Trade</b>	-8.9	-6.0	-6.6	4.0	<b>-4.9</b>
<b>Merchandise Exports</b>	-6.5	-4.8	-4.5	2.1	<b>-5.1</b>
Domestic Exports	-11.9	-5.0	-8.0	7.6	<b>-5.8</b>
Oil	-32.2	-18.0	-13.7	20.2	<b>-12.6</b>
Non-Oil	1.5	1.2	-5.4	2.7	<b>-2.8</b>
<b>Re-Exports</b>	-0.9	-4.6	-1.0	-2.4	<b>-4.4</b>
<b>Merchandise Imports</b>	-11.5	-7.4	-9.1	6.1	<b>-4.7</b>
Oil	-38.2	-29.2	-23.9	16.8	<b>-20.6</b>
Non-Oil	-0.1	-0.7	-4.9	3.9	<b>-0.6</b>

For the whole of 2016, total merchandise exports fell by 5.1 per cent, extending the 6.5 per cent decline in 2015.

### Non-Oil Domestic Exports

Non-oil domestic exports (NODX) increased by 2.7 per cent in the fourth quarter, reversing the 5.4 per cent decline in the preceding quarter (Exhibit 4.2). The growth in NODX was due to increases in both electronics and non-electronics NODX.

**Exhibit 4.2: Changes in Domestic Exports**



Electronics NODX increased by 1.0 per cent in the fourth quarter, an improvement from the 8.6 per cent contraction in the previous quarter. The growth in electronics NODX was primarily due to the higher exports of integrated circuits (ICs), parts of personal computers (PCs) and office machines. Similarly, non-electronics NODX rose by 3.5 per cent in the fourth quarter, a reversal from the 4.1 per cent decline in the third quarter. The rise in non-electronics NODX was due to increased shipments of specialised machinery, petrochemicals and non-monetary gold.

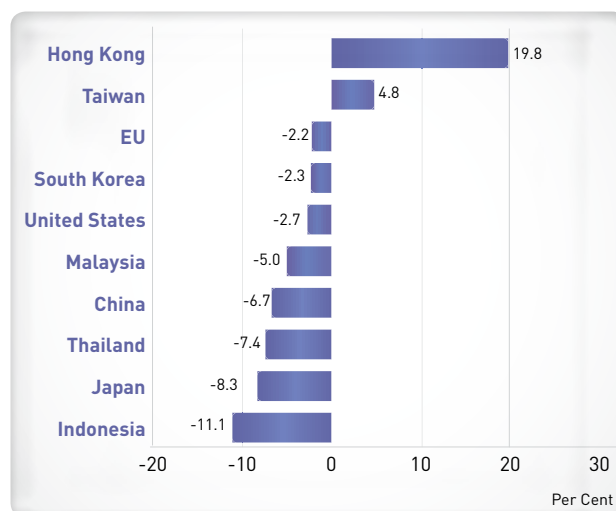
For the full year, NODX declined by 2.8 per cent, reversing the 1.5 per cent increase in 2015. The decline was due to a fall in both electronics (-4.0 per cent) and non-electronics NODX (-2.3 per cent).

The top ten NODX markets accounted for 78 per cent of Singapore's total NODX in 2016. Singapore's NODX to all top ten markets, except for Hong Kong and Taiwan, declined in 2016 (Exhibit 4.3).

China, Indonesia and Japan contributed the most to the decline in NODX. A fall in the sales of non-monetary gold, primary chemicals and pumps led to lower NODX to China. The decline in NODX to Indonesia was mainly due to a drop in the exports of petrochemicals, primary chemicals and bare printed circuit boards, while NODX to Japan contracted on the back of a fall in the exports of specialised machinery, ICs and tobacco manufactures.

By contrast, NODX to Hong Kong and Taiwan grew by 20 per cent and 4.8 per cent respectively. NODX to Hong Kong increased due to a rise in the exports of non-monetary gold, ICs and electrical machinery. On the other hand, increased shipments of specialised machinery, measuring instruments and precious stones & pearls led to the rise in NODX to Taiwan.

**Exhibit 4.3: Growth Rates of Non-Oil Domestic Exports to Top Ten Markets in 2016**



## Oil Domestic Exports

Oil domestic exports expanded by 20 per cent in the fourth quarter, in contrast to the 14 per cent contraction in the preceding quarter. The increase in the value of oil domestic exports was led by higher sales to Indonesia, China and Hong Kong, as oil prices rose in the fourth quarter compared to a year ago. In volume terms, growth in oil domestic exports continued to be positive, at 9.4 per cent in the fourth quarter, following the 4.1 per cent increase in the third quarter.

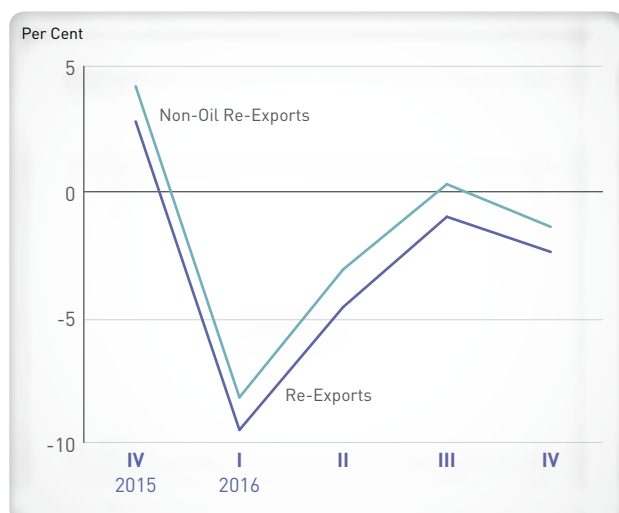
For the full year, oil domestic exports decreased by 13 per cent, a smaller decline as compared to the 32 per cent contraction in 2015. The decline in the value of oil domestic exports was driven mainly by lower sales to Malaysia, Panama and Australia, on the back of lower oil prices compared to 2015. In volume terms, oil domestic exports increased by 7.4 per cent, after rising by 6.8 per cent in 2015.

## Non-Oil Re-Exports

Non-oil re-exports (NORX) decreased by 1.4 per cent in the fourth quarter, reversing the 0.3 per cent growth in the preceding quarter (Exhibit 4.4). The decline in electronics re-exports outweighed the rise in non-electronics re-exports. In particular, electronics re-exports fell by 3.6 per cent, following the 2.0 per cent decrease in the third quarter, due to a decline in the re-exports of ICs, diodes & transistors and disk drives. On the other hand, non-electronics NORX rose by 0.7 per cent, following the 2.7 per cent increase in the preceding quarter, mainly due to the higher re-exports of petrochemicals, personal beauty products and aluminium.



**Exhibit 4.4: Changes in Re-Exports**

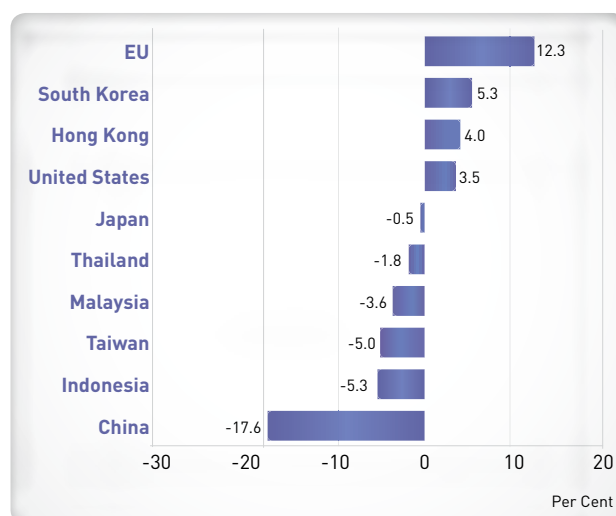


For the whole of 2016, NORX decreased by 3.1 per cent, a reversal from the 1.8 per cent increase in 2015. The decline was due to a fall in both electronics (-4.5 per cent) and non-electronics (-1.8 per cent) NORX.

NORX to the top ten markets declined in 2016, except for the EU 28, South Korea, Hong Kong and the US (Exhibit 4.5). NORX to China contracted the most, by 18 per cent, due to the lower re-exports of ICs, non-monetary gold and nickel. Lower shipments of non-monetary gold, ICs and civil engineering equipment parts led to the 5.3 per cent decline in NORX to Indonesia. Re-exports to Malaysia decreased by 3.6 per cent, due to declines in the re-exports of non-monetary gold, telecommunications equipment and civil engineering equipment parts.

On the other hand, NORX to the EU 28 rose by 12 per cent on the back of an increase in the shipments of ICs, non-electric engines & motors and pharmaceutical products. NORX to Hong Kong increased by 4.0 per cent, due to a rise in the shipments of ICs, diodes & transistors and aircraft parts. NORX to South Korea grew by 5.3 per cent due to increased shipments of personal beauty products, ICs and measuring instruments.

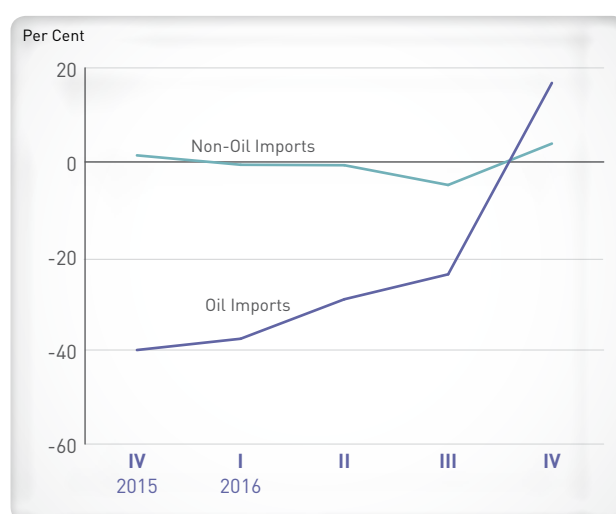
**Exhibit 4.5: Growth Rates of Non-Oil Re-Exports to Top Ten Markets in 2016**



## Merchandise Imports

Non-oil imports rose by 3.9 per cent in the fourth quarter, a reversal from the 4.9 per cent decline in the preceding quarter (Exhibit 4.6). The increase in non-oil imports was due to both electronics and non-electronics imports. Higher purchases of ICs, telecommunications equipment and disk media products contributed to the 3.5 per cent increase in electronics imports. Non-electronics imports grew by 4.2 per cent on the back of a rise in the imports of non-monetary gold, other specialty chemicals and non-electric engines & motors.

**Exhibit 4.6: Changes in Merchandise Imports**



Oil imports grew by 17 per cent in the fourth quarter, a turnaround from the 24 per cent contraction in the preceding quarter, due to the pick-up in oil prices. In volume terms, oil imports declined by 2.5 per cent, an improvement from the 12 per cent contraction in the preceding quarter.

For the full year, non-oil imports decreased by 0.6 per cent, extending the 0.1 per cent decline in 2015. Oil imports fell by 21 per cent in 2016, a moderation from the 38 per cent contraction in 2015.

## SERVICES TRADE

### Services Exports

Services exports increased at a faster pace of 3.1 per cent in the fourth quarter, compared to the 0.6 per cent increase in the preceding quarter (Exhibit 4.7). The increase was mainly due to growth in the exports of transport (6.1 per cent) and travel (12 per cent) services. On the other hand, the exports of financial services saw the largest decline of 8.0 per cent, extending the 9.9 per cent contraction in the preceding quarter.

For 2016 as a whole, services exports grew by 1.2 per cent, moderating from the growth of 5.1 per cent in 2015. Exports of all services categories rose in 2016, with the exception of financial services which declined by 10 per cent.

*Exhibit 4.7: Growth Rates of Total Services Trade, Services Exports and Services Imports (In Nominal Terms)*

	2015	2016			2016
		II	III	IV	
<b>Total Services Trade</b>	5.1	1.4	0.4	3.4	<b>1.2</b>
<b>Services Exports</b>	5.1	2.0	0.6	3.1	<b>1.2</b>
<b>Services Imports</b>	5.2	0.9	0.2	3.7	<b>1.2</b>

### Services Imports

Services imports expanded by 3.7 per cent in the fourth quarter, a pick-up from the 0.2 per cent gain in the third quarter, primarily supported by higher payments for transport services and the use of intellectual property, which contributed 1.4 percentage-points to growth each.

Among the services categories, insurance services saw the fastest imports growth in the fourth quarter, at 19 per cent. By contrast, the imports of travel services declined by 4.0 per cent.

For the full year, services imports rose by 1.2 per cent, a slowdown from the 5.2 per cent growth in 2015. Apart from the imports of maintenance & repair services which declined by 2.0 per cent, the rest of the services categories saw a rise in imports in 2016.



# CHAPTER 5

## Balance of Payments





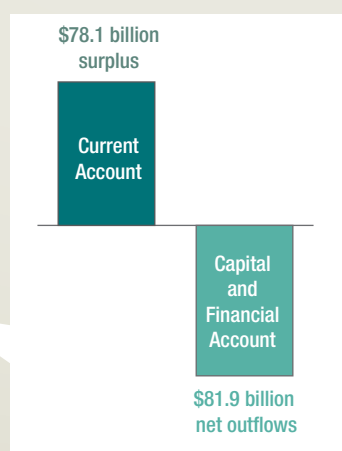
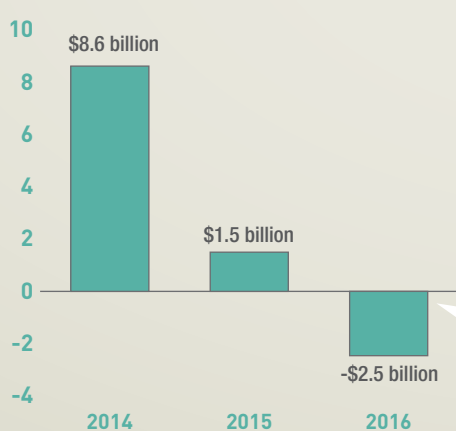


## CHAPTER 5

# BALANCE OF PAYMENTS

Singapore's balance of payments deficit came in at **\$2.5 billion** at the end of 2016

### BALANCE OF PAYMENTS



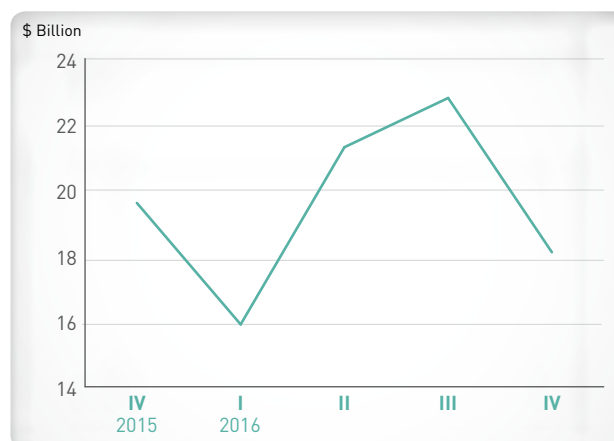
## OVERVIEW

Singapore's overall balance of payments recorded a deficit of \$3.9 billion in the fourth quarter of 2016, reversing the surplus of \$5.4 billion in the third quarter. For the year as a whole, the deficit amounted to \$2.5 billion, a reversal from the surplus of \$1.5 billion in 2015. The deficit was due to larger net outflows from the capital and financial account, which outweighed the increase in the current account surplus. Singapore's official foreign reserves rose to \$356 billion at the end of 2016, equivalent to 11 months of merchandise imports.

## CURRENT ACCOUNT

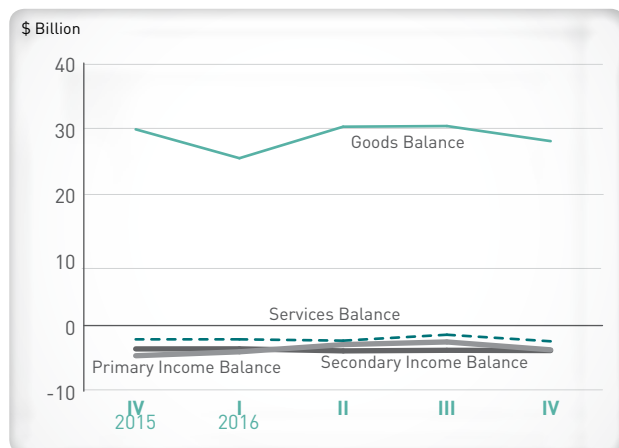
The current account surplus narrowed to \$18 billion in the fourth quarter, from \$23 billion in the third quarter (Exhibit 5.1). For the full year, the surplus rose to \$78 billion (19 per cent of GDP), from \$74 billion a year ago (18 per cent of GDP). This expansion was largely driven by a smaller deficit in the primary income balance.

Exhibit 5.1: Current Account Balance



In terms of the sub-components of the current account, the surplus in the goods balance declined by \$2.3 billion to \$28 billion in the fourth quarter, as imports rose more than exports (Exhibit 5.2). For the full year, the fall in exports was offset by the decline in imports such that the surplus in the goods balance was broadly stable, at \$114 billion.

**Exhibit 5.2: Components of Current Account Balance**



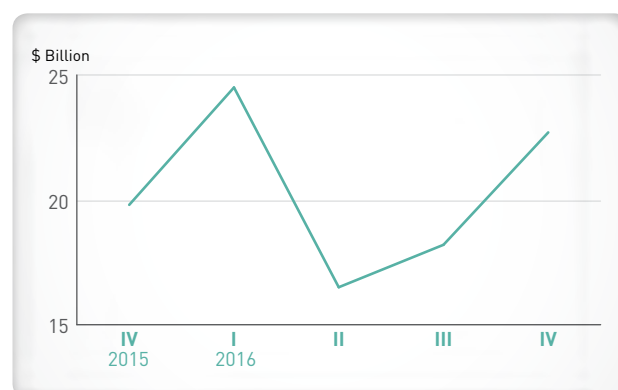
Meanwhile, the deficit in the services balance widened to \$2.4 billion in the fourth quarter from \$1.4 billion in the preceding quarter. For the year as a whole, the deficit rose slightly to \$8.2 billion. Lower net receipts for both financial services and insurance services, along with higher net payments for the use of intellectual property, broadly offset the higher net receipts for maintenance and repair services as well as lower net payments for travel and transport services.

For the primary income balance, the deficit widened by \$1.2 billion in the fourth quarter to \$3.7 billion. For the full year, however, the deficit shrank by \$5.0 billion to \$13 billion, as income receipts from abroad rose while income payments to foreign investors declined.

## CAPITAL AND FINANCIAL ACCOUNT

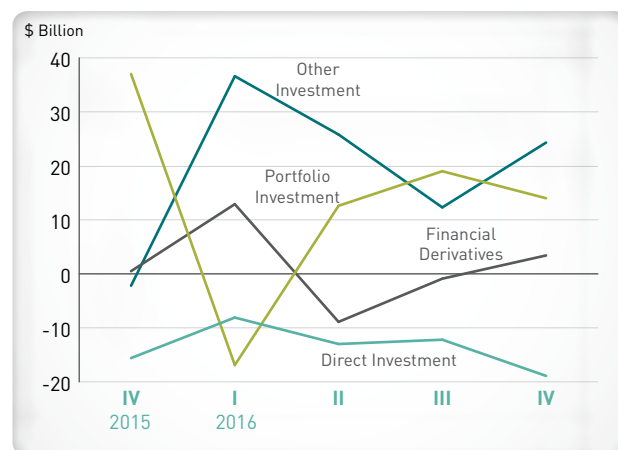
Net outflows from the capital and financial account<sup>1</sup> rose to \$23 billion in the fourth quarter, compared to \$18 billion in the previous quarter (Exhibit 5.3). For the year as a whole, net outflows increased to \$82 billion (20 per cent of GDP), from \$71 billion in 2015 (17 per cent of GDP). This was due to larger net outflows of “other investment”, a reversal from net inflows of financial derivatives to net outflows, as well as smaller net inflows of direct investment. These collectively exceeded the decline in net outflows of portfolio investment.

**Exhibit 5.3: Capital and Financial Account Balance**



In terms of the sub-components of the capital and financial account, net inflows of direct investment rose by \$6.7 billion in the fourth quarter to \$19 billion (Exhibit 5.4). For the full year, net inflows of direct investment amounted to \$52 billion, \$1.8 billion lower than in 2015. This occurred as foreign direct investment into Singapore declined by more than residents’ direct investment abroad.

**Exhibit 5.4: Components of Financial Account (Net)**



<sup>1</sup> Decrease in assets and liabilities, and net inflows in net balances, are indicated by a minus (-) sign. For more details regarding the change in sign convention to the financial account, please refer to DOS’s information paper on “Singapore’s International Accounts: Methodological Updates and Recent Developments”.

Net outflows of portfolio investment declined from \$19 billion in the third quarter to \$14 billion in the fourth quarter. For 2016 as a whole, net outflows of portfolio investment fell to \$29 billion, from \$75 billion in the previous year. This largely reflected a switch by deposit-taking corporations from net purchases of overseas securities to net sales, as well as smaller net purchases by the domestic non-bank private sector.

Net outflows from the “other investment” account doubled to \$24 billion in the fourth quarter. For the full year, net outflows from this account rose by \$32 billion to reach \$99 billion.

Financial derivatives turned from net inflows to net outflows of \$3.4 billion in the fourth quarter. For the whole of 2016, net outflows of financial derivatives amounted to \$6.4 billion, in contrast to the \$17 billion net inflows in the preceding year.





# CHAPTER 6

## Sectoral Performance





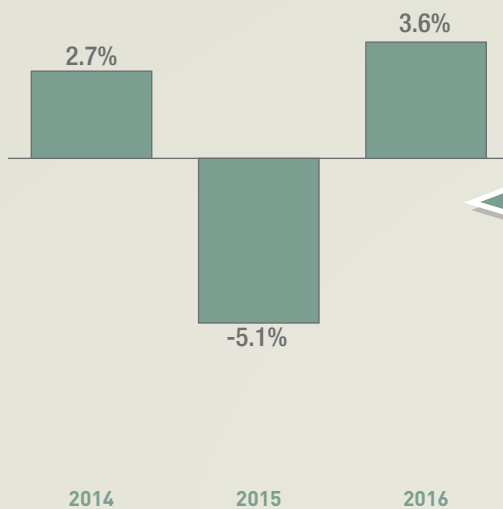


## CHAPTER 6

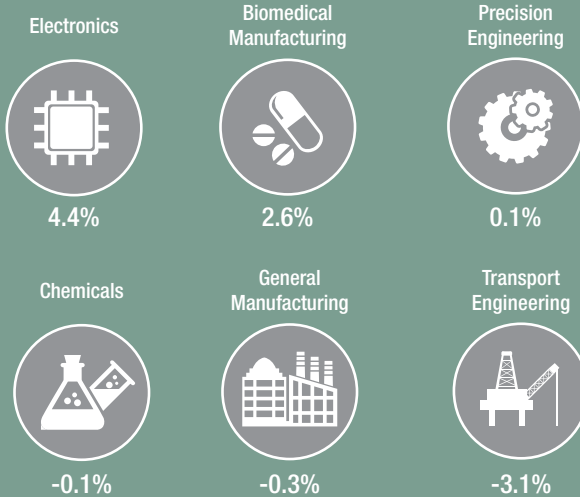
# SECTORAL PERFORMANCE

### Manufacturing Sector

#### REAL GROWTH

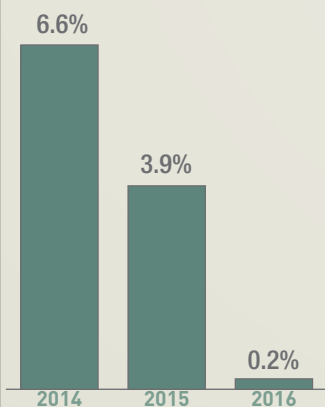


#### CLUSTERS IN MANUFACTURING SECTOR %-POINT CONTRIBUTION IN 2016

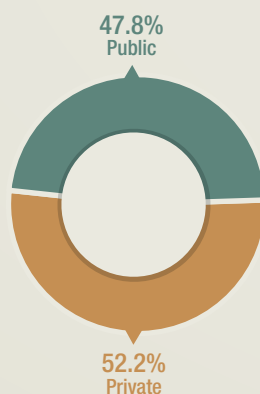


### Construction Sector

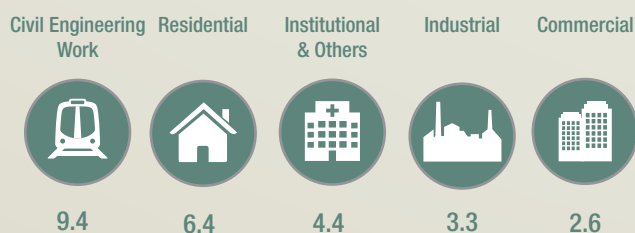
#### REAL GROWTH



#### CERTIFIED PAYMENTS IN 2016

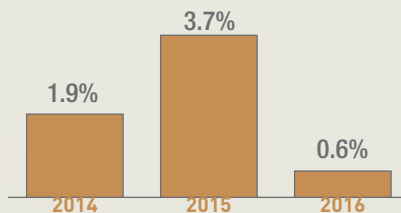


#### CONTRACTS AWARDED IN 2016 (\$, billion)



### Wholesale & Retail Trade Sector

#### REAL GROWTH



#### WHOLESALE TRADE

##### Domestic Wholesale Trade Index growth



-2.8%

##### Foreign Wholesale Trade Index growth



1.3%

#### RETAIL TRADE

##### Retail Sales Index growth (Motor Vehicles)



27.5%

##### Retail Sales Index growth (Non-motor Vehicles)

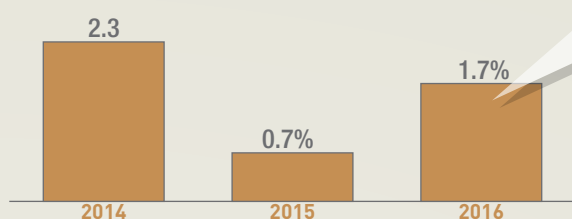


-3.4%



## Accommodation & Food Services Sector

### REAL GROWTH



### ACCOMMODATION

#### Performance of hotels

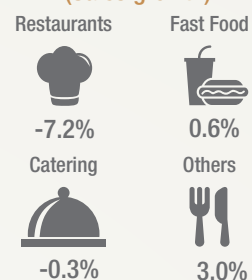


Room revenue growth: 2.3%

Gross lettings growth: 6.0%

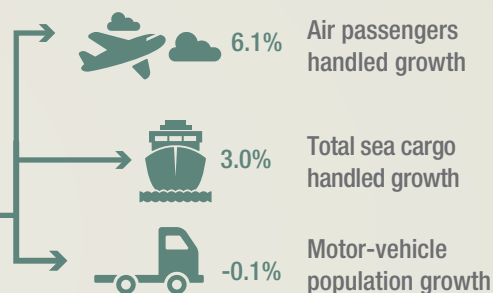
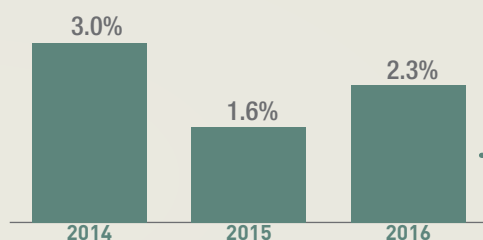
### FOOD SERVICES

#### Performance of F&B (Sales growth)



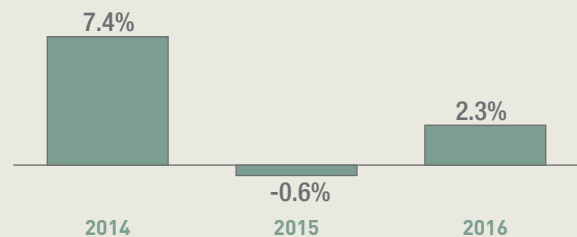
## Transportation & Storage

### REAL GROWTH



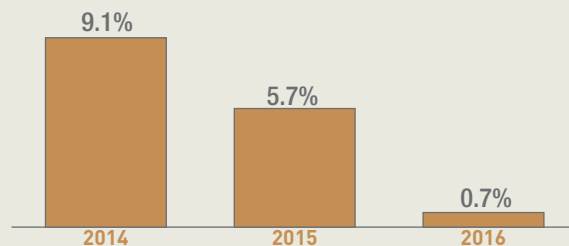
## Information & Communications

### REAL GROWTH

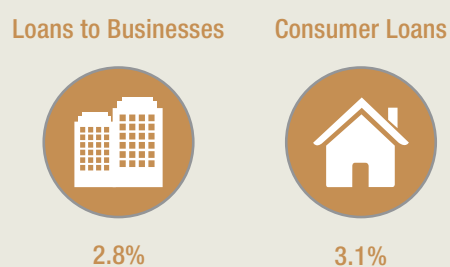


## Finance & Insurance

### REAL GROWTH

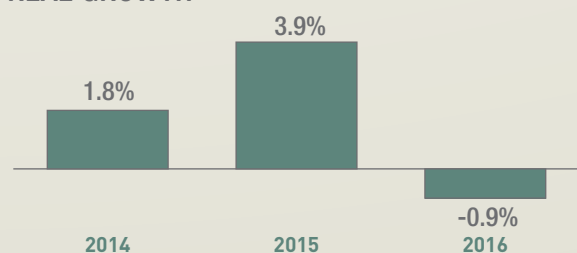


#### Growth of bank loans & advances to non-bank customers in 2016



## Business Services

### REAL GROWTH



# 6.1 Manufacturing

## OVERVIEW

The manufacturing sector expanded by 11 per cent in the fourth quarter of 2016, underpinned by robust growth in the electronics and biomedical manufacturing clusters.

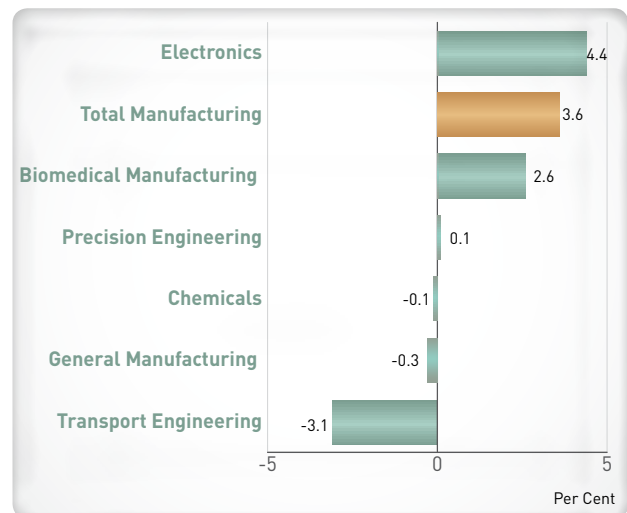
For the whole of 2016, the manufacturing sector grew by 3.6 per cent, a reversal from the 5.1 per cent contraction in the previous year. Growth was supported by a rebound in electronics and biomedical manufacturing output, even as a decline in the output of the transport engineering cluster weighed heavily on growth.

## OVERALL MANUFACTURING PERFORMANCE

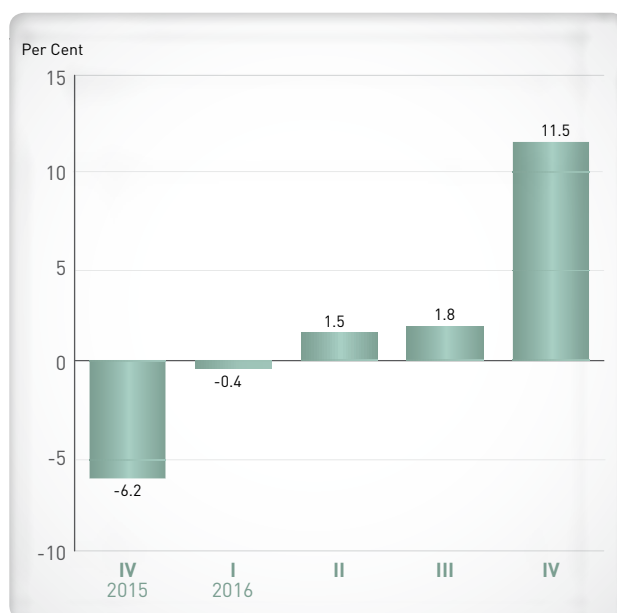
In the fourth quarter, manufacturing output rose by 11 per cent, supported largely by robust growth in the electronics and biomedical manufacturing clusters (Exhibit 6.1).

For the whole of 2016, manufacturing output increased by 3.6 per cent, reversing the contraction of 5.1 per cent in 2015. Growth was supported by higher levels of output in the electronics and biomedical manufacturing clusters, which accounted for 122 per cent and 74 per cent of the overall expansion. By contrast, a decline in the output of the transport engineering cluster placed the largest drag on growth (Exhibit 6.2).

*Exhibit 6.2: Percentage-Point Contribution to Manufacturing Sector's Growth in 2016*



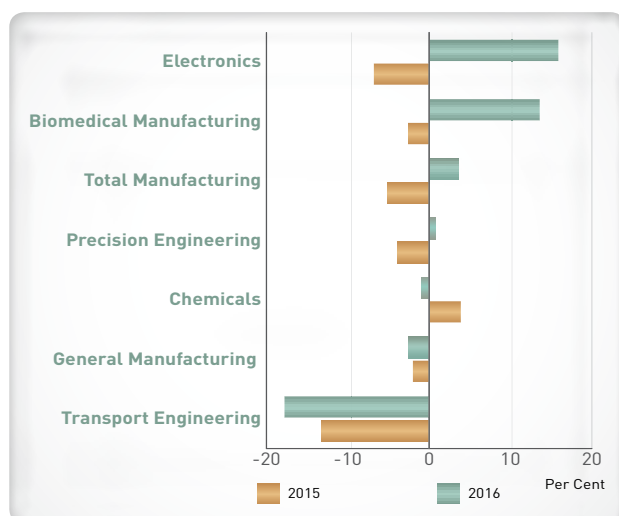
*Exhibit 6.1: Manufacturing Growth Rates*



## PERFORMANCE OF CLUSTERS

The electronics cluster grew by 33 per cent in the fourth quarter, supported primarily by the semiconductors segment, which expanded by 62 per cent. The robust performance of the semiconductors segment came on the back of a strong recovery in global semiconductors demand. On the other hand, output in the data storage and infocomms & consumer electronics segments declined by 12 per cent and 19 per cent respectively, amidst a continued softening of the PC devices market. For the full year, the electronics cluster expanded by 16 per cent, as the strong performance of the semiconductors segment more than offset the weakness seen in the data storage, computer peripherals and infocomms & consumer electronics segments (Exhibit 6.3).

Exhibit 6.3: Manufacturing Clusters' Growth



The output of the biomedical manufacturing cluster increased by 30 per cent in the fourth quarter. Within the cluster, the pharmaceuticals segment expanded by 33 per cent on the back of a higher level of output in active pharmaceutical ingredients and biological products. At the same time, the medical technology segment recorded robust growth of 19 per cent as a result of higher export demand for medical devices. For 2016 as a whole, the biomedical manufacturing cluster expanded by 14 per cent, with both the pharmaceuticals and medical technology segments supporting growth.

The precision engineering cluster expanded by 5.6 per cent in the fourth quarter, supported mainly by the machinery & systems (M&S) segment. Output in the M&S segment grew by 8.7 per cent in tandem with healthy export demand for semiconductor manufacturing equipment. Output in the precision modules & components segment inched up by 0.7 per cent due to an increase in the production of dies, moulds, tools, jigs & fixtures and metal precision components. For the whole of 2016, the precision engineering cluster's output rose by 0.8 per cent. While the M&S segment contributed positively to growth in the cluster, output was weighed down by firms supporting the oil & gas industry, which had remained weak amidst the low oil price environment.

The output of the chemicals cluster grew by 2.2 per cent in the fourth quarter, supported by growth in all segments. The specialty chemicals segment, which expanded by 3.1 per cent on the back of a higher level of production of mineral oil additives, was the largest contributor to growth. For the full year, the chemicals cluster contracted by 0.9 per cent. This was due to a decline in the output of the petrochemicals segment arising from major plant maintenance shutdowns, even as the output of all other segments expanded.

The general manufacturing industries shrank by 7.6 per cent in the fourth quarter, with all segments within the cluster posting declines in output. In particular, the miscellaneous industries segment contracted by 9.6 per cent on account of a lower production of fibre glass products and construction-related products & materials. The printing segment shrank by 16 per cent, due to weak demand for commercial printing. In addition, output of the food, beverage & tobacco segment fell by 2.7 per cent. For the full year, the general manufacturing industries contracted by 2.5 per cent on the back of output declines in the printing and miscellaneous industries segments.

Output of the transport engineering cluster declined by 18 per cent in the last quarter of 2016, weighed down by continued weakness in the marine & offshore engineering (M&OE) segment. The M&OE segment contracted by 33 per cent, the ninth consecutive quarter of contraction as sluggish global capital expenditure for offshore production and exploration amidst the weak oil price environment continued to place a drag on rig-building activities and the demand for oilfield & gasfield equipment. On the other hand, the land transport and aerospace segments grew by 13 per cent and 6.9 per cent respectively, with the latter supported by higher demand for aircraft and engine maintenance work. For the whole of 2016, the transport engineering cluster contracted by 18 per cent, largely due to the M&OE segment.

## 6.2 Construction

### OVERVIEW

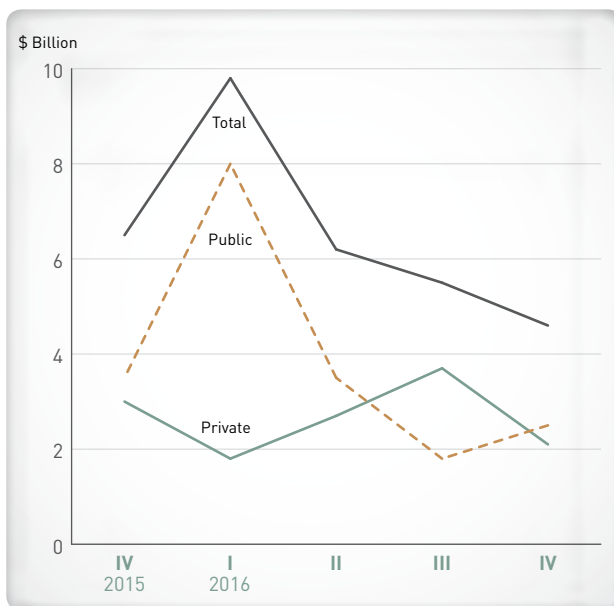
The construction sector shrank by 2.8 per cent in the fourth quarter of 2016, extending the 2.2 per cent contraction recorded in the previous quarter.

For the whole of 2016, the sector expanded marginally by 0.2 per cent, moderating from the 3.9 per cent growth in the previous year.

### CONSTRUCTION DEMAND

Construction demand (or contracts awarded) fell by 29 per cent to \$4.6 billion in the fourth quarter, on the back of a fall in both public and private sector construction demand. (Exhibit 6.4).

Exhibit 6.4: Contracts Awarded



For the full year, total construction demand fell by 3.6 per cent to \$26 billion (Exhibit 6.5). This was due to weakness in private sector construction demand. Public sector construction demand, on the other hand, provided some support.

Exhibit 6.5: Contracts Awarded, 2016 (\$ Billion)

	Total	Public	Private
<b>Total</b>	<b>26.1</b>	<b>15.8</b>	<b>10.3</b>
<b>Residential</b>	<b>6.4</b>	<b>3.2</b>	<b>3.1</b>
<b>Commercial</b>	<b>2.6</b>	<b>0.2</b>	<b>2.5</b>
<b>Industrial</b>	<b>3.3</b>	<b>0.6</b>	<b>2.7</b>
<b>Institutional &amp; Others</b>	<b>4.4</b>	<b>3.8</b>	<b>0.5</b>
<b>Civil Engineering Works</b>	<b>9.4</b>	<b>7.9</b>	<b>1.5</b>

### Public Sector

In the fourth quarter, public sector construction demand declined by 28 per cent, a further pullback from the 2.2 per cent contraction registered in the previous quarter. This was due to a decline in contracts awarded for all types of building works, notably residential, industrial, and institutional & other building works.

For the full year, public sector construction demand increased by 19 per cent to reach \$16 billion. Growth was supported by a 108 per cent surge in demand for civil engineering works such as the construction of the Thomson-East Coast Line (TEL), among others. On the other hand, demand for public building works registered broad-based weakness, mainly led by declines in the residential, industrial, and institutional & others segments.



## Private Sector

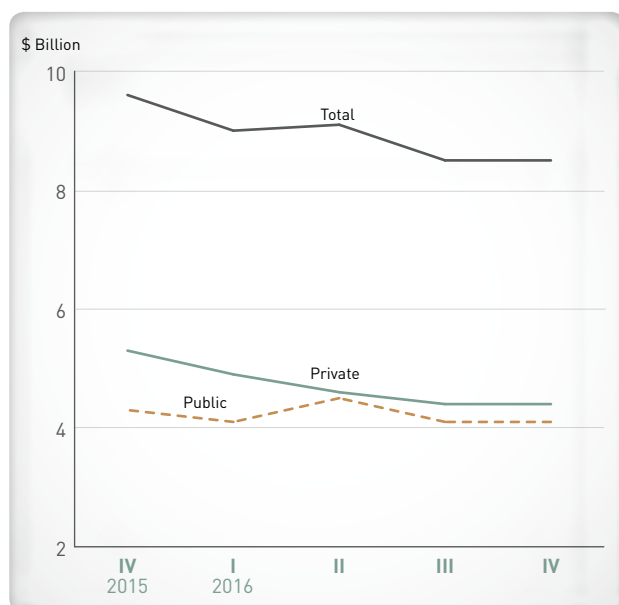
Private sector construction demand in the fourth quarter fell by 31 per cent to \$2.1 billion. The decline was attributed to a contraction in construction demand for commercial developments and civil engineering works. In particular, the demand for civil engineering works fell significantly to \$91 million, compared to the \$1.2 billion in the same period a year ago.

For the full year, private sector construction demand shrank by 25 per cent from \$14 billion in 2015 to \$10 billion in 2016. This was largely due to a fall in the demand for residential, industrial, institutional and other building works. On the other hand, contracts awarded for commercial developments such as Woods Square, the first office development in Woodlands Regional Centre, provided some support to growth.

## CONSTRUCTION ACTIVITIES

Construction output (or certified payments) declined by 11 per cent to \$8.5 billion in the fourth quarter, due to a slowdown in both public and private sector construction activities (Exhibit 6.6).

Exhibit 6.6: Certified Payments



For the full year, construction output contracted by 3.7 per cent to \$35 billion, dragged down primarily by a decline in overall residential building works. However, strong overall on-site construction activities for institutional developments as well as civil engineering works helped to alleviate the contraction in construction output.

## Public Sector

Public sector construction output fell by 3.9 per cent in the fourth quarter, mainly due to a reduction in on-site construction activities for residential developments (-22 per cent) and civil engineering projects (-16 per cent).

For the full year, public sector construction output rose by 7.3 per cent, largely supported by robust on-site construction activities for industrial developments (68 per cent), institutional developments (19 per cent) and civil engineering projects (13 per cent). Some of the major projects under construction included the expansion of the Liquefied Natural Gas (LNG) Terminal (Phase 3), Sengkang General and Community Hospital, TEL, and land preparation works for Changi Airport.

## Private Sector

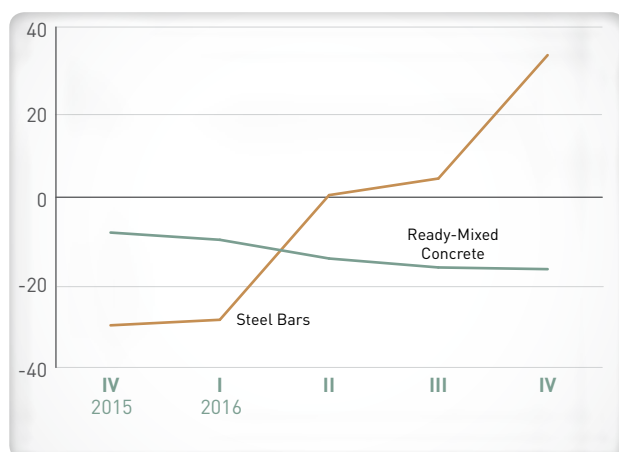
Private sector construction output shrank by 17 per cent in the fourth quarter, largely due to weakness in residential and industrial building works. Likewise, private sector construction output for 2016 as a whole fell by 12 per cent, in part due to lower output from residential (-22 per cent) and industrial building (-6.7 per cent) works.

## CONSTRUCTION MATERIALS

In 2016, the total consumption of ready-mixed concrete reached \$14 million m<sup>3</sup>, 13 per cent lower as compared to a year ago. Similarly, the total consumption of steel rebars<sup>1</sup> declined to 1.7 million tonnes in 2016, from 2.0 million tonnes in 2015.

The average market price of Grade 40 pump ready-mixed concrete<sup>2</sup> decreased by 16 per cent year-on-year to \$80.8 per m<sup>3</sup> in December 2016 (Exhibit 6.7). On the other hand, the average market price of steel rebar<sup>3</sup> increased by 64 per cent year-on-year to \$649.6 per tonne in December 2016.

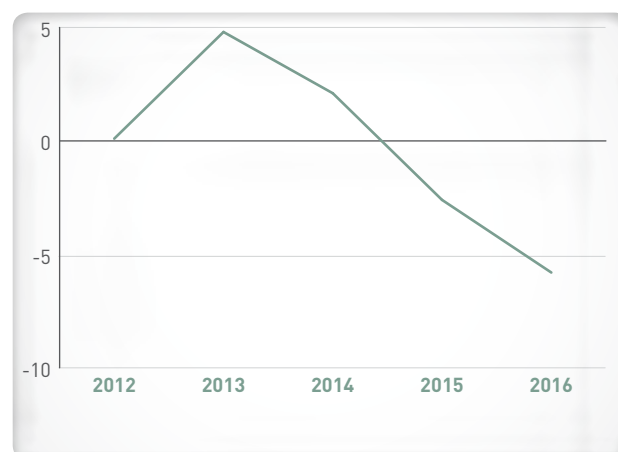
**Exhibit 6.7: Changes in Market Prices of Construction Materials**



## CONSTRUCTION COSTS

Based on BCA's Building Works Tender Price Index (TPI), tender prices in the construction sector recorded its ninth consecutive quarter of year-on-year decline in the fourth quarter, dropping by 2.6 per cent. This came on the back of a reduction in private sector building demand and a softening in the costs of some key construction materials and plant and equipment. For the full year, the TPI declined by 5.8 per cent (Exhibit 6.8).

**Exhibit 6.8: Changes in Tender Price Index**



<sup>1</sup> Rebar consumption is estimated from net imports plus local production (without factoring in stock levels).

<sup>2</sup> The market prices are based on contracts with non-fixed price, fixed price and market retail price.

<sup>3</sup> The market prices refer to 16mm to 32mm High Tensile rebar and are based on fixed price supply contracts with a contract period 12 months or below.

## CONSTRUCTION OUTLOOK IN 2017

According to BCA, total construction demand in 2017 is projected to be between \$28 billion and \$35 billion (Exhibit 6.9). Demand from the public sector is expected to strengthen to between \$20 billion and \$24 billion, contributing about 70 per cent to total construction demand. The boost to the overall public sector demand is likely to come from an anticipated increase in demand for most building construction works and civil engineering works. On the other hand, private sector demand is projected to remain subdued at between \$8.0 billion and \$11 billion amidst weakness in the property market and continued economic uncertainties.

Total construction output in 2017 is projected to moderate to between \$30 billion and \$32 billion, due to the slowdown in construction demand since 2015.

Exhibit 6.9: Projected Construction Demand in 2017

	\$ Billion
<b>Public Sector</b>	<b>20.0 – 24.0</b>
<b>Building Construction Sub-total</b>	<b>9.4 – 10.5</b>
Residential	3.6 – 3.9
Commercial	0.1 – 0.2
Industrial	2.3 – 2.7
Institutional & Others	3.4 – 3.7
<b>Civil Engineering Works Sub-total</b>	<b>10.6 – 13.5</b>
<b>Private Sector</b>	<b>8.0 – 11.0</b>
<b>Building Construction Sub-total</b>	<b>7.3 – 9.9</b>
Residential	2.1 – 2.9
Commercial	2.3 – 3.0
Industrial	1.9 – 2.9
Institutional & Others	1.0 – 1.2
<b>Civil Engineering Works Sub-total</b>	<b>0.7 – 1.1</b>
<b>TOTAL CONSTRUCTION DEMAND</b>	<b>28.0 – 35.0</b>

## 6.3 Wholesale & Retail Trade

### OVERVIEW

The wholesale & retail trade sector grew by 0.4 per cent in the fourth quarter of 2016, slightly better than the 0.1 per cent expansion in the previous quarter.

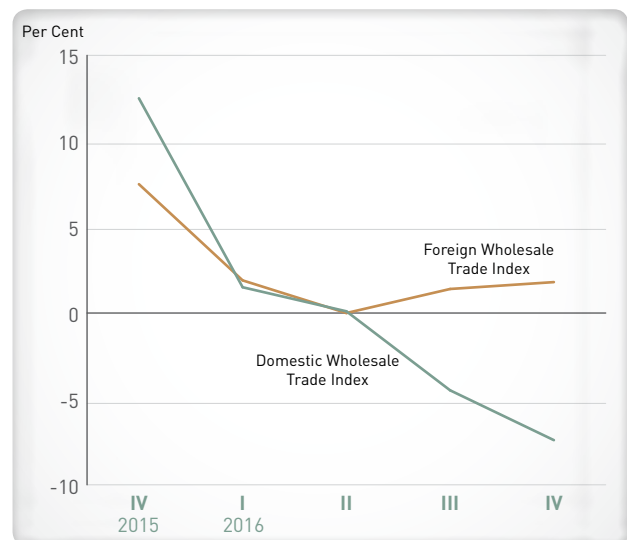
For the whole of 2016, the sector expanded by 0.6 per cent, moderating from the 3.7 per cent growth in 2015. The slowdown in growth could be attributed to both the wholesale trade and retail trade segments.

### WHOLESALE TRADE

While foreign wholesale sales volume registered modest growth, domestic wholesale sales volume continued to decline in the fourth quarter. Specifically, domestic wholesale trade fell by 7.4 per cent, worsening from the 4.5 per cent contraction in the preceding quarter (Exhibit 6.10). Domestic wholesale trade in the quarter was mainly weighed down by a decline in the sales volume of petroleum & petroleum products (-9.8 per cent). For the whole of 2016, the domestic wholesale trade index declined by 2.8 per cent, reversing the 8.8 per cent growth in 2015.

On the other hand, foreign wholesale trade grew modestly by 1.8 per cent in the fourth quarter, following the 1.4 per cent rise in the preceding quarter. Growth was supported by the healthy sales of telecommunications & computers (37 per cent), as well as metals, timber & construction materials (17 per cent). However, growth was weighed down by a 5.9 per cent decline in the sales volume of petroleum & petroleum products. For the full year, the growth of the foreign wholesale trade index moderated to 1.3 per cent, from 9.0 per cent in 2015.

*Exhibit 6.10: Changes in Wholesale Trade Index at Constant Prices*

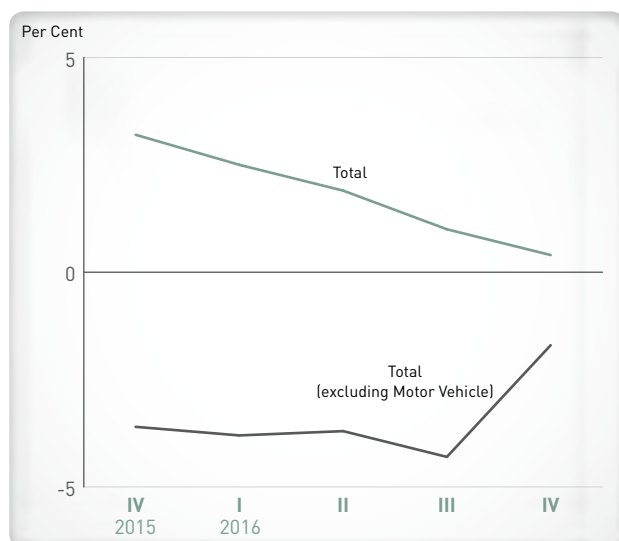


### RETAIL SALES

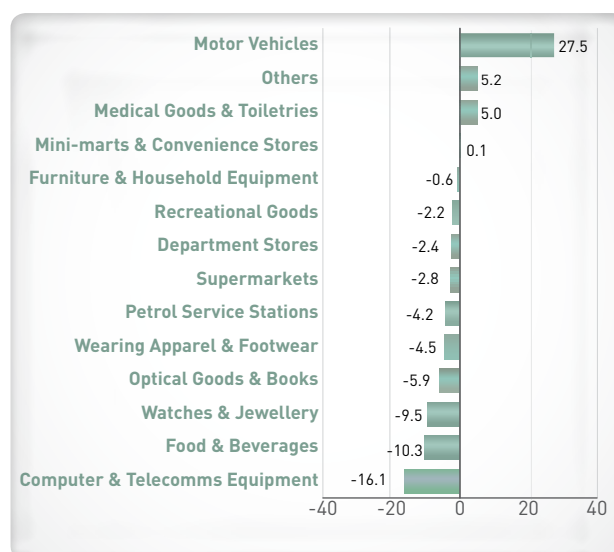
In the fourth quarter, retail sales volume rose marginally by 0.4 per cent, moderating from the 1.0 per cent growth recorded in the third quarter (Exhibit 6.11). Growth was weighed down by non-motor vehicle sales. Notably, the sales of discretionary goods such as telecommunication equipment & computers and watches & jewellery declined by 8.2 per cent and 5.9 per cent respectively. On the other hand, the sales of motor vehicles expanded by 11 per cent in the fourth quarter, and provided support to the retail trade segment.



**Exhibit 6.11: Changes in Retail Sales Index at Constant Prices**



**Exhibit 6.12: Changes in Retail Sales Index at Constant Prices for Major Segments in 2016**



For the full year, retail sales volume grew by 1.5 per cent, following the 4.6 per cent growth recorded in 2015. Growth was driven by motor vehicle sales, which surged by 28 per cent. Excluding motor vehicle sales, retail sales volume contracted by 3.4 per cent, extending the 1.0 per cent decline in the previous year.

The weakness in non-motor vehicle sales was underpinned by a decline in discretionary goods sales. The contraction was broad-based, with declines recorded in the sales volume of telecommunication equipment & computers (-16 per cent), watches & jewellery (-9.5 per cent), optical goods & books (-5.9 per cent), and wearing apparel & footwear (-4.5 per cent) (Exhibit 6.12).

## 6.4 Accommodation & Food Services

### OVERVIEW

The accommodation & food services sector contracted by 0.2 per cent in the fourth quarter of 2016, reversing the 2.5 per cent growth recorded in the previous quarter.

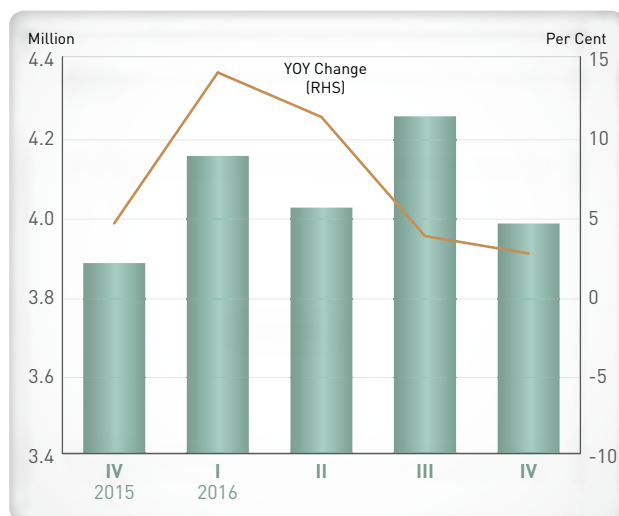
For the whole of 2016, the sector expanded by 1.7 per cent, accelerating from the 0.7 per cent growth in 2015.

### VISITOR ARRIVALS

Led by a 20 per cent surge in Chinese visitor arrivals, Singapore received a total of 4.0 million visitors in the fourth quarter, 2.6 per cent higher compared to the same period a year ago (Exhibit 6.13).

For the full year, visitor arrivals increased by a robust 7.7 per cent, improving from the 0.9 per cent growth registered in 2015. In total, visitor arrivals reached 16.4 million in 2016.

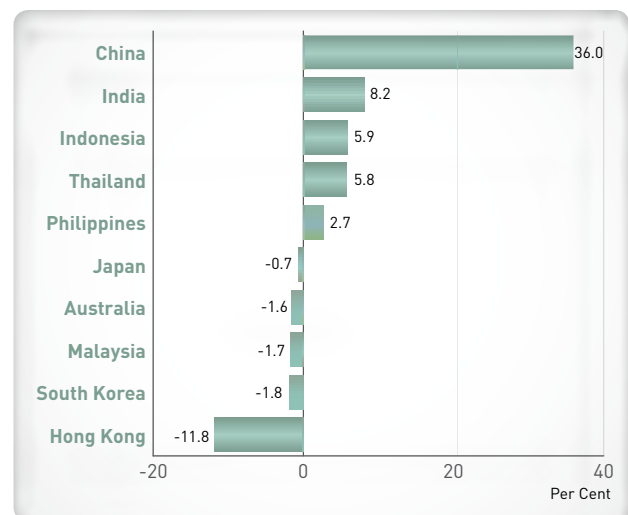
Exhibit 6.13: Visitor Arrivals



In terms of source markets, Singapore's top five visitor-generating markets in 2016 were Indonesia (2.9 million visitors), China (2.9 million), Malaysia (1.2 million), India (1.1 million) and Australia (1.0 million). Together, they accounted for 55 per cent of total visitor arrivals.

Among the key visitor markets, China (36 per cent), India (8.2 per cent) and Indonesia (5.9 per cent) posted the highest growth rates in visitor arrivals in 2016 (Exhibit 6.14).

Exhibit 6.14: Growth Rates of Top Ten Visitor Generating Markets in 2016



# ACCOMMODATION

In tandem with the growth in visitor arrivals, the gross lettings of gazetted hotel rooms rose by 3.5 per cent in the fourth quarter, although this was a moderation from the 6.1 per cent increase in the previous quarter (Exhibit 6.15). Nevertheless, room revenue dipped marginally by 0.8 per cent, on the back of a decline in the average daily room rate of gazetted hotel rooms. Specifically, the average daily room rate fell by 4.3 per cent to reach \$235 in the fourth quarter on the back of a decline in average occupancy rate as the supply of hotel rooms rose.

For the full year, the performance of the accommodation segment was resilient. The overall room revenue of gazetted hotels rose by 2.3 per cent to reach \$3.2 billion, on the back a 6.0 per cent increase in gross lettings.

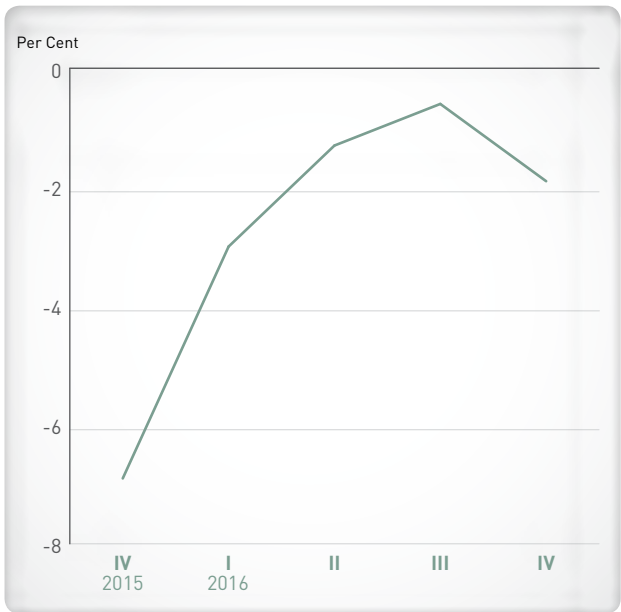
Exhibit 6.15: Gross Lettings



# FOOD & BEVERAGE SERVICES

Overall food & beverage sales volume decreased by 1.9 per cent in the fourth quarter, extending the 0.6 per cent decline recorded in the preceding quarter (Exhibit 6.16). The weak fourth quarter performance was due to the poor showing of restaurants, which recorded a 9.7 per cent contraction in sales volume. By contrast, fast food outlets, food caterers and other eating places registered growth of 1.9 per cent, 4.6 per cent and 3.1 per cent respectively.

Exhibit 6.16: Changes in Food and Beverage Services Index at Constant Prices



For the full year, the food & beverage services index fell by 1.7 per cent, which was more modest than the 5.0 per cent decline in the previous year. The contraction was led by a 7.2 per cent decline in the sales of restaurants, an extension of the 7.8 per cent fall recorded in the previous year. On the other hand, the sales of fast food outlets and other eating places recorded improvements of 0.6 per cent and 3.0 per cent respectively in 2016.

## 6.5 Transportation & Storage

### OVERVIEW

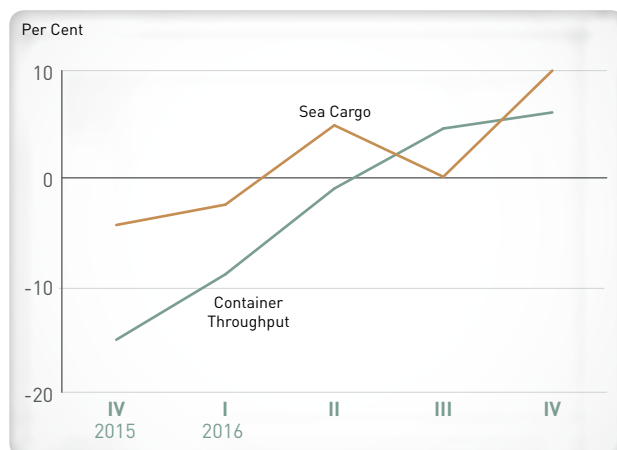
The transportation & storage sector grew by 5.4 per cent in the fourth quarter, an improvement from the 0.7 per cent growth in the previous quarter.

For the whole of 2016, the sector expanded by 2.3 per cent, faster than the 1.6 per cent expansion in 2015. Growth of the sector was mainly supported by the water transport segment.

### WATER TRANSPORT

Container throughput rose by 6.1 per cent in the fourth quarter, following the 4.6 per cent expansion in the previous quarter, in tandem with an improvement in global container trade (Exhibit 6.17).

*Exhibit 6.17: Changes in Container Throughput and Sea Cargo Handled*



Overall sea cargo volumes rose by 10 per cent in the fourth quarter, picking up strongly from the 0.1 per cent expansion in the preceding quarter. The growth in sea cargo volumes was bolstered by a 26 per cent surge in oil-in-bulk cargo shipments.

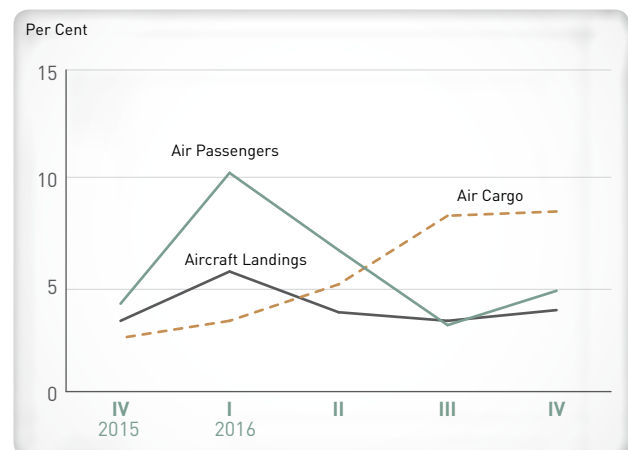
For the whole of 2016, container throughput fell marginally by 0.1 per cent, easing from the 8.7 per cent decline in the previous year. The number of Twenty-Foot Equivalent Units handled by Singapore's ports in 2016 came in at 31 million.

Meanwhile, sea cargo volumes rose by 3.0 per cent in 2016, reversing the 0.9 per cent contraction in the previous year. The improved performance was supported by oil-in-bulk cargo shipments, which grew by 13 per cent in 2016, faster than the 7.8 per cent growth in 2015.

### AIR TRANSPORT

Air passenger traffic handled by Changi Airport rose by 4.7 per cent in the fourth quarter, faster than the 3.1 per cent increase in the previous quarter (Exhibit 6.18). Growth was supported by improvements in air passenger movements on several key routes, including China, Malaysia and Indonesia.

*Exhibit 6.18: Changes in Air Transport*



Similarly, air cargo registered an 8.4 per cent growth in the fourth quarter, extending the 8.2 per cent increase in the previous quarter. Growth was in part supported by a pick-up in the volume of non-oil domestic exports in the fourth quarter.

Likewise, aircraft landings rose by 3.8 per cent to reach 46,160 in the fourth quarter, following the 3.3 per cent growth in the preceding quarter.



For the full year, air passenger traffic handled by Changi Airport posted growth of 6.1 per cent, faster than the 2.9 per cent increase in 2015. Growth was mainly supported by the recovery in air passenger volume on the Singapore-Indonesia route, as well as healthy growth on the Singapore-China and Singapore-Malaysia routes.

Air cargo shipments rose by 6.3 per cent in 2016, faster than the 0.5 per cent increase in 2015.

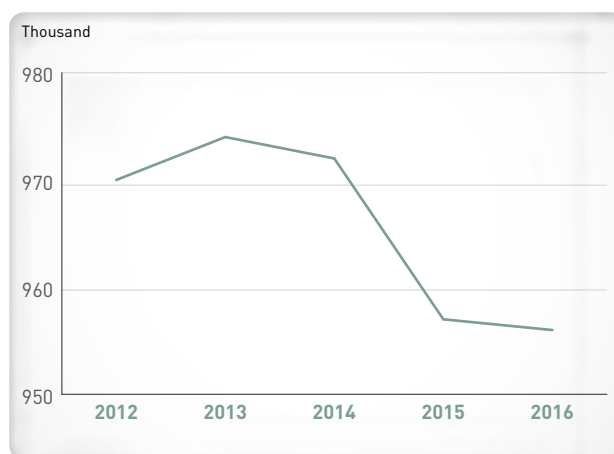
Finally, the number of aircraft landings in 2016 increased by 4.1 per cent to reach 180,251, extending the 1.4 per cent increase in the previous year.

## LAND TRANSPORT

As of December 2016, the total number of vehicles registered with the Land Transport Authority (LTA) was 956,430, 0.1 per cent lower than the number of vehicles registered in December 2015 (Exhibit 6.19). This marked the third year of decline in the number of vehicles registered, following the 1.5 per cent and 0.2 per cent decrease recorded in 2015 and 2014 respectively.

The vehicles registered as at December 2016 comprised 552,427 private and company cars, 51,336 rental cars, 27,534 taxis, 18,804 buses, 143,052 motorcycles and scooters, and 163,227 goods vehicles and other vehicle types.

*Exhibit 6.19: Motor Vehicles Registered*



## 6.6 Information & Communications

### OVERVIEW

Supported by growth in the IT & information services segment, the information & communications sector expanded by 1.4 per cent in the fourth quarter of 2016, continuing the 1.3 per cent growth in the previous quarter.

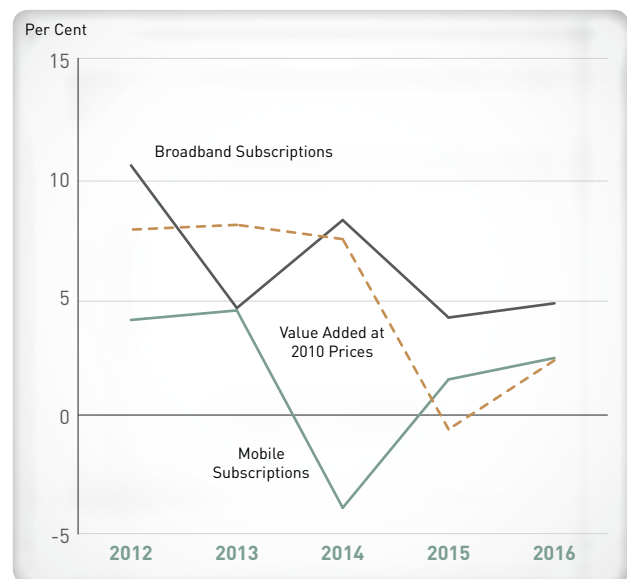
For the whole of 2016, the sector posted growth of 2.3 per cent, reversing the 0.6 per cent contraction recorded in 2015.

### TELECOMMUNICATIONS

In 2016, an increase in the number of consumers who upgraded to the more profitable 4G tiered data plans boosted the telecommunications segment. As at the end of November 2016<sup>1</sup>, overall 4G subscriptions had risen by 18 per cent as compared to the same period a year ago. Conversely, 2G and 3G subscriptions declined by 40 per cent and 11 per cent respectively. Nevertheless, the switch to the 4G subscription plans has shown signs of slowing down as the market becomes more saturated.

At the same time, the number of broadband subscribers has continued to rise. In particular, by November 2016, total broadband subscriptions had risen by 4.7 per cent, on the back of healthy growth in both wireless broadband (5.6 per cent) and optical fibre broadband (23 per cent) subscriptions (Exhibit 6.20).

Exhibit 6.20: Information & Communications Growth



<sup>1</sup> Full year data are not available at the time of publication.

## 6.7 Finance & Insurance

### OVERVIEW

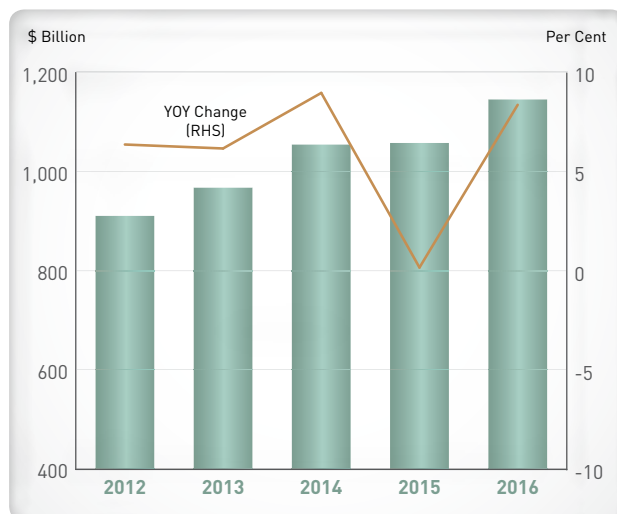
The finance & insurance sector grew by 0.6 per cent in the fourth quarter of 2016, an improvement from the 0.1 per cent growth registered in the preceding quarter.

For the whole of 2016, the sector expanded by 0.7 per cent, slower than the 5.7 per cent growth in 2015.

### COMMERCIAL BANKS

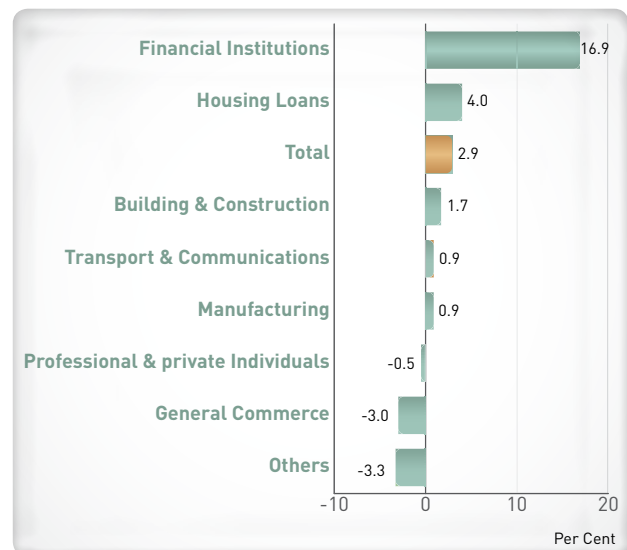
In 2016, the total assets/liabilities of commercial banks increased by 8.4 per cent to \$1.1 trillion, compared with the muted 0.2 per cent expansion the year before (Exhibit 6.21). The stronger outcome came on the back of an improvement in both interbank and non-bank lending. Credit extended to non-bank customers rose by \$18 billion (2.9 per cent), alongside an increase in both business and consumer loans.

**Exhibit 6.21: Total Assets and Liabilities of Commercial Banks**



Business lending expanded by 2.8 per cent in 2016, a reversal from the 3.7 per cent contraction in the preceding year, with most sectors registering growth in outstanding loan volumes. In particular, there was a 17 per cent step-up in lending to non-bank financial institutions. Meanwhile, consumer lending rose by 3.1 per cent, underpinned by sustained demand for housing loans (Exhibit 6.22).

**Exhibit 6.22: Growth of Bank Loans and Advances to Non-Bank Customers by Industry in 2016**



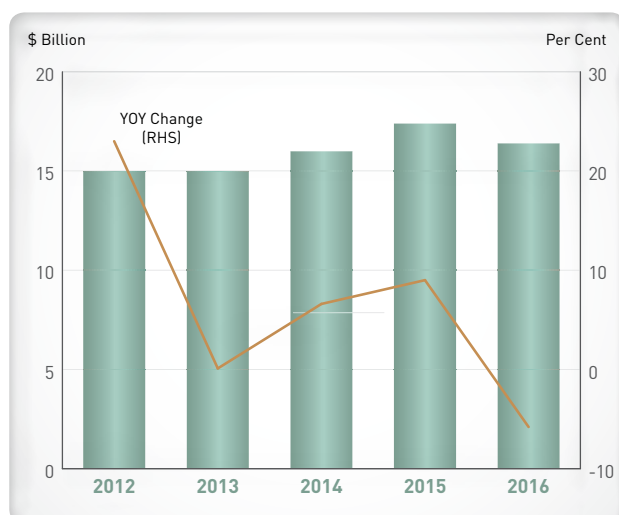
On the liabilities front, the total deposits of non-bank customers expanded by 6.5 per cent in 2016, extending the 1.8 per cent increase in the previous year. As at end-2016, total non-bank deposits stood at \$597 billion, up from \$560 billion the year before. The faster pace of growth could be attributed to a broad-based increase in demand, fixed and savings deposits.

## FINANCE COMPANIES

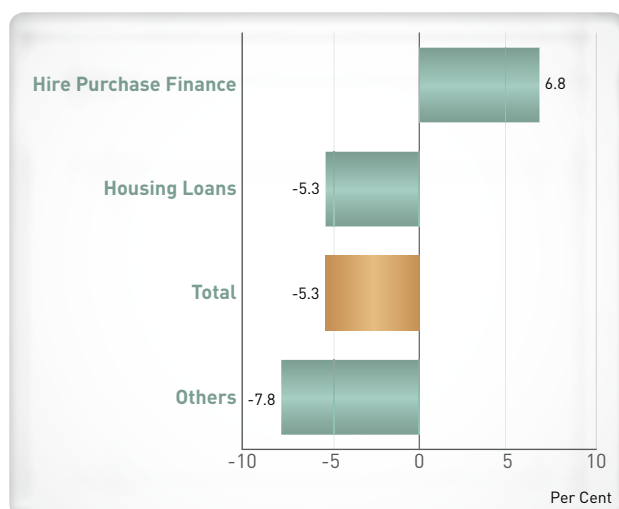
Total assets/liabilities of finance companies declined by 5.8 per cent in 2016, a reversal from the 9.0 per cent expansion in 2015 (Exhibit 6.23). Notably, the bulk of the decline was due to the non-bank segment, which saw a 5.3 per cent pullback in contrast to the 7.0 per cent growth recorded the year before. Despite a step-up in the hire-purchase financing of motor vehicles, finance companies suffered from weak credit demand in the housing and building & construction segments (Exhibit 6.24).

On the liabilities front, deposits of non-bank customers declined by 7.2 per cent, largely due to a fall in fixed deposits.

**Exhibit 6.23: Total Assets and Liabilities of Finance Companies**



**Exhibit 6.24: Growth of Loans and Advances of Finance Companies in 2016**

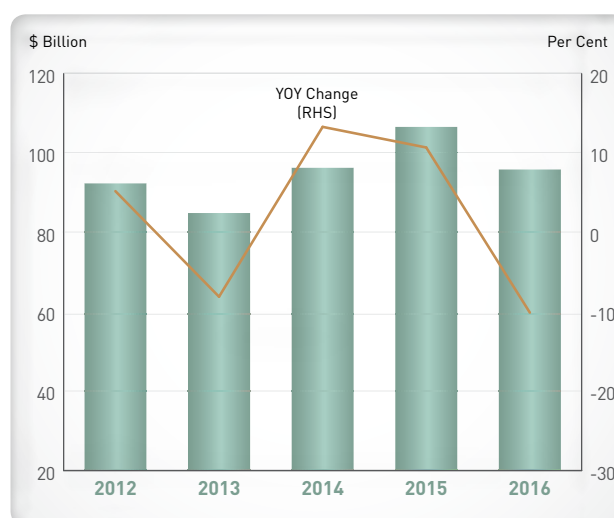


## MERCHANT BANKS

Total asset/liabilities of merchant banks stood at \$96 billion as at end-2016, a contraction of 10 per cent from the \$107 billion recorded in the previous year (Exhibit 6.25). The decline stemmed in part from the offshore segment which saw weakness in non-bank lending extended to entities outside Singapore.

In comparison, the domestic operations of merchant banks grew by 4.6 per cent, reversing the 1.5 per cent decline posted in 2015. Activity was partly bolstered by an increase in the merchant banks' holdings of securities and equities.

**Exhibit 6.25: Total Assets and Liabilities of Merchant Banks**

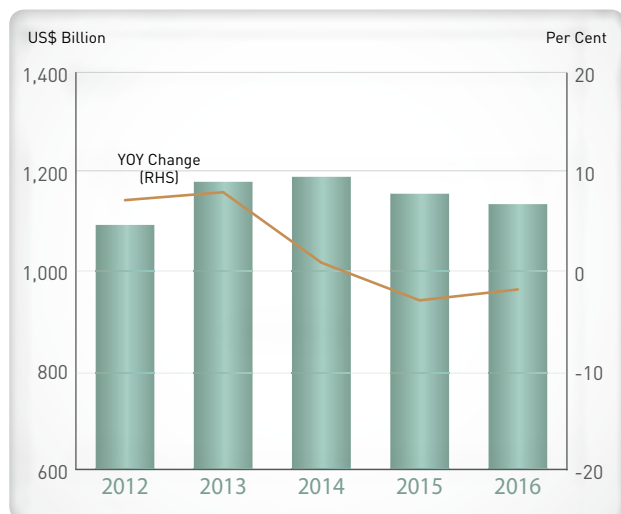


## ASIAN DOLLAR MARKET

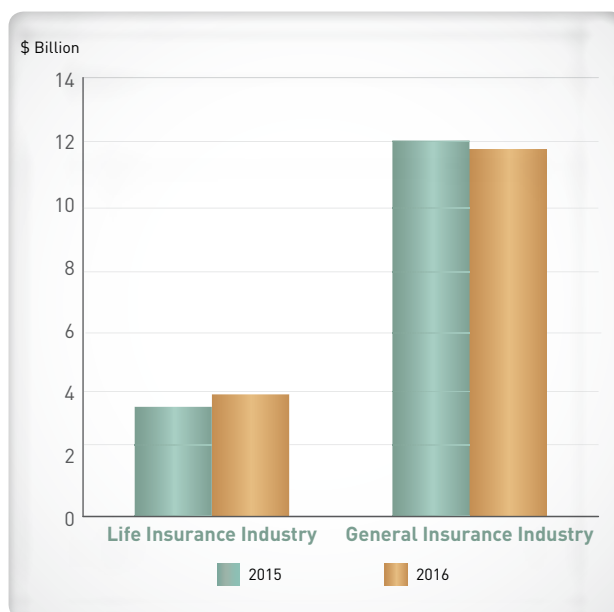
Total assets/liabilities of the Asian Dollar Market fell by 1.8 per cent in 2016, extending the 2.9 per cent decline in the previous year (Exhibit 6.26). Notably, non-bank loan volume decreased by 4.7 per cent, as lending to non-residents recorded a pullback. Loans to East Asia saw the largest decline of 18 per cent. Meanwhile, interbank loans grew modestly by 0.8 per cent, after two consecutive years of contraction.

On the liabilities front, non-bank deposits declined marginally by 0.5 per cent, as a fall in foreign currency deposits by non-residents outweighed the increase in resident deposits. Concomitantly, interbank deposits also contracted by 2.8 per cent, due to reductions in deposits from banks outside Singapore.

**Exhibit 6.26: Total Assets and Liabilities of the Asian Dollar Market**



**Exhibit 6.27: Premiums in the Insurance Industry**



## INSURANCE INDUSTRY

Total weighted new business premiums in the direct life insurance industry increased by 11 per cent to \$3.9 billion in 2016, with robust growth achieved in both single and regular premium business (Exhibit 6.27). Regular premium business increased by 13 per cent to \$2.8 billion, while single premium business grew by 6.5 per cent to \$1.1 billion. The overall net income of the direct life insurance industry was \$1.4 billion in 2016, broadly similar to 2015.

In the general insurance industry, gross premiums dropped slightly by 2.2 per cent to \$12 billion in 2016, with offshore and domestic businesses accounting for \$7.7 billion and \$4.0 billion respectively. The general insurance industry recorded an operating profit of \$770 million in 2016, a 6.0 per cent decline from the \$819 million reported in 2015. This was due to weaker underwriting profits in 2016.

## CENTRAL PROVIDENT FUND

Total CPF balances grew by 10 per cent to \$330 billion in 2016.

Members' contributions for the year amounted to \$36 billion, while total withdrawals reached \$19 billion. This resulted in a net contribution of \$17 billion, an increase of 30 per cent from the level recorded in 2015.

Total net withdrawals under the Public Housing Scheme and Private Property Scheme rose by 5.9 per cent to reach \$198 billion as at 31 December 2016.

As at 31 December 2016, more than 173,000 CPF members have been included in the CPF Lifelong Income for the Elderly (CPF LIFE) Scheme which provides lifelong payouts during retirement. The CPF LIFE fund stood at \$9.8 billion.



## STOCK MARKET

At the start of 2016, a rout in the Chinese stock market and downward revisions to global growth projections had led to a sharp turn in investor sentiments, with the benchmark Straits Times Index (STI) plunging to a multi-year low of around 2,533 points in late January (Exhibit 6.28). Nonetheless, a subsequent wave of optimism on the back of improving US economic data, increased stimulus in China, as well as expectations of higher oil prices, had resulted in a swift recovery in the index over the later part of the first quarter.

The domestic bourse was range-bound in the second and third quarters, as global developments such as the Brexit referendum in UK led to heightened volatility in financial markets. Towards the end of the year, the STI benefited from the global equity rally, amidst expectations that President Trump's administration will help spur US economic activity via tax reductions, regulation streamlining and infrastructure spending. All in, the STI closed the year at around the same level as 2015.

*Exhibit 6.28: Straits Times Index*



## SECURITIES MARKET

In 2016, the total turnover value of the securities market decreased by 2.9 per cent to \$272 billion, while total turnover volume increased by 6.4 per cent to 423 billion shares, compared with 2015. This translated to a 4.4 per cent decrease in the average daily traded value to \$1.1 billion, while the average daily traded volume increased by 4.7 per cent to 1.7 billion shares.

At the end of 2016, the total number of listed companies in Singapore was 757, with a combined market capitalisation of \$926 billion, a 2.3 per cent increase from 2015. In 2016, there were 572 companies listed on SGX's Mainboard, while another 185 companies were listed on SGX's Catalyst.

## DERIVATIVES MARKET

In 2016, SGX's derivatives market activity decreased by 6.3 per cent to 173 million contracts. Compared to 2015, total futures trading volume declined by 7.7 per cent to 163 million, while options on futures trading volume grew by 34 per cent to 9.5 million contracts. The most actively-traded contracts were the FTSE China A50 Index Futures, the Nikkei 225 Stock Index and the SGX CNX Nifty Index futures, which formed 67 per cent of the total volume traded on SGX's derivatives trading platform.

## FOREIGN EXCHANGE MARKET

Singapore's foreign exchange market posted an average daily turnover of US\$442 billion in 2016, an increase of 27 per cent from the previous year. Trading in the major currencies such as the United States Dollar, Euro and Japanese Yen continued to dominate the market, with the US Dollar/Yen currency pair registering the highest trading volume. Trading in the US Dollar/Singapore Dollar currency pair contributed less than 10 per cent to the total turnover.

In 2016, the Euro and British Pound fell by 3.2 per cent and 16 per cent against the US Dollar respectively, while the Japanese Yen was up 2.8 per cent. The US Dollar was range-bound for most of the year but rallied towards year-end on the back of expectations that President Trump's administration would embark on a programme of fiscal easing and comprehensive tax reforms, potentially including a border tax adjustment. The British Pound depreciated as the June referendum vote to leave the EU was seen as detrimental to the UK economy, and prompted further accommodative policy from the Bank of England, which also weakened the Pound. The Yen rallied over the first half of the year on safe haven flows, as events such as the UK referendum vote caused risk aversion to rise. However, the Yen weakened towards year-end as global growth and sentiments improved. The Euro depreciated slightly over the year as the European Central Bank's monetary policy remained accommodative, extending its Asset Purchase Programme till December 2017.

## 6.8 Business Services

### OVERVIEW

The business services sector contracted by 1.9 per cent in the fourth quarter of 2016, similar to the 1.8 per cent contraction registered in the previous quarter.

For the whole of 2016, the sector shrank by 0.9 per cent, reversing the 3.9 per cent growth in 2015.

### REAL ESTATE

In 2016, the growth of the business services sector was dampened by the slowdown in the real estate market. Notably, the real estate segment shrank by 4.2 per cent, a reversal from the 2.2 per cent growth seen in the previous year.

Against the backdrop of a sluggish real estate market following the implementation of property cooling measures such as the Total Debt Servicing Ratio and Additional Buyer's Stamp Duty, prices in the private residential property market registered its thirteen consecutive quarter of decline in the fourth quarter. On a quarter-on-quarter basis, prices fell by 0.5 per cent during the quarter, extending the 1.5 per cent decline seen in the previous quarter. For the whole of 2016, prices fell by 3.1 per cent, following the decline of 3.7 per cent recorded in 2015.

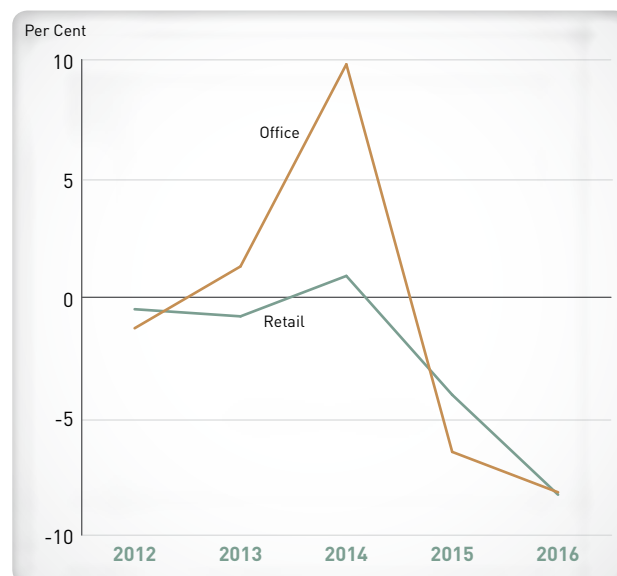
**Exhibit 6.29: Total Sales of Private Residential Units and Private Residential Property Price Index**



In comparison, sales volumes have started to stabilise as the private residential property market adjusts to lower prices. Total private residential property sales surged by 37 per cent year-on-year in the fourth quarter of 2016, extending the 11 per cent growth in the previous quarter, in part due to the higher transactions of newly launched units. For the full year, total sales picked up by 16 per cent to reach 16,378 units, compared to the 14,117 units sold in 2015 (Exhibit 6.29). However, the uptick was modest compared to the average of 28,997 units sold between 2010 and 2014.

In the commercial space segment, the retail and office space markets faced increased headwinds in 2016 given falling prices and rentals. In particular, the prices of private retail space declined by 5.4 per cent in 2016, accelerating from the 0.8 per cent contraction recorded in the previous year. Likewise, office space prices weakened by 2.8 per cent, moderating further from the 0.1 per cent contraction in 2015.

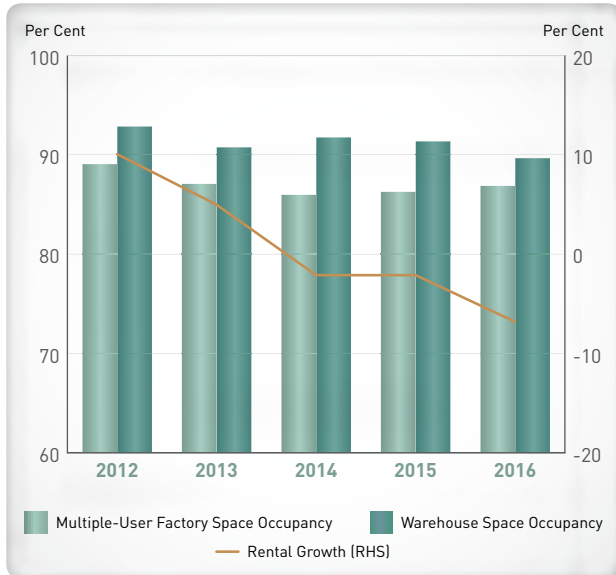
**Exhibit 6.30: Changes in Rentals of Private Sector Office and Retail Spaces**



For the rental market, private retail space rentals declined by 8.3 per cent in 2016, sliding further from the 4.1 per cent decline in the previous year. The deterioration was driven by lower rentals in the Central Area (-8.8 per cent) as well as the Fringe Area (-6.6 per cent). Similarly, rentals in the office market saw a contraction of 8.2 per cent, extending the 6.5 per cent decline seen in 2015 (Exhibit 6.30).

In the industrial space market, overall prices weakened by 9.1 per cent in 2016, following the 1.7 per cent fall in 2015. Overall rentals also declined by 6.8 per cent, a steeper pullback compared to the 2.1 per cent decline in 2015. Notably, rentals of private multiple-user factory space fell by 7.7 per cent in 2016, worsening from the 3.3 per cent decline in the previous year (Exhibit 6.31).

**Exhibit 6.31: Occupancy Rate and Rental Growth of Industrial Space**



## PROFESSIONAL SERVICES

The professional services segment grew marginally in 2016, weighed down primarily by weakness in the business & management consultancy sub-segment (-10 per cent). However, the segment was supported by the legal (4.9 per cent) and architectural & engineering services (2.3 per cent) sub-segments.

## 6.9 Overview of Sectors in 2016

### OVERALL ECONOMY

STRUCTURE OF ECONOMY	Nominal Value Added (% Share)	Real Growth (%)
<b>TOTAL</b>	100.0	2.0
<b>Goods Producing Industries</b>	26.2	2.8
Manufacturing	19.6	3.6
Construction	5.0	0.2
Utilities	1.5	1.7
Other Goods Industries	0.0	-1.4
<b>Services Producing Industries</b>	69.4	1.0
Wholesale & Retail Trade	14.2	0.6
Transportation & Storage	7.6	2.3
Accommodation & Food Services	2.2	1.7
Information & Communications	4.2	2.3
Finance & Insurance	13.1	0.7
Business Services	15.8	-0.9
Other Services Industries	12.2	3.1
<b>Ownership of Dwellings</b>	4.4	5.1

WHOLESALE & RETAIL TRADE	Nominal Value Added (% Share)	Real Growth (%)
<b>Wholesale &amp; Retail Trade</b>	100.0	0.6
Wholesale Trade	86.6	0.7
Retail Trade	13.4	0.4

ACCOMMODATION & FOOD SERVICES	Nominal Value Added (% Share)	Real Growth (%)
<b>Accommodation &amp; Food Services</b>	100.0	1.7
Accommodation	44.5	4.9
Food & Beverage	55.5	-0.8

TRANSPORTATION & STORAGE	Nominal Value Added (% Share)	Real Growth (%)
<b>Transportation &amp; Storage</b>	100.0	2.3
Land Transport*	18.6	1.7
Water Transport*	39.0	2.1
Air Transport*	22.7	1.4
Storage & Other Support Services	17.2	5.1
Post & Courier	2.5	3.0

\*Including supporting services

### SECTORAL BREAKDOWN

MANUFACTURING	Nominal Value Added (% Share)	Real Growth (%)
<b>Manufacturing</b>	100.0	3.6
Electronics	22.6	15.9
Chemicals	19.7	-0.9
Biomedical Manufacturing	21.8	13.6
Precision Engineering	12.8	0.8
Transport Engineering	11.5	-17.8
General Manufacturing Industries	11.5	-2.5

INFORMATION & COMMUNICATIONS	Nominal Value Added (% Share)	Real Growth (%)
<b>Information &amp; Communications</b>	100.0	2.3
Telecommunications	32.6	3.7
IT & Information Services	50.2	2.8
Others	17.2	-1.6



FINANCE & INSURANCE	Nominal Value Added (% Share)	Real Growth (%)
<b>Finance &amp; Insurance</b>	100.0	0.7
Banking	46.6	1.1
Security Dealing	2.6	-0.8
Fund Management	11.0	-6.1
Insurance	15.4	4.2
Others	24.4	0.8

OTHER SERVICES INDUSTRIES	Nominal Value Added (% Share)	Real Growth (%)
<b>Other Services Industries</b>	100.0	3.1
Public Administration & Defence	24.6	3.1
Education, Health & Social Work	52.0	4.7
Arts, Entertainment & Recreation	11.4	-2.0
Others	12.0	2.1

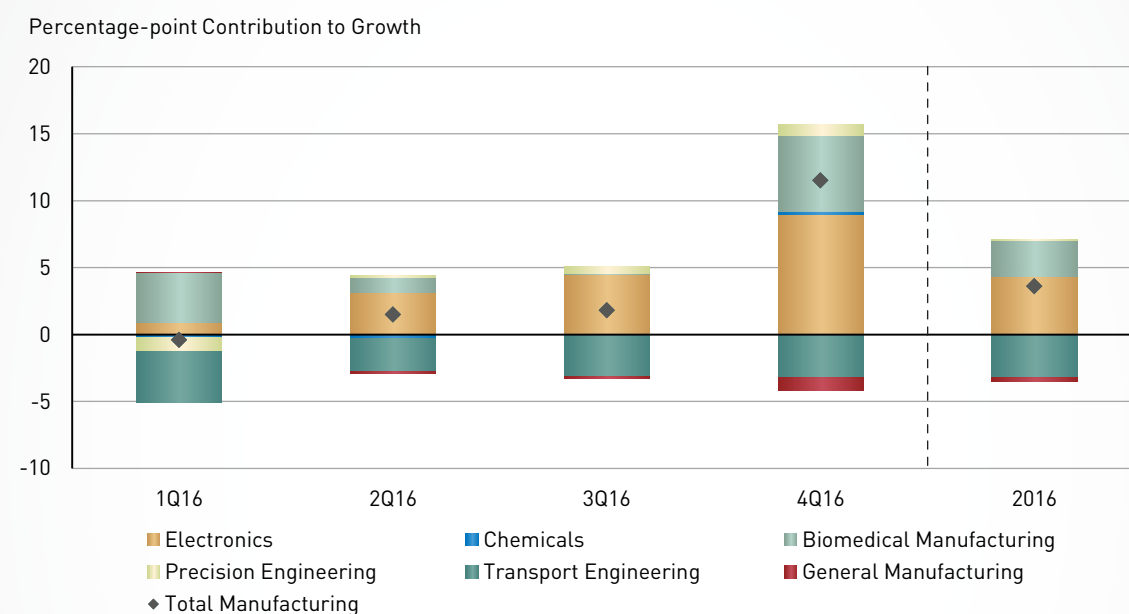
BUSINESS SERVICES	Nominal Value Added (% Share)	Real Growth (%)
<b>Business Services</b>	100.0	-0.9
Real Estate	29.4	-4.2
Rental & Leasing	16.3	1.1
Legal	3.7	4.9
Accounting	2.7	-1.8
Head Offices & Business Representative Offices	11.2	0.6
Business & Management Consultancy	3.5	-10.2
Architectural & Engineering	11.5	2.3
Other Professional, Scientific & Technical Services	8.8	1.8
Other Administrative & Support Services	12.9	0.6

# Drivers of Growth in the Manufacturing Sector

## *The manufacturing sector rebounded in 2016*

The manufacturing sector grew by 3.6 per cent in 2016, a reversal from the 5.1 per cent decline in 2015. The recovery of the sector was underpinned by growth in the electronics, biomedical manufacturing (BMS) and precision engineering clusters (Exhibit 1). Specifically, these three clusters contributed 4.4 percentage-points (pp), 2.6pp and 0.1pp to overall manufacturing growth in 2016 respectively. On the other hand, the transport engineering (-3.1pp), general manufacturing (-0.3pp) and chemicals (-0.1pp) clusters contributed negatively to the sector's growth.

**Exhibit 1: Overall manufacturing growth in 2016 was driven by the electronics, BMS and precision engineering clusters**

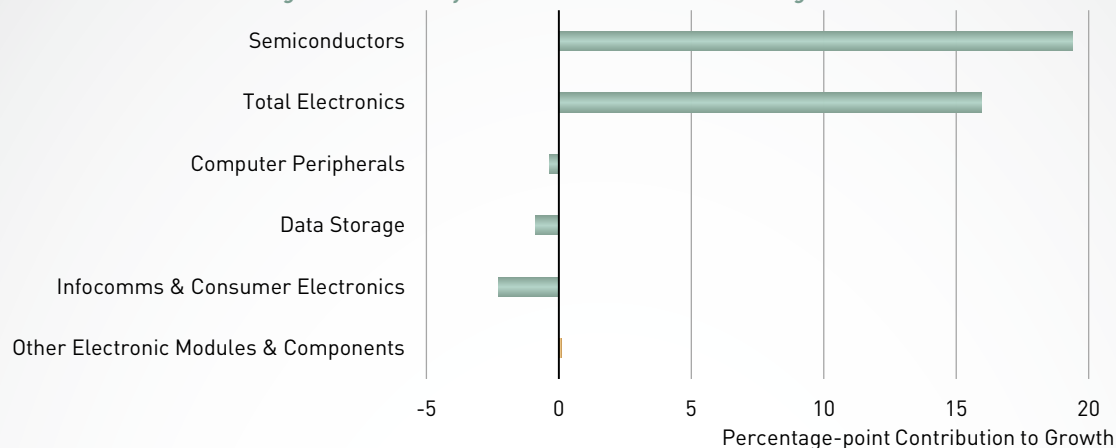


Source: Economic Development Board

## *The strong expansion in electronics production in 2016 was driven mainly by a recovery in global semiconductor demand*

The electronics cluster expanded by 16 per cent in 2016, reversing the 6.8 per cent contraction in 2015. This strong outturn was driven by robust growth in the semiconductors segment (31 per cent). Indeed, the semiconductors segment contributed 19pp to the overall growth of the cluster, even as most of the other segments within the cluster weighed on growth (Exhibit 2).

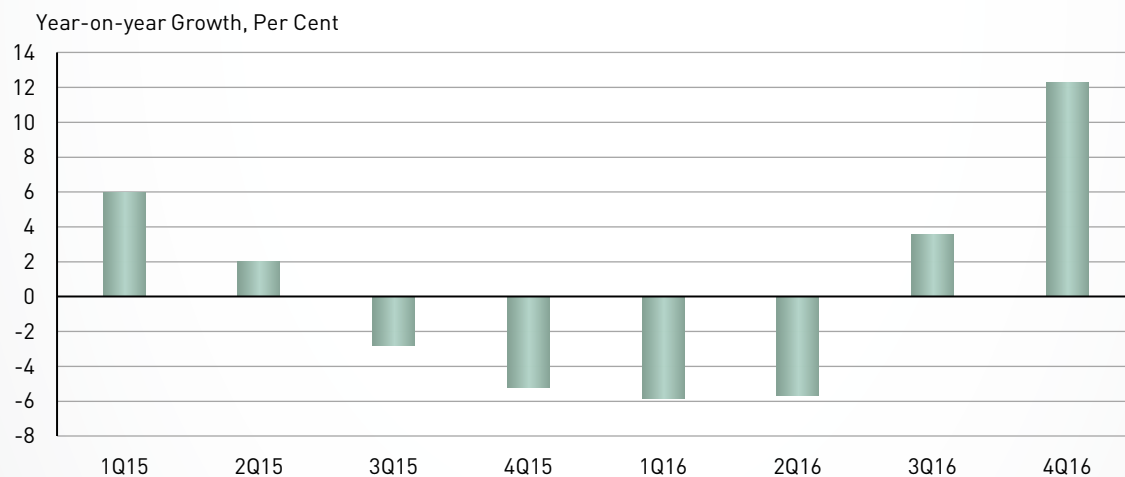
**Exhibit 2: Semiconductors segment was the key driver of the electronics cluster's growth in 2016**



Source: Economic Development Board

The strong performance of the semiconductors segment came on the back of a recovery in global semiconductor demand, especially in the later part of 2016.<sup>1</sup> According to the World Semiconductor Trade Statistics (WSTS), global semiconductor sales surged by around 12 per cent in 4Q16, a significant step-up from the 3.6 per cent increase in 3Q16, and surpassing many analysts' expectations (Exhibit 3).<sup>2</sup> For the whole of 2016, global semiconductor sales rose by 1.1 per cent, reversing the 0.2 per cent decline recorded in 2015. The recovery in global semiconductor sales was underpinned by healthy demand in major end markets such as the smartphone, automotive and solid state drive markets.<sup>3</sup> Closer to home, the success of Chinese smartphone manufacturers in China has benefitted semiconductor firms (including fabless firms) in Singapore that supply to these smartphone producers.

**Exhibit 3: Global semiconductor sales rebounded in the second half of 2016**



Source: World Semiconductor Trade Statistics

<sup>1</sup> A firm-specific factor also led to higher output in the semiconductor segment since the start of 2016. Such firm-specific factors may arise from a company's decisions to adjust its operations in response to changes in their operating environment.

<sup>2</sup> In November 2016, the World Semiconductor Trade Statistics (WSTS) estimated that global semiconductor sales for the whole of 2016 would be flat, at around -0.1 per cent. In February 2017, WSTS announced that global semiconductor sales grew by 1.1 per cent in 2016, underscoring the strength of the recovery in 4Q16.

<sup>3</sup> The healthy demand for semiconductors was in part driven by the higher level of semiconductor content in electronic devices, such as increased memory capacity in smartphones.

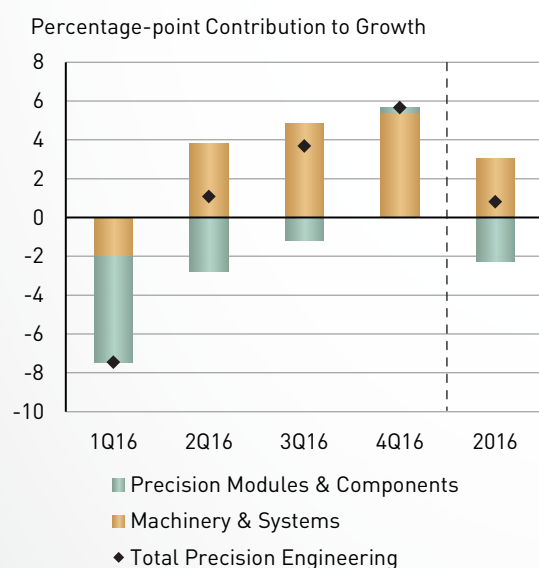
The strength of the semiconductors segment helped to offset the weakness stemming from the other segments of the electronics cluster, such as the computer peripherals, data storage and infocomms & consumer electronics segments. These segments were weighed down by sluggish demand in markets such as that for PCs and servers.

### *The BMS and precision engineering clusters were bolstered by healthy external demand for pharmaceuticals and semiconductor manufacturing equipment respectively*

The BMS cluster grew by 14 per cent in 2016, a turnaround from the 2.6 per cent contraction in 2015. Growth was supported by output expansions in both the pharmaceuticals (14 per cent) and medical technology (13 per cent) segments. The former was boosted by the increase in production of existing and newly-introduced active pharmaceutical ingredients, as well as biological products. The latter, on the other hand, continued to benefit from robust export demand for medical devices (e.g., analytical instruments for life science research), and new product launches.

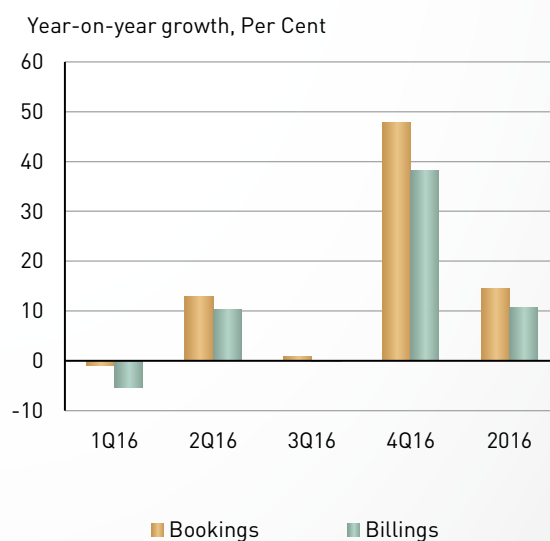
As for the precision engineering cluster, output expanded by 0.8 per cent in 2016, a reversal from the 3.9 per cent contraction in 2015. The cluster was mainly supported by the machinery & systems segment (Exhibit 4), which expanded by 5.1 per cent as a result of strong global demand for semiconductor manufacturing equipment. According to the Semiconductor Equipment and Materials International (SEMI), the bookings and billings of North America-based semiconductor equipment manufacturers – indicators commonly used to track global demand for such equipment – rose robustly by 14 per cent and 11 per cent respectively in 2016 (Exhibit 5). The recovery in global demand for semiconductor manufacturing equipment can be attributed to a few factors. First, there has been a ramp-up in wafer fab capacity investments by Chinese semiconductor manufacturers, supported in turn by the Chinese government's efforts to improve China's self-sufficiency in the production of semiconductors. Second, leading global semiconductor manufacturers have stepped up their investments in leading edge wafer manufacturing process technologies in order to maintain their technological lead. Third, an undersupply of capacity in the global flash memory market has spurred semiconductor capital investments.

**Exhibit 4: Precision engineering cluster's growth in 2016 was supported by the machinery & systems segment**



Source: Economic Development Board

**Exhibit 5: Bookings and billings of North America-based semiconductor equipment manufacturers rose in 2016**



Source: Semiconductor Equipment and Materials International

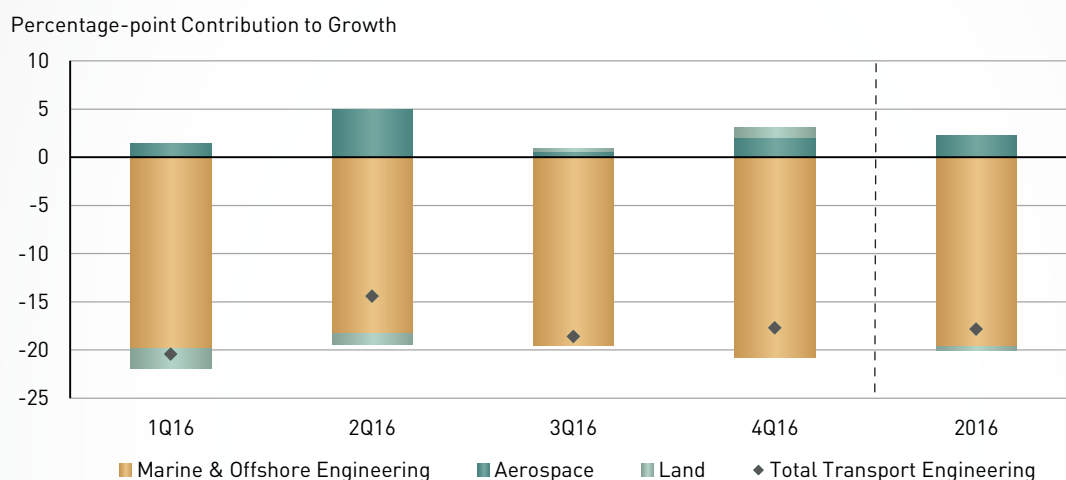


In contrast to the machinery & systems segment, the precision modules & components segment of the precision engineering cluster contracted by 5.7 per cent in 2016. The segment's weak performance could be partly attributed to firms supporting the global oil and gas industry, which has been adversely affected by sustained low oil prices.<sup>4</sup>

### *On the other hand, the transport engineering cluster continued to pose a significant drag on overall manufacturing growth*

The transport engineering cluster shrank by 18 per cent in 2016, extending the 13 per cent contraction in 2015. The performance of the cluster was adversely affected by the marine & offshore engineering (M&OE) segment, while the aerospace segment provided some support to the cluster (Exhibit 6).

**Exhibit 6: The M&OE segment weighed heavily on the transport engineering cluster in 2016**



Source: Economic Development Board

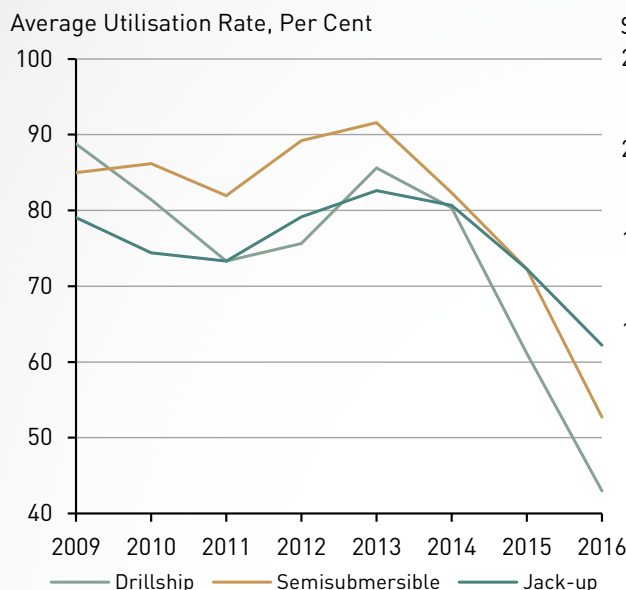
Output in the M&OE segment fell by 30 per cent in 2016, a steeper contraction than the 18 per cent decline in 2015. Weak oil prices since the second half of 2014 have weighed on the utilisation of offshore rigs globally, with the overall utilisation rate of such rigs falling for three consecutive years (Exhibit 7). The oversupply situation has adversely affected capital spending on offshore rigs and oilfield & gasfield equipment, thus leading to a drying out of new orders for the local yards. For instance, new orders secured by two major local yards in the first three quarters of 2016 amounted to just \$0.8 billion, 82 per cent lower than the amount of new orders secured over the same period in 2015, and also lower than the \$1.5 billion secured in the first three quarters of 2009 during the height of the Global Financial Crisis (Exhibit 8). At the same time, several requests for deferments in the delivery of offshore rig projects over the past two years have had a further dampening effect on the output of the local yards.

On a brighter note, the aerospace segment lent support to the transport engineering cluster, expanding by a healthy 8.1 per cent in 2016. Production activity in this segment was lifted by higher volumes of aircraft and engine maintenance, repair and overhaul (MRO) works.<sup>5</sup> Besides MRO activities, some aerospace companies have also diversified into adjacent areas such as cabin services and aircraft refurbishment.

<sup>4</sup> Such firms may also be found in the machinery & systems segment (e.g., firms that manufacture hydraulic equipment).

<sup>5</sup> For instance, according to press reports, Singapore Technologies Aerospace – a leading, independent MRO player – secured \$2.0 billion in new orders in 2015 and another \$2.6 billion in 2016.

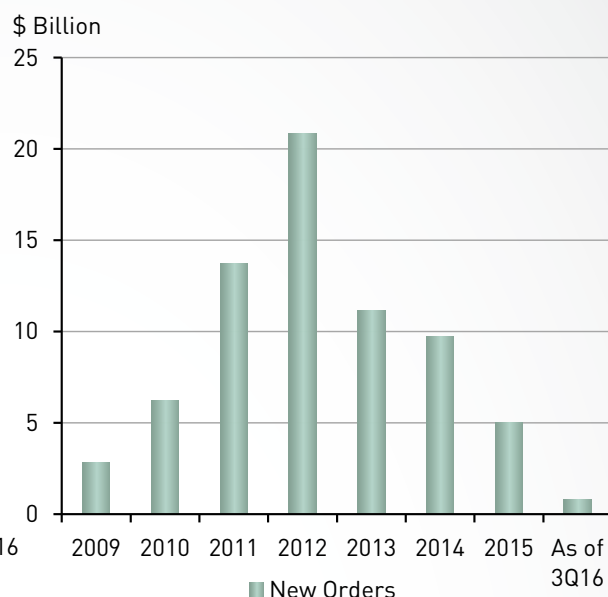
**Exhibit 7: Utilisation rate across the different types of offshore rigs plunged further in 2016...**



Source: Riglogix

Note: Drillships and semisubmersibles include rigs that can operate in water depth of 5,000 ft and more, while jack-up rigs include independent leg cantilevers of all types.

**Exhibit 8:...weighing on new orders secured by two major local yards**



Source: Keppel Offshore & Marine and Sembcorp Marine

### *Similarly, the general manufacturing and chemicals clusters weighed on overall manufacturing growth in 2016*

The output of the general manufacturing cluster fell by 2.5 per cent in 2016, extending the 2.0 per cent decline in 2015, on the back of contractions in the printing (-15 per cent) and miscellaneous industries (-4.4 per cent) segments. The weakness in the printing segment stems from the structural decline in the demand for traditional print media as digital media continues to displace print products. As for the miscellaneous industries segment, its poor performance was due in part to the drop in demand for construction-related materials in tandem with the slowdown seen in construction activities. On the other hand, the food, beverage & tobacco segment expanded by 3.7 per cent, supported by healthy export demand.

The chemicals cluster contracted by 0.9 per cent in 2016, reversing the expansion of 3.9 per cent in 2015. This was due to the petrochemicals segment (-10 per cent), where output levels were dampened by major plant maintenance shutdowns. By contrast, the other segments of the cluster expanded. In particular, the other chemicals segment grew by 8.2 per cent on the back of healthy demand from the region for fragrances used in personal and household care products. Similarly, the specialty chemicals segment expanded by 1.7 per cent, with output growth underpinned by a higher production of mineral oil additives.

### *Despite the pick-up in output in the manufacturing sector, employment in the sector was weak in 2016*

Although the manufacturing sector as a whole expanded in 2016, manufacturing employment fell by an estimated 15,700. This seeming divergence can largely be explained by the uneven performance of the different clusters within the sector. First, the bulk of the employment decline in the sector occurred in the M&OE segment – a segment which has seen prolonged weakness in production activities due to low oil prices. The weak performance of precision engineering firms that support the global oil & gas industry also had an adverse impact on employment in the precision engineering cluster. Second, manufacturing output growth in 2016 was concentrated in segments such as semiconductors and pharmaceuticals. In general, the firms in these segments are highly productive, relying heavily on automated manufacturing processes, which allow them to ramp up production significantly without a corresponding increase in manpower.

### *While the near-term outlook for the manufacturing sector has improved, growth will remain uneven across the manufacturing clusters and segments*

The near-term outlook for the manufacturing sector has improved, given the strong momentum seen in the fourth quarter of 2016. However, growth will be uneven across clusters and segments within clusters. Segments such as semiconductors and machinery & systems are likely to continue to expand on the back of healthy global demand for semiconductors and semiconductor manufacturing equipment. Capacity expansions in the semiconductors segment will also provide a further boost to electronics output in 2017. On the other hand, the M&OE segment and to a lesser extent the precision modules & components segment are likely to continue to face headwinds as the oversupply in offshore oil rigs and lacklustre capital spending by major oil players will weigh on external demand. Similarly, continued weak demand for print products and construction-related materials is likely to adversely affect the printing and miscellaneous industries segments of the general manufacturing cluster.

Over the medium term, the manufacturing sector is expected to remain a key pillar of our economy, at around 20 per cent of nominal GDP, in line with the recommendation of the Committee on the Future Economy. In this regard, MTI and EDB will continue to work towards strengthening Singapore's manufacturing base and developing capabilities in areas such as industrial data analytics and advanced manufacturing technologies. These efforts will in turn help to open up new growth opportunities within the sector.

#### *Contributed by:*

Economics Division  
Ministry of Trade and Industry

Research and Statistics Unit  
Economic Development Board

# CHAPTER 7

## Economic Outlook









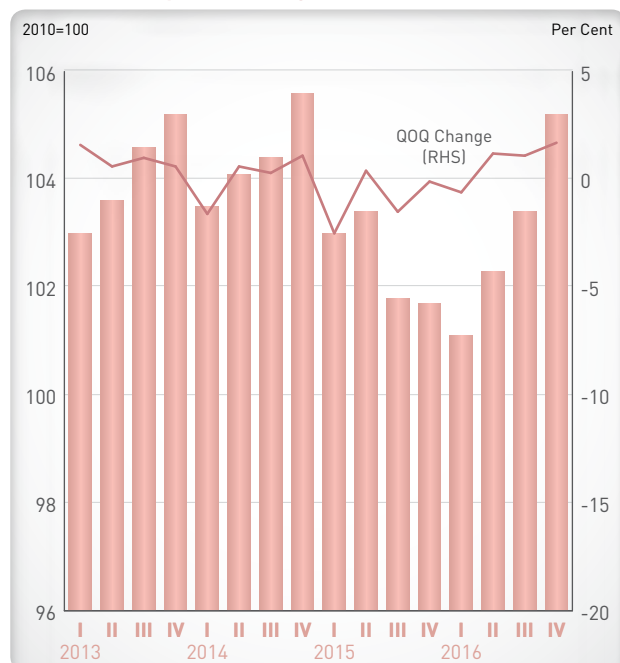
# CHAPTER 7

# ECONOMIC OUTLOOK

## LEADING INDICATORS

The composite leading index (CLI) points to a modest pick-up in growth in the Singapore economy in the near term. The CLI rose by 1.7 per cent on a quarter-on-quarter basis in the fourth quarter of 2016, an improvement from the 1.1 per cent increase in the third quarter (Exhibit 7.1). Of the nine components within the index, six components increased, namely wholesale trade, money supply, non-oil retained imports, the US Purchasing Managers' Index, stock price and new companies formed. On the other hand, domestic liquidity and the stock of finished goods declined. The final component, non-oil sea cargo handled, remained flat.

**Exhibit 7.1: Composite Leading Index Levels and Growth Rate**



## OUTLOOK FOR 2017

Global growth is projected to pick up slightly in 2017. In particular, growth in the US and key ASEAN economies is expected to improve, even as growth in China continues to moderate.

**Exhibit 7.2: GDP and World Trade Forecasts**

	2016 (Estimate)	2017 (Forecast)
World Trade	1.9	3.8
World GDP	3.1	3.4
United States	1.6	2.3
Eurozone	1.7	1.6
Japan	1.0	0.8
China	6.7	6.5
Hong Kong SAR	1.5	1.8
South Korea	2.7	2.5
Taiwan	1.5	1.9
Indonesia	5.0	5.3
Malaysia	4.2	4.3
Thailand	3.2	3.2
Singapore	2.0	1.0-3.0^

Source: Various Official Sources, IMF and Bloomberg Forecasts

^ MTI's forecast range

The US economy is projected to grow at a faster pace in 2017, supported by domestic demand and expected fiscal stimulus under the new US administration. On the other hand, growth in the Eurozone is likely to remain modest, as consumption growth may be dampened to some extent by sluggish labour market conditions. In Asia, China's economic growth is expected to ease further, as investment growth continues to slow on the back of a slowdown in the housing market and continued efforts to reduce overcapacity in the heavy industries. Meanwhile, key ASEAN economies are expected to register a modest uptick in growth in 2017, supported by resilient domestic demand as well as exports demand on the back of an expected improvement in global growth.

However, uncertainties and downside risks in the global economy remain. First, political risks and economic uncertainties have risen. Even as the UK navigates through "Brexit", upcoming elections in key Eurozone economies may create further uncertainties regarding the future of the monetary union. There are also signs of a rise in anti-globalisation sentiments. If protectionist approaches become the norm, global trade will be adversely affected, with knock-on effects on economic growth worldwide. Political risks and the lack of clarity on the policies of the new US administration have also heightened economic uncertainties globally and led to financial market volatility. These uncertainties may in turn weigh on business and consumer confidence, thereby dampening investments and consumption, and causing a pullback in global growth. Second, if monetary conditions tighten further in China and result in a steeper-than-intended pullback in credit, investment spending and hence growth in China could slow down more sharply than expected.

Against this global backdrop and barring the materialisation of downside risks, externally-oriented sectors such as the manufacturing and transportation & storage sectors are likely to provide support to growth in the Singapore economy in 2017. In particular, the improved momentum seen in the manufacturing sector towards the end of 2016 is expected to be sustained into 2017, supported by a continued recovery in the global demand for semiconductors and semiconductor equipment. Likewise, the transportation & storage sector is likely to benefit from the projected improvement in global trade flows. At the same time, the information & communications and education, health & social services sectors are expected to remain resilient.

On the other hand, the outlook for the construction sector has weakened on the back of the drop in contracts awarded in the last two years, largely due to sluggish private sector demand. Other sectors like the marine & offshore, retail and food services sectors are also likely to continue to face headwinds.

Taking the above factors into account, the Singapore economy is expected to grow at a modest pace of **"1.0 to 3.0 per cent"** in 2017.

# FEATURE ARTICLE





# FEATURE ARTICLE

## DRIVERS OF LABOUR PRODUCTIVITY GROWTH TRENDS IN SINGAPORE: AN UPDATE USING VALUE-ADDED PER ACTUAL HOUR WORKED

### INTRODUCTION

From 2009 to 2016, Singapore's overall labour productivity, as measured by real value-added per actual hour worked, grew at a compounded annual growth rate of 2.6%. Excluding the rebound from the Global Financial Crisis, productivity growth was 1.5% per annum from 2010 to 2016.



**+2.6% p.a.**  
from  
2009 to 2016

### FINDINGS

#### SHIFT-SHARE ANALYSIS

Between 2009 and 2016, productivity improvements within most sectors supported overall productivity growth. Growth was stronger for outward-oriented sectors.



MANUFACTURING



WHOLESALE  
TRADE



FINANCE &  
INSURANCE

However, this was partly offset by a shift in hours worked and employment towards less productive domestically-oriented sectors such as Construction and Food Services. Similar patterns were observed for the 2010 to 2016 period.



CONSTRUCTION & FOOD SERVICES

#### GROWTH ACCOUNTING ANALYSIS

For both periods from 2009 to 2015 and 2010 to 2015, overall productivity growth was supported by improvements in capital intensity.

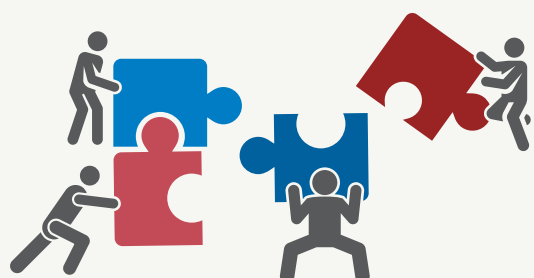


Labour quality improvements also contributed positively to overall productivity growth. This was due to a rise in hours worked by skilled workers which outpaced that of less-skilled workers. This was in turn driven by an increase in the number of skilled workers relative to less-skilled workers.



### CONCLUSION

With the implementation of the Industry Transformation Maps, productivity growth in the various sectors is expected to improve in the coming years. It is also important that we push on with efforts to equip workers with the skills that would allow them to move into more productive sectors and enjoy higher wages.





## EXECUTIVE SUMMARY

- This article examines the drivers of Singapore's labour productivity growth in recent years.
- First, a shift-share analysis indicates that a shift in hours worked towards less productive sectors, including the Construction and Food Services sectors, negatively contributed to Singapore's labour productivity growth from 2009 to 2016. However, this effect was outweighed by productivity improvements in most sectors, particularly the outward-oriented sectors.
- Second, using growth accounting analysis, we find that productivity growth from 2009 to 2015 was supported by improvements in both capital intensity and labour quality. Similar trends were observed for the period from 2010 to 2015.

*The views expressed in this paper are solely those of the author and do not necessarily reflect those of the Ministry of Trade and Industry or the Government of Singapore.*

## INTRODUCTION

Between 2009 and 2016, Singapore's overall productivity, as measured on a real value-added (VA) per actual hour worked (AHW) basis, grew at a compounded annual growth rate (CAGR) of 2.6 per cent, although part of the gains can be attributed to the strong rebound in 2010 following the Global Financial Crisis (GFC). Excluding the post-GFC rebound, productivity growth was 1.5 per cent on a CAGR basis.<sup>1</sup>

This article examines the drivers of Singapore's labour productivity growth in recent years by decomposing productivity growth using two approaches. A shift-share analysis is first used to investigate the extent to which (i) productivity changes within sectors, (ii) shifts in hours worked across sectors with different productivity levels, and (iii) shifts in hours worked across sectors with different productivity growth rates contributed to Singapore's productivity growth. The second approach uses growth accounting analysis to determine the contributions of changes in capital intensity and labour quality to productivity growth.

Previous shift-share and growth accounting analyses had used real VA per worker as the measure of labour productivity (see for example, Goh & Fan, 2015). However, VA per AHW is recognised internationally to be a better measure of labour productivity as hours worked captures the intensity of labour input more accurately (see OECD, 2001). In Singapore's context, it has also become more relevant in recent years with the rising share of part-time workers in the economy, and cyclical changes in hours worked by full-time employees (see Goh & Lin, 2015).

This article updates the earlier analyses by using real VA per AHW as the measure of labour productivity, and by incorporating data from more recent years.

## SHIFT-SHARE ANALYSIS OF LABOUR PRODUCTIVITY GROWTH: AN UPDATE

An earlier shift-share analysis (Goh & Fan, 2015) found that between 2009 and 2014, Singapore's labour productivity growth (measured on a VA per worker basis) was driven by productivity improvements in most sectors, especially the outward-oriented sectors. However, the gains were partially offset by a shift in employment towards less productive sectors, including the Construction and Food Services sectors.

This section updates the earlier analysis by using VA per AHW as the measure of labour productivity, and also extends the analysis to include more recent data. In particular, we examine labour productivity growth from 2009 to 2016.

<sup>1</sup> VA per worker grew by 2.1 per cent per annum between 2009 and 2016. Between 2010 and 2016, it grew by 0.6 per cent on a CAGR basis.

## Methodology

Using shift-share decomposition, overall labour productivity growth in the economy can be expressed as the sum of three effects:

- Within Effect: the contribution of productivity growth within sectors to overall productivity growth;
- Static Shift Effect: the contribution of changes in the AHW shares of sectors with *different productivity levels* to overall productivity growth; and
- Dynamic Shift Effect: the contribution of changes in the AHW shares of sectors with *different productivity growth rates* to overall productivity growth.

In equation form, this can be represented as:

$$\frac{P_t - P_{t-1}}{P_{t-1}} = \sum_{i=1}^n \left[ \left( \frac{P_{it} - P_{it-1}}{P_{it-1}} \right) \times \frac{Y_{it-1}}{Y_{t-1}} \right] + \sum_{i=1}^n \left[ \left( \frac{P_{it-1}}{P_{t-1}} \right) \times \left( \frac{H_{it}}{H_t} - \frac{H_{it-1}}{H_{t-1}} \right) \right] + \sum_{i=1}^n \left[ \left( \frac{P_{it} - P_{it-1}}{P_{it-1}} \right) \times \left( \frac{H_{it}}{H_t} \right) - \left( \frac{H_{it-1}}{H_{t-1}} \right) \right]$$

Where  $P_t$  is the productivity level (VA per AHW) of the economy in period  $t$ ;

$Y_t = \sum_{i=1}^n Y_{it}$  is the total VA of the economy in period  $t$ ;

$H_t = \sum_{i=1}^n H_{it}$  is the total AHW of the economy in period  $t$ ; and

$i = 1, \dots, n$  is the  $i^{th}$  sector in the economy.

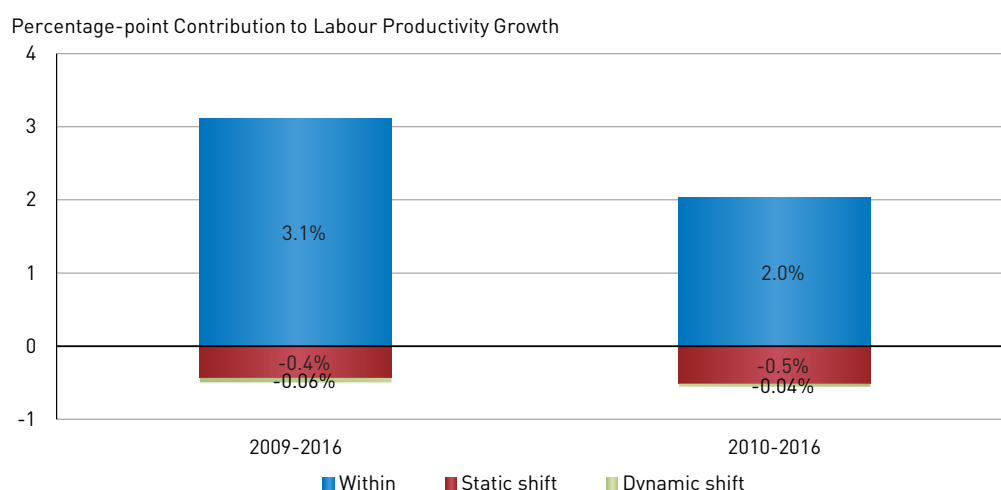
## Decomposition of Overall Labour Productivity Growth

Singapore's labour productivity grew by 2.6 per cent per annum from 2009 to 2016. The shift-share analysis shows that higher productivity growth within sectors (i.e., positive Within Effect) supported overall productivity growth over this period (Exhibit 1). However, the effect was partially offset by an increase in the AHW shares of less productive sectors relative to the more productive sectors (i.e., negative Static Shift Effect). Details are provided below:

- Within Effect: The Within Effect dominated productivity growth dynamics. Productivity improvements in the different sectors contributed 3.1 percentage-points to overall productivity growth each year.
- Static Shift Effect: A rise in the AHW shares of less productive sectors dampened overall productivity growth by 0.4 percentage-points each year.
- Dynamic Shift Effect: This effect was negative, although the magnitude was very small (-0.06 percentage-points per year).

Excluding the GFC rebound, overall productivity grew by 1.5 per cent per annum from 2010 to 2016. A similar decomposition exercise for this period resulted in a smaller, though still positive, Within Effect (+2.0 percentage-points each year). A negative Static Shift Effect also remained, weighing down productivity growth by 0.5 percentage-points each year. In terms of the Dynamic Shift Effect, the effect remained negligible (-0.04 percentage-points per year).

**Exhibit 1: Decomposition of Labour Productivity Growth (2009 – 2016, 2010 – 2016)**



Source: MTI Staff Estimates

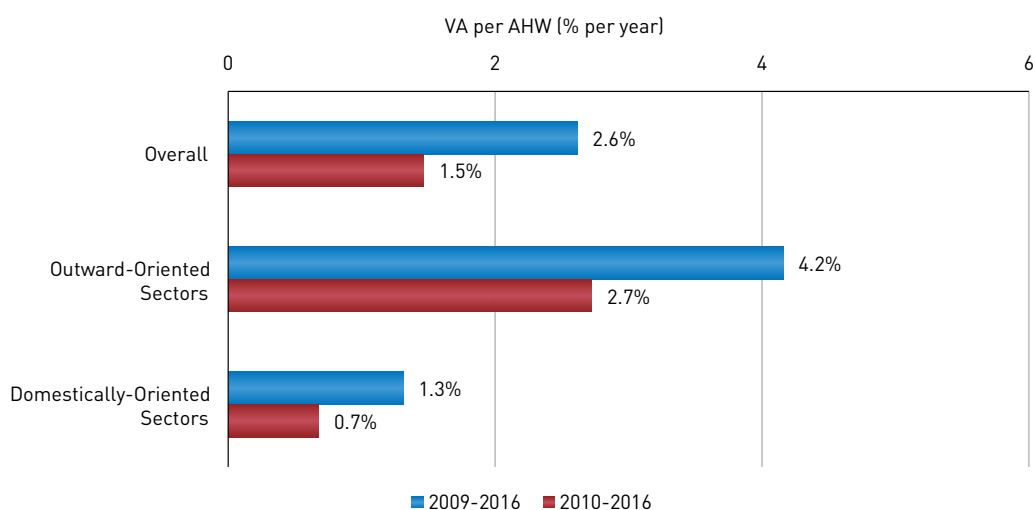
Note: The Within, Static Shift, and Dynamic Shift Effects may not sum to the overall productivity growth due to rounding.

### Contribution from Within Effect

The Within Effect was the strongest driver of labour productivity growth from 2009 to 2016. Our main observations are as follows:

- The positive Within Effect over this period was driven mainly by the Manufacturing, Wholesale Trade, and Finance & Insurance sectors. The remaining sectors' contributions to the Within Effect were generally small (lower than 0.2 percentage-points each year) and positive. A similar pattern emerged when the analysis was restricted to the period from 2010 to 2016.
- The performance of domestically- and outward-oriented sectors diverged significantly between 2009 and 2016, with the productivity growth of domestically-oriented sectors (1.3 per cent per year) trailing that of outward-oriented sectors (4.2 per cent per year) (Exhibit 2).<sup>2</sup> Notably, the main sectors driving the positive Within Effect (i.e., the Manufacturing, Wholesale Trade, and Finance & Insurance sectors) were all outward-oriented. The trends remained the same for the 2010 to 2016 period. There are various possible reasons why outward-oriented sectors tend to have better productivity performance. For example, to stay competitive in the global market, exporting firms have to constantly improve their products and processes, and be more productive.

**Exhibit 2: Broad Sectoral Productivity Growth (2009 – 2016, 2010 – 2016)**



Source: MTI Staff Estimates

<sup>2</sup> The classification of a sector as outward- or domestically-oriented is determined by its direct and indirect export share of total output as estimated using the latest Input-Output tables and tourism receipts. Domestically-oriented sectors refer to Construction, Retail Trade, Food Services, Other Business Services, and Other Services Industries. Outward-oriented sectors refer to Manufacturing, Wholesale Trade, Transportation & Storage, Accommodation, Information & Communications, Finance & Insurance, and Professional Services.

## Contribution from Static Shift Effect

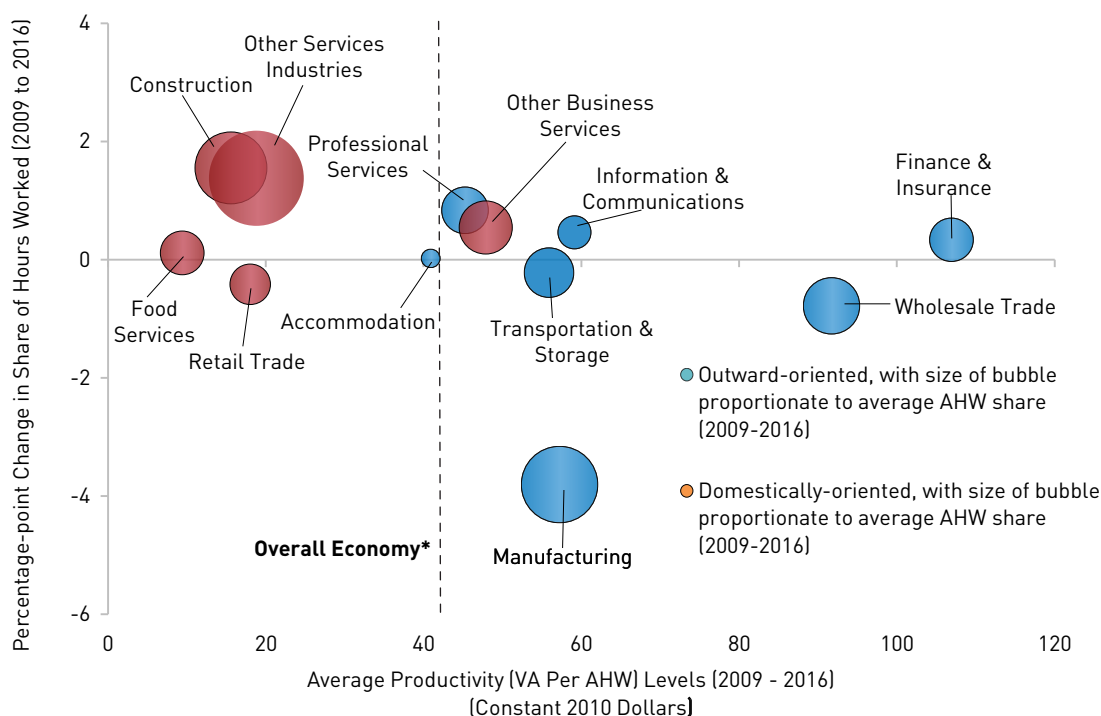
From 2009 to 2016, there was a general increase in the AHW shares of less productive, domestically-oriented sectors relative to that of more productive, outward-oriented sectors, thus dampening overall productivity growth (Exhibit 3). The changes in the AHW shares were largely driven by changes in employment shares.

The key observations are as follows:

- Some outward-oriented sectors that were more productive than the overall economy like Manufacturing, Wholesale Trade, and Transportation & Storage saw a decline in their AHW shares. This was driven by a decline in their employment shares.<sup>3</sup> On the other hand, the AHW shares of other outward-oriented sectors – Professional Services, Information & Communications, and Finance & Insurance sectors – increased on the back of a rise in their respective employment shares.
- However, domestically-oriented sectors such as Construction, Food Services and Other Services Industries that were less productive than the overall economy also saw an increase in their AHW shares. The rise in AHW shares was largely due to an increase in employment shares for these sectors. For example, to cater to higher demand, the education, health & social services sector (classified under Other Services Industries) saw an expansion of its manpower needs. For the Construction sector, on the other hand, its employment and AHW shares both peaked in 2014 due to a ramp-up in building and infrastructural works (e.g., public housing and new Mass Rapid Transit (MRT) lines). Since then, both shares have declined.
- On balance, the decline in the AHW shares of more productive outward-oriented sectors like Manufacturing and Wholesale Trade, coupled with the increase in the AHW shares of less productive domestically-oriented sectors, outweighed the positive effect of the increase in the AHW shares of sectors like Information & Communications and Finance & Insurance. This led to an overall negative Static Shift Effect. Similar patterns were also observed for the 2010 to 2016 period.

<sup>3</sup> While employment in the Transportation & Storage and Wholesale Trade sectors increased over this period, their gains were insufficient to offset the employment growth in other sectors (especially the less productive sectors), thus resulting in a drop in their employment share.

**Exhibit 3: Change in AHW Share vs Average Productivity Levels by Sector (2009 – 2016)**



Source: MTI Staff Estimates

\*This excludes ownership of residential dwellings and taxes on products.

## Summary

Singapore's overall labour productivity growth between 2009 and 2016 was supported by productivity growth in most sectors. The strongest drivers of overall productivity growth were the outward-oriented sectors, while the productivity growth of domestically-oriented sectors was weak. At the same time, overall productivity growth was dampened by a shift in hours worked towards less productive domestically-oriented sectors such as Construction and Food Services.

The findings point to two broad policy implications. First, to improve overall productivity, we have to press on with efforts to uplift sectoral productivity, especially for domestically-oriented sectors. Second, the Government should persist with economic restructuring efforts to shift our economy towards more productive sectors. This would entail supporting workers in learning skills that would allow them to move into such sectors. In this regard, the Government's efforts under key initiatives such as the Industry Transformation Maps (ITMs) will be valuable in boosting future productivity growth.



## GROWTH ACCOUNTING ANALYSIS OF LABOUR PRODUCTIVITY GROWTH: AN UPDATE

Overall labour productivity growth can be driven by improvements in capital intensity, labour quality and total factor productivity (TFP). Capital intensity refers to the amount of machinery, equipment, intellectual property and infrastructure each unit of labour input uses for production. An increase in capital intensity thus enables workers to be more productive. In addition, a more highly skilled workforce also raises labour productivity. As for TFP, it may broadly be interpreted as a measure of how efficient technologies and processes are in combining capital and labour for production, although in practice, it is often computed as a residual.

In its drive to improve productivity, the Government has made concerted efforts to raise both capital intensity and labour quality in Singapore. Schemes that encourage firms to adopt technology and/or innovate include the Technology Adoption Programme, Capability Development Grant and more recently, the Automation Support Package. On labour quality, substantial investments have been made to encourage and enhance learning at various stages in life, for example, through the SkillsFuture initiative.

The earlier study by Goh and Fan (2015) had found that improvements in both capital intensity and labour quality supported overall labour productivity growth (measured by VA per worker growth) between 2009 and 2013. In this section, we incorporate more recent data to examine how changes in capital intensity and labour quality have contributed to labour productivity growth, as measured by VA per AHW growth, in Singapore.

### Methodology

Using a growth accounting framework, we decompose VA per AHW into contributions from capital intensity, labour quality, and TFP for the period between 2009 and 2015.<sup>4</sup> (TFP is computed as a residual in this framework.)

We use a Cobb-Douglas production function and assume that inputs are paid their marginal products under competitive markets<sup>5</sup>:

$$Y = A \cdot \prod_i H_i^{b_i} \cdot \prod_j K_j^{c_j}$$

Where  $Y$  = real output;  
 $A$  = Total Factor Productivity (TFP);  
 $H_i$  = AHW of  $i^{\text{th}}$  type of labour;  
 $b_i$  = share of output of the  $i^{\text{th}}$  type of labour;  
 $K_j$  = net stock of  $j^{\text{th}}$  type of capital;  
 $c_j$  = share of output of  $j^{\text{th}}$  type of capital; and  
 $\sum_i b_i + \sum_j c_j = 1$  (i.e., constant returns to scale)

Given that  $\Delta Y \approx \sum_i \Delta b_i \Delta H_i + \sum_j c_j \Delta K_j + \Delta A$ , we can decompose productivity growth into contributions from changes in labour quality, capital intensity and TFP:

$$\Delta \frac{Y}{H} \approx S_L \cdot \sum_i (s_i - h_i) \Delta H_i + \sum_j c_j \left( \Delta \frac{K_j}{H} \right) + \Delta A$$

Where  $S_L$  = total wage share of output;  
 $s_i$  = wage share of  $i^{\text{th}}$  type of labour; and  
 $h_i$  = AHW share of  $i^{\text{th}}$  type of labour

<sup>4</sup> The timeframe for the growth accounting analysis does not include 2016, as 2016 data for capital stock is not yet available.

<sup>5</sup> See Chinloy (1988).

Similar to the earlier study, we analyse the contributions from five types of capital — Machinery & Equipment (M&E), Computer Software, Research & Development (R&D), Transport Equipment, and non-residential Construction & Works.<sup>6</sup> Capital intensity contributes positively to productivity growth when capital growth outpaces hours worked growth, such that there is more capital for each man-hour.

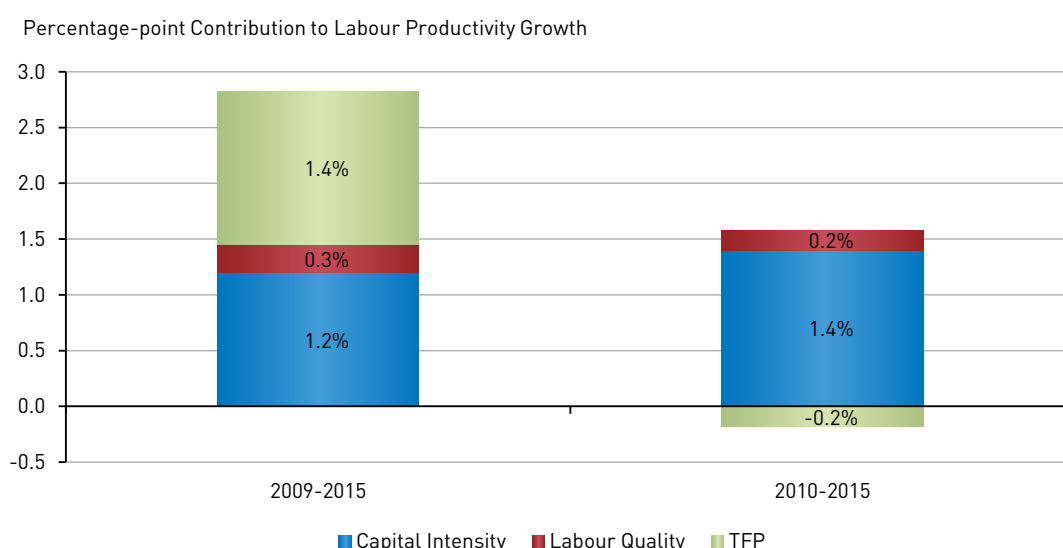
We examine labour quality by categorising labour into skilled and less-skilled labour. Labour quality is proxied by the term  $(s_i - h_i)$ , which is positive when the labour type  $i$  has higher wages than the other labour types. Hence, overall labour quality improves when the growth in total hours worked by skilled labour (whose wages exceed the economy average) exceeds that of less-skilled labour (whose wages are lower than the economy average), thereby supporting productivity growth.

## Decomposition of Overall Labour Productivity Growth

Over the periods of 2009 to 2015 and 2010 to 2015, productivity growth was driven by improvements in both capital intensity and labour quality. Our key observations are as follows (Exhibit 4):

- The contribution from capital intensity to productivity growth, at 1.2-1.4 percentage-points per annum, was the main driver of productivity growth in both periods.
- Improvements in labour quality also supported productivity growth, contributing 0.2-0.3 percentage-points per year to productivity growth in both periods.
- TFP weighed down productivity growth by 0.2 percentage-points per year for the period 2010 to 2015, a reversal from the positive contribution of 1.4 percentage-points seen from 2009 to 2015. However, it should be noted that as TFP was computed as the residual, it is highly sensitive to changes in VA. In this regard, the slowdown in economic growth in recent years would have contributed to a dampening of TFP growth in the later period.

**Exhibit 4: Decomposition of Labour Productivity Growth (2009 – 2015, 2010 – 2015)**



Source: MTI Staff Estimates

Note: The contributions from three components – capital intensity, labour quality and TFP – will not sum up to productivity growth for the overall economy as ownership of residential dwellings is excluded from the productivity computation.

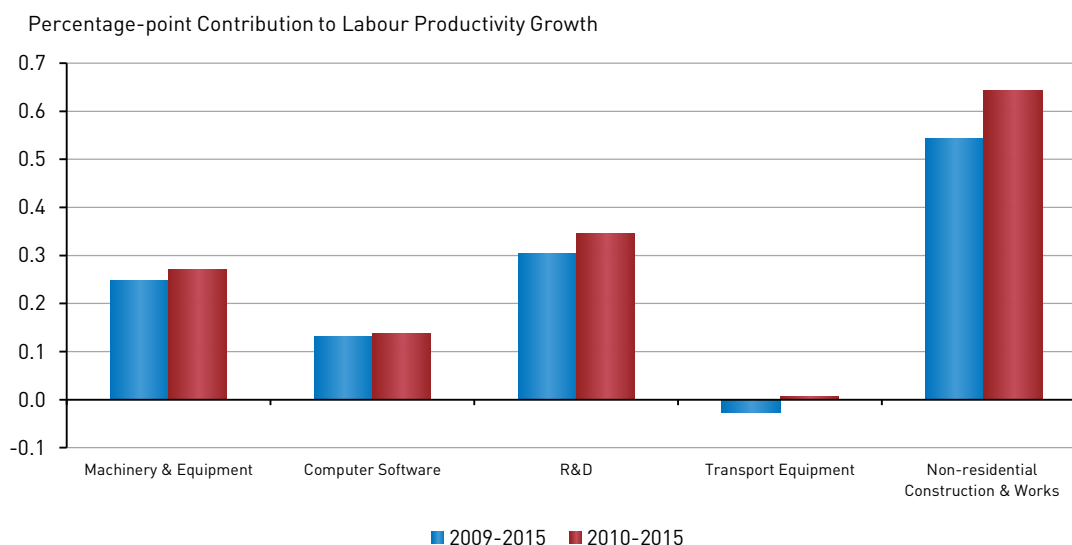
<sup>6</sup> We exclude residential buildings as they are not used in firm production. Correspondingly, we also exclude the imputed ownership of residential dwellings from the productivity computation.

## Contribution from Capital Intensity

Next, we examine the contribution of each capital type to productivity growth (Exhibit 5). Our key observations for the two time periods of 2009 to 2015 and 2010 to 2015 are as follows:

- Non-residential construction & works contributed 0.5-0.6 percentage-points per year to productivity improvements over the two periods, the highest across all capital types. The relatively large contribution of non-residential construction & works to productivity growth is consistent with the Government's continued investments in infrastructure, such as new MRT lines and major road improvement works.
- R&D capital stock contributed 0.3 percentage-points per year to productivity improvements over these periods. The relatively significant contribution of R&D capital intensity is in line with sustained R&D investments by the Government under its 5-year Research, Innovation and Enterprise plans.
- Contributions from M&E and Computer Software to productivity growth were 0.2-0.3 and 0.1 percentage-points per year respectively over both periods. Even though the net capital stock of M&E and Computer Software grew at a slower pace in recent years<sup>7</sup>, the growth in hours worked also moderated, thereby leading to an increase in capital intensity for these two capital types.
- The contribution from Transport Equipment (including ships, boats, aircrafts and other transport equipment) to productivity improvements was negligible over both periods.

**Exhibit 5: Contribution from Capital Intensity to Labour Productivity Growth (2009 – 2015, 2010 – 2015)**



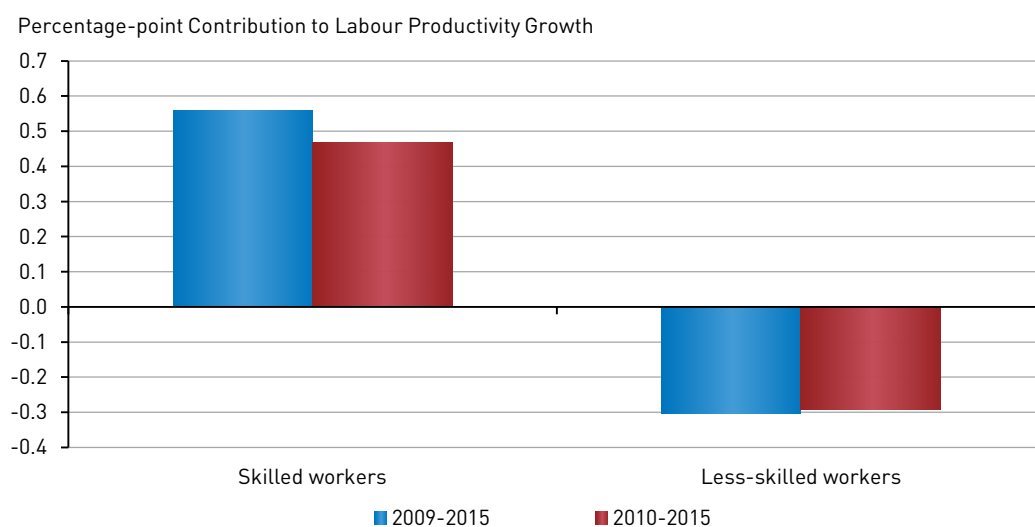
Source: MTI Staff Estimates

## Contribution from Labour Quality

In both periods from 2009 to 2015 and 2010 to 2015, labour quality contributed 0.2-0.3 percentage-points per year to productivity growth. The positive contribution of labour quality was due to an increase in hours worked by skilled workers which outpaced that of less-skilled workers (Exhibit 6). This was in turn driven by a rise in the number of skilled workers relative to less-skilled workers.

<sup>7</sup> An earlier study (MTI, 2016) found that the uncertain global economic environment was the main driver of a decline in private M&E investments in recent years.

**Exhibit 6: Contribution from Labour Quality to Labour Productivity Growth (2009 – 2015, 2010 – 2015)**



Source: MTI Staff Estimates

## Summary

Using growth accounting analysis, we find that overall labour productivity growth was driven by improvements in both capital intensity and labour quality between 2009 and 2015. Similar trends are observed for the period from 2010 to 2015. Much of the capital intensity contributions came from non-residential construction & works, as well as R&D. On the other hand, labour quality improvements arose due to an increase in hours worked by skilled workers which outpaced that of less-skilled workers, on the back of a rise in the number of skilled workers relative to less-skilled workers.

## CONCLUSION

Based on shift-share analysis, we find that Singapore's overall productivity growth was largely supported by productivity growth of more productive outward-oriented sectors. The weak productivity performance of domestically-oriented sectors, along with a shift in hours worked towards these sectors, has weighed on overall productivity growth. Using a growth accounting approach, we find that overall productivity growth has been supported by improvements in capital intensity and labour quality.

With the implementation of the ITMs, productivity growth in domestically-oriented sectors is expected to improve in the coming years. It is also important that we push on with efforts to equip workers with the skills that will allow them to move into more productive sectors and enjoy higher wages. On its part, the Government will continue to support investments in capital via schemes such as the Automation Support Package, and skills improvements via SkillsFuture initiatives.

## REFERENCES

Chinloy, P. (1988). The Effect of Shifts in the Composition of Employment on Labour Productivity Growth: Canada 1971-1979. In A. Dogramaci and R. Färe (Eds.), *Applications of Modern Production Theory: Efficiency and Productivity* (pp. 195-220). Boston, MA: Kluwer Academic Publishers.

MTI (Ministry of Trade and Industry, Singapore) (2016). Recent Trends in Singapore's Real Gross Fixed Capital Formation. *Economic Survey of Singapore First Quarter 2016*, 18-26.

Goh, T. W., & Fan, S. L. (2015). Drivers of Labour Productivity Growth Trends in Singapore. *Economic Survey of Singapore 2014*, 76-87.

Goh, K., & Lin, T. (2015). Trends in Actual Hours Worked and Implications for Labour Productivity. *Economic Survey of Singapore Second Quarter 2015*, 16-23.

OECD (2001). *Measuring Productivity: Measurement of Aggregate and Industry-level Productivity Growth, OECD Manual*. Paris: OECD.

### *Contributed by:*

Fan Shir Li, Economist  
Marsha Teo, Economist  
Economics Division  
Ministry of Trade and Industry







**MINISTRY OF TRADE AND INDUSTRY**  
100 High Street, #09-01 The Treasury  
Singapore 179434

ISSN 2382-6541