

# ECONOMIC SURVEY OF **SINGAPORE**

Second Quarter 2019





August 2019

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

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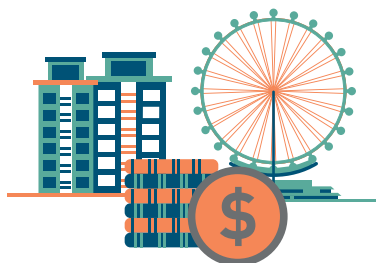


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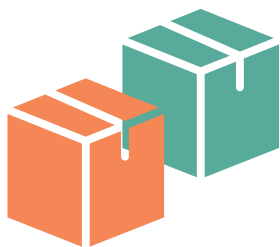
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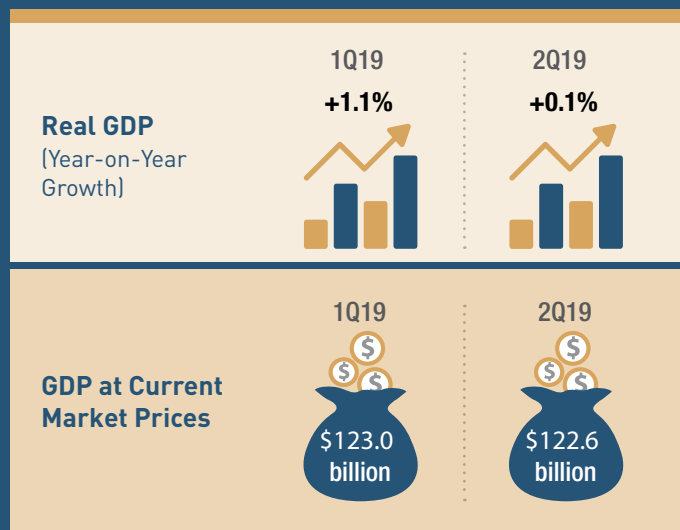




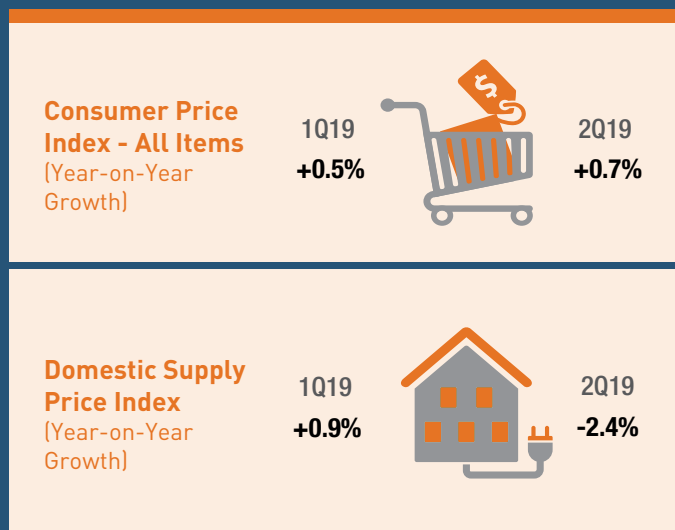
# MAIN INDICATORS OF THE SINGAPORE ECONOMY

03

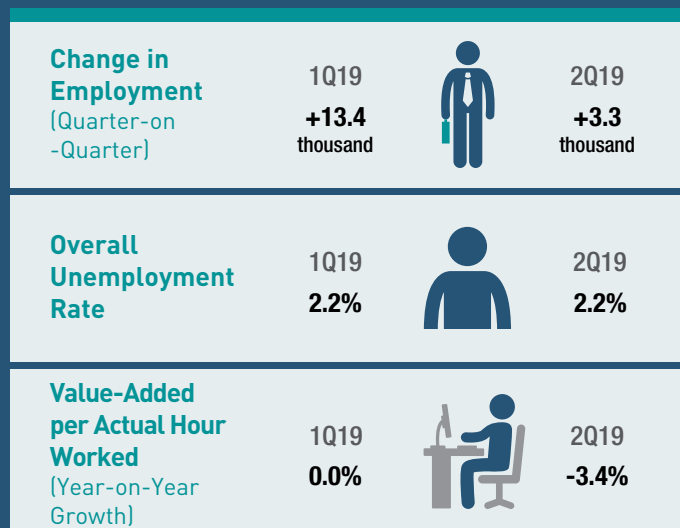
## OVERALL ECONOMY



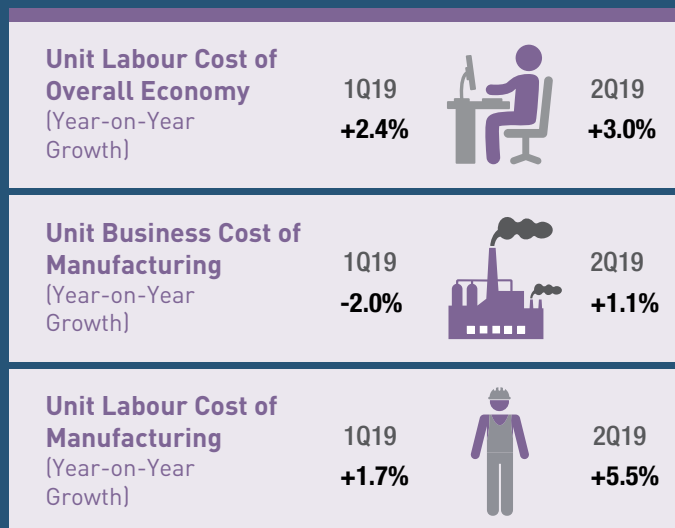
## PRICES



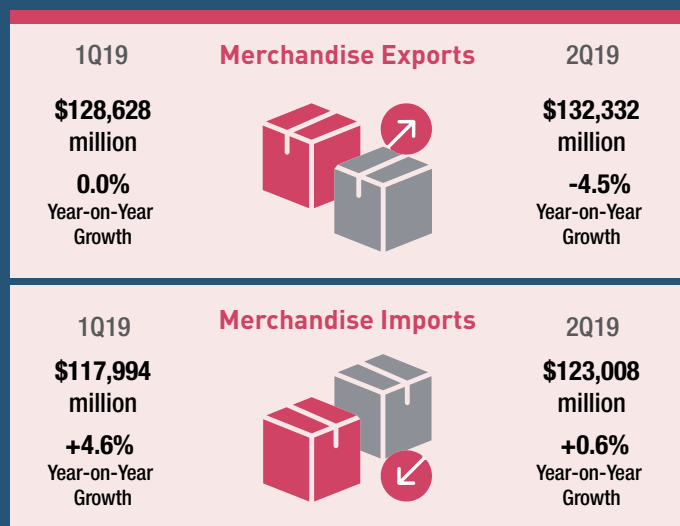
## LABOUR MARKET



## COSTS



## MERCHANDISE TRADE



## SERVICES TRADE

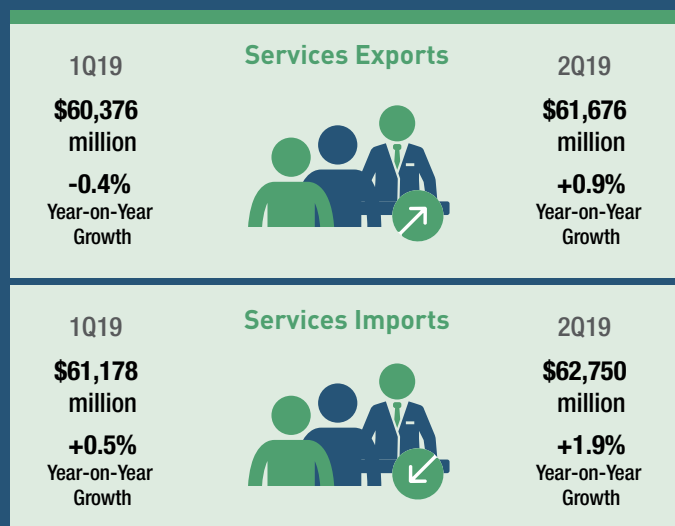




Image courtesy of Ministry of Communications and Information



A wide-angle photograph of the Singapore skyline as seen from Marina Bay Sands. The image shows a dense cluster of modern skyscrapers, including the HSBC building and the UOB building, under a bright blue sky with scattered white clouds. In the foreground, a wooden boardwalk with a metal railing curves along the water's edge. The water is calm and reflects the surrounding buildings.

CHAPTER 1

# THE SINGAPORE ECONOMY

# CHAPTER 1

## THE SINGAPORE ECONOMY

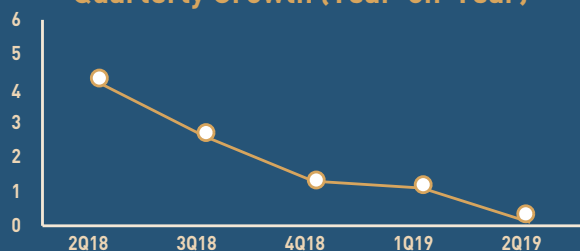
### ECONOMIC PERFORMANCE

Real GDP grew by

**0.1%** in 2Q19



#### Quarterly Growth (Year-on-Year)



#### Main Drivers of Growth in 2Q19

Finance & Insurance



**0.6%-point**  
contribution

Other Services Industries



**0.2%-point**  
contribution

### LABOUR MARKET

Resident  
Unemployment Rate



**3.1%**  
in 2Q19

Employment  
(Q-Q Change)



**+3,300**  
employed

#### Sectors with the Highest Employment Growth in 2Q19



Construction



Information &  
Communications



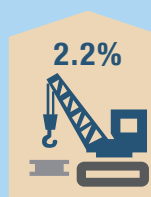
Finance &  
Insurance

### PRODUCTIVITY

Value-Added per Actual Hour  
Worked declined by  
**3.4%** in 2Q19



Highest Growth in Value-Added  
per Actual Hour Worked in 2Q19



Construction



## COSTS

Overall Unit Labour  
Cost increased by  
**3.0%** in 2Q19



Within the  
manufacturing  
sector



**1.1%**  
Unit Business  
Cost



**5.5%**  
Unit Labour  
Cost



## PRICES

The Consumer Price  
Index (CPI) rose by  
**0.7%** in 2Q19



Categories with Price Increases

**2.6%**



Education

**2.1%**



Recreation & Culture

**1.2%**



Health Care

Quarterly Growth (Year-on-Year)

## INTERNATIONAL TRADE

Total Merchandise  
Exports declined by  
4.5% in 2Q19



**2.2%**



Re-exports

**-2.9%**



Oil  
Domestic Exports

**-14.6%**



Non-Oil  
Domestic Exports

Total Services  
Exports rose by  
**0.9%** in 2Q19



Main Drivers of Services Export Growth were...

**1.1%-pt**



Transport  
Services

**0.7%-pt**



Financial  
Services

**0.4%-pt**



Telecommunications,  
Computer and  
Information

## OVERVIEW

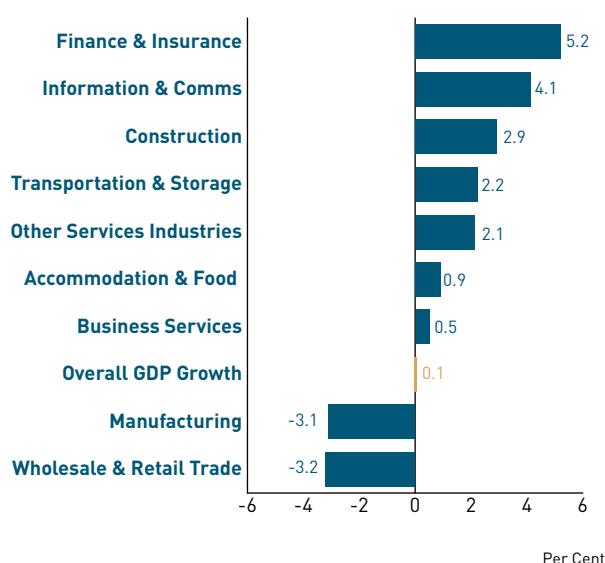
In the second quarter of 2019,

- The economy grew marginally by 0.1 per cent on a year-on-year basis. The sectors that contributed the most to GDP growth were the finance & insurance sector and “other services industries”.
- The seasonally-adjusted resident and citizen unemployment rates rose slightly in June 2019 as compared to March 2019, even as the overall unemployment rate remained unchanged. Retrenchments in the second quarter were lower as compared to the first quarter and the same quarter a year ago.
- Total employment rose by 3,300 on a quarter-on-quarter basis, less than the increase of 13,400 registered in the first quarter and the 6,500 recorded in the same quarter last year. Excluding foreign domestic workers, employment increased by 4,000 in the second quarter.
- The Consumer Price Index-All Items (CPI-All Items) rose by 0.7 per cent on a year-on-year basis, slightly higher than 0.5 per cent increase in the previous quarter.

## OVERALL PERFORMANCE

The economy grew marginally by 0.1 per cent on a year-on-year basis in the second quarter, moderating from the 1.1 per cent growth in the first quarter (Exhibit 1.1). On a quarter-on-quarter seasonally-adjusted annualised basis, the economy contracted by 3.3 per cent, a reversal from the 3.8 per cent growth in the first quarter.

Exhibit 1.1: GDP and Sectoral Growth Rates in 2Q 2019



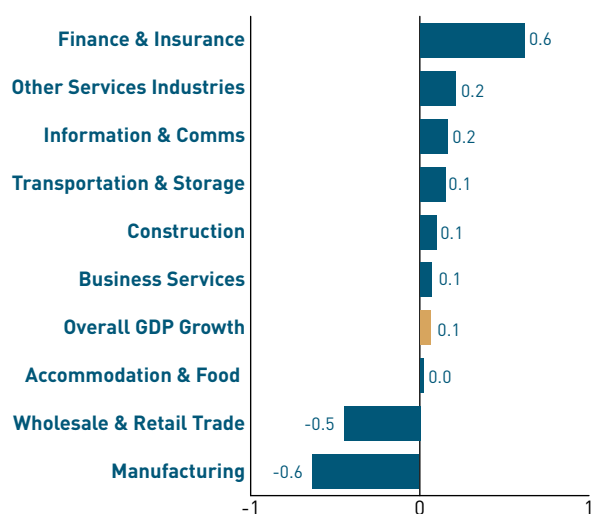
The manufacturing sector shrank by 3.1 per cent year-on-year, sharper than the 0.3 per cent decline in the previous quarter. The contraction was largely due to output declines in the electronics, transport engineering and precision engineering clusters, which outweighed output expansions in the biomedical manufacturing and general manufacturing clusters.

The services producing industries grew by 1.1 per cent year-on-year, easing from the 1.2 per cent growth in the preceding quarter. The finance & insurance sector saw the strongest pace of growth (5.2 per cent), followed by the information & communications sector (4.1 per cent), the transportation & storage sector (2.2 per cent) and the “other services industries” (2.1 per cent). The accommodation & food services and business services sectors also recorded growth of 0.9 per cent and 0.5 per cent respectively. By contrast, the wholesale & retail trade sector contracted by 3.2 per cent.

The construction sector expanded by 2.9 per cent year-on-year, extending the 2.8 per cent growth in the first quarter. Construction output during the quarter was supported by public sector construction works.

The sectors that contributed the most to GDP growth in the second quarter were the finance & insurance sector and the “other services industries” (Exhibit 1.2).

Exhibit 1.2: Percentage-Point Contribution to Growth in Real GDP in 2Q 2019 (By Industry)



## SOURCES OF GROWTH

Total demand fell by 0.3 per cent on a year-on-year basis in the second quarter, a more gradual pace of decline as compared to the 0.4 per cent drop in the previous quarter (Exhibit 1.3). Total demand was weighed down by external demand, which contracted by 1.4 per cent in the second quarter, extending the 2.2 per cent decline in the preceding quarter.

On the other hand, domestic demand expanded by 2.4 per cent year-on-year, slower than the 3.9 per cent growth in the previous quarter. Growth in domestic demand during the quarter was supported by an increase in consumption expenditure and a build-up in inventories.

In particular, consumption expenditure rose by 3.3 per cent year-on-year, moderating from the 4.8 per cent growth in the first quarter. Both private consumption and public consumption increased during the quarter, at 3.4 per cent and 3.1 per cent respectively.

By contrast, gross fixed capital formation (GFCF) declined by 0.3 per cent year-on-year, extending the 0.2 per cent contraction in the previous quarter. This came on the back of a 1.9 per cent decline in private sector GFCF, which was in turn weighed down by lower investment spending on private construction & works. On the other hand, public sector GFCF expanded by 8.1 per cent, largely supported by increased spending on public construction & works.

Exhibit 1.3: Changes in Total Demand\*

	2018			2019	
	II	III	IV	I	II
<b>Total Demand</b>	6.3	3.3	0.9	-0.4	<b>-0.3</b>
<b>External Demand</b>	8.1	4.2	1.4	-2.2	<b>-1.4</b>
<b>Total Domestic Demand</b>	2.1	0.8	-0.2	3.9	<b>2.4</b>
<b>Consumption Expenditure</b>	3.1	2.3	2.5	4.8	<b>3.3</b>
Public	3.2	1.5	3.8	3.0	<b>3.1</b>
Private	3.1	2.6	2.2	5.4	<b>3.4</b>
<b>Gross Fixed Capital Formation</b>	-1.5	-7.5	-4.4	-0.2	<b>-0.3</b>
<b>Changes in Inventories</b>	0.6	1.5	-0.2	0.6	<b>0.3</b>

\* For inventories, this refers to the contribution to GDP growth.

## LABOUR MARKET

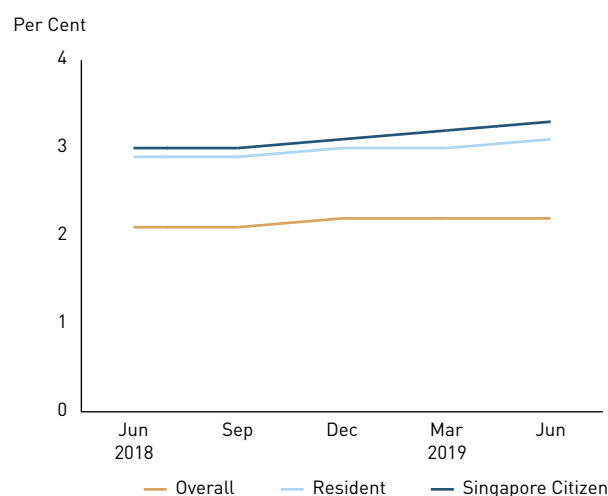
### Unemployment and Retrenchment<sup>1</sup>

The seasonally-adjusted overall unemployment rate (2.2 per cent) remained unchanged in June 2019 as compared to March 2019. However, there was a slight uptick in the unemployment rates for residents (from 3.0 per cent to 3.1 per cent) and citizens (from 3.2 per cent to 3.3 per cent) over the same period (Exhibit 1.4). The overall, resident and citizen unemployment rates in June 2019 were all higher when compared to the same period a year ago.

In June 2019, an estimated 72,400 residents, including 64,300 Singapore citizens, were unemployed. These were higher than the number of unemployed residents (69,700) and citizens (62,200) in March 2019.<sup>2</sup>

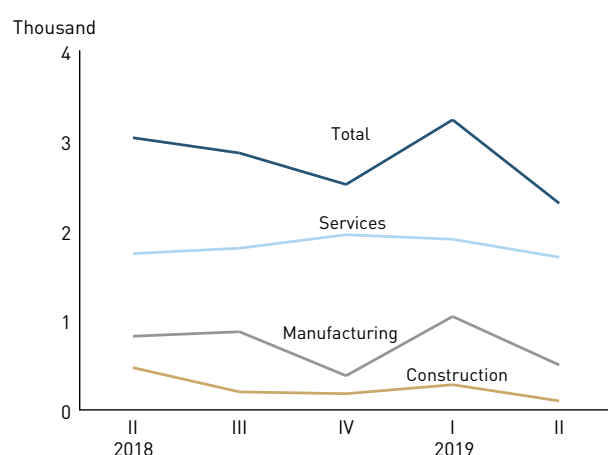
<sup>1</sup> Figures pertain to private sector establishments with at least 25 employees and the public sector.

<sup>2</sup> Based on seasonally-adjusted data on the number of unemployed persons.

*Exhibit 1.4: Unemployment Rate (Seasonally-Adjusted)*

Total retrenchments came in at around 2,300 in the second quarter, lower than the levels recorded in the preceding quarter (3,230) and the same quarter last year (3,030) (Exhibit 1.5). By broad sectors, retrenchments fell in the manufacturing (from 1,040 in the first quarter to 500 in the second quarter), services (from 1,900 to 1,700) and construction (from 280 to 100) sectors.

The fall in retrenchments, alongside the slight uptick in resident and citizen unemployment rates, suggests that even though hiring had slowed, most employers were not laying off existing workers.

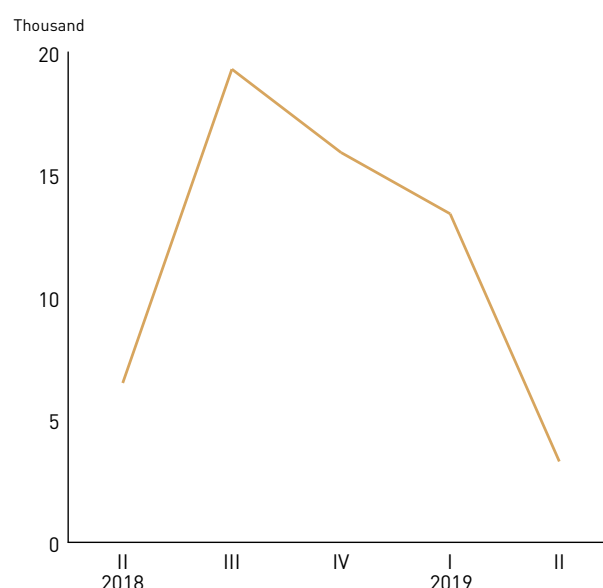
*Exhibit 1.5: Retrenchments*

## EMPLOYMENT<sup>3</sup>

Total employment rose by 3,300 on a quarter-on-quarter basis in the second quarter, lower than the increase of 13,400 in the first quarter and the increase of 6,500 in the same quarter a year ago (Exhibit 1.6). Excluding foreign domestic workers (FDWs), employment increased by 4,000. Total employment gains during the quarter came on the back of employment growth in the construction and services sectors.

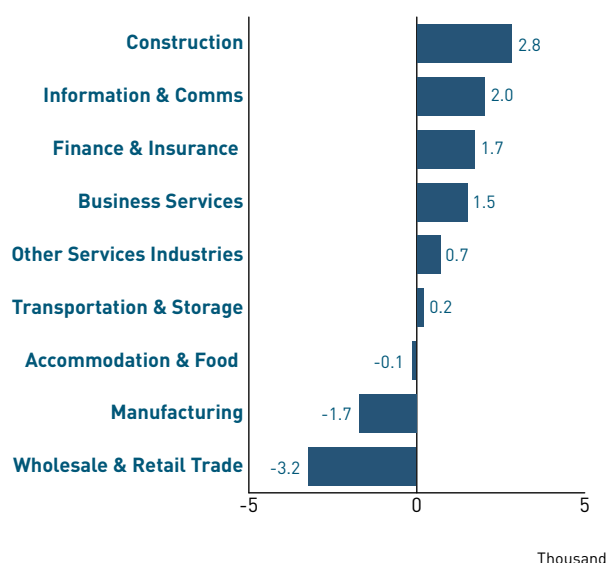
Employment in the construction sector rose by 2,800 in the second quarter, supported by an increase in public sector construction works (Exhibit 1.7). Employment in the overall services sector also rose by 2,700 (3,400 excluding FDWs), with the information & communications (2,000), finance & insurance (1,700) and business services (1,500) sectors contributing the most to the increase.

By contrast, employment in the manufacturing sector declined by 1,700 as manufacturing output declined. This marked the third consecutive quarter of contraction.

*Exhibit 1.6: Change in Total Employment, Quarter-on-Quarter*

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

Exhibit 1.7: Changes in Employment by Industry in 2Q 2019



## HIRING EXPECTATIONS

According to EDB's Business Expectations Survey for the Manufacturing Sector, hiring expectations in the sector remained subdued, with a net weighted balance of 1 per cent of manufacturers expecting to reduce hiring in the third quarter of 2019 as compared to the second quarter. Firms in the other electronics modules & components segment of the electronics cluster had the weakest hiring sentiments, with a net weighted balance of 53 per cent of firms in the segment expecting lower levels of hiring in the third quarter. By contrast, firms in the pharmaceuticals segment of the biomedical manufacturing cluster were the most optimistic, as a net weighted balance of 39 per cent of them expected higher levels of hiring in the third quarter.

Hiring expectations for firms in the services sector were positive. According to DOS' Business Expectations Survey for the Services Sector, a net weighted balance of 5 per cent of services firms expected to increase hiring in the third quarter of 2019. In particular, a net weighted balance of 26 per cent of firms in the accommodation & food services industry and 22 per cent of firms in the real estate industry expected to hire more workers in the third quarter.

## COMPETITIVENESS

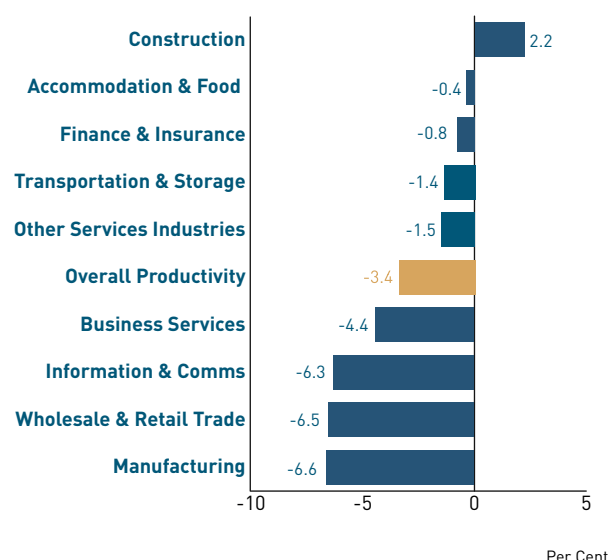
### Productivity

Overall labour productivity, as measured by real value-added per actual hour worked, declined by 3.4 per cent on a year-on-year basis in the second quarter, after remaining unchanged in the previous quarter (Exhibit 1.8).<sup>4</sup> The weaker productivity growth in the second quarter was in line with the moderation in GDP growth over the same period.

By sectors, the construction sector (2.2 per cent) saw positive productivity growth in the second quarter. On the other hand, the manufacturing (-6.6 per cent) and wholesale & retail trade (-6.5 per cent) sectors experienced the strongest declines in productivity.

Outward-oriented sectors as a whole saw weaker productivity growth than domestically-oriented sectors in the second quarter. Compared to the same period last year, the productivity of outward-oriented sectors fell by 4.7 per cent in the second quarter, following the 0.5 per cent decline in the previous quarter, on the back of a marked slowdown in economic activities due to weak external demand.<sup>5</sup> For domestically-oriented sectors, productivity fell by 2.2 per cent, a reversal from the 0.5 per cent increase in the previous quarter.

Exhibit 1.8: Changes in Value-Added per Actual Hour Worked for the Overall Economy and Sectors in 2Q 2019



<sup>4</sup> Overall labour productivity, as measured by real value-added per worker, fell by 1.4 per cent in the second quarter, deteriorating from the 0.3 per cent decline in the preceding quarter. The larger decline in real value-added per actual hour worked compared to real value-added per worker was due to a rise in the number of actual hours worked per worker.

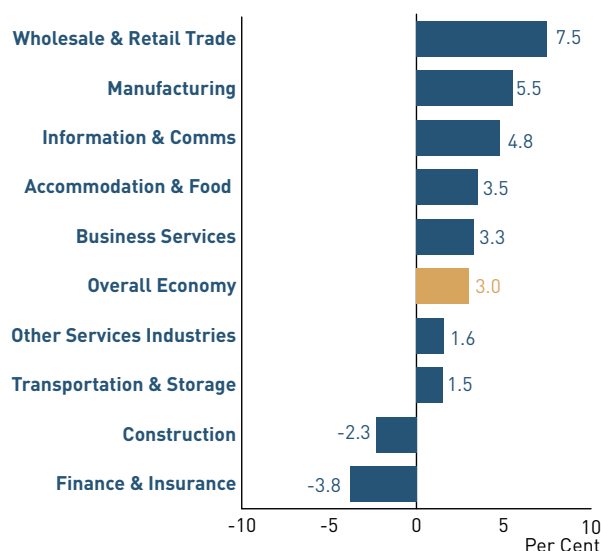
<sup>5</sup> Outward-oriented sectors refer to manufacturing, wholesale trade, transportation & storage, accommodation, information & communications, finance & insurance and professional services. Domestically-oriented sectors refer to construction, retail trade, food & beverage services, other business services and other services industries.



## Unit Labour Cost and Unit Business Cost

Overall unit labour cost (ULC) for the economy rose by 3.0 per cent on a year-on-year basis in the second quarter, higher than the 2.4 per cent increase in the preceding quarter (Exhibit 1.9). The rise in the overall ULC was due to an increase in total labour cost per worker and a fall in labour productivity, as measured by real value-added per worker.

Exhibit 1.9: Changes in Unit Labour Cost in 2Q 2019

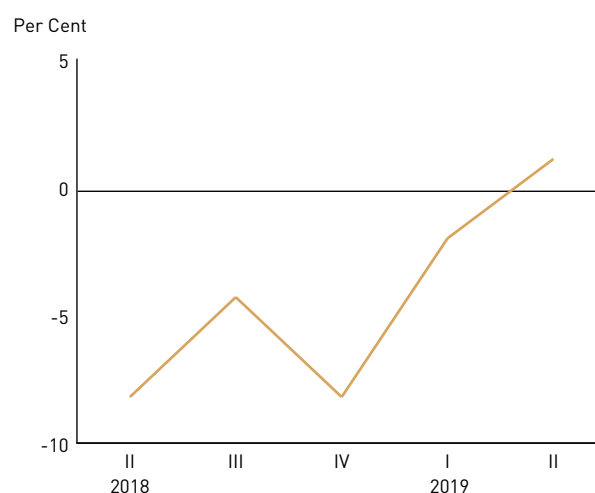


By sectors, the ULC for the manufacturing sector rose by 5.5 per cent year-on-year, faster than the 1.7 per cent increase observed in the first quarter. This occurred on the back of a larger decline in productivity and an increase in total labour cost per worker in the sector. The ULC for the services producing industries rose by 2.6 per cent, a slight moderation from the 2.8 per cent increase in the previous quarter. Most services sectors saw an increase in their ULCs, with the exception of the finance & insurance sector. The ULC of the finance & insurance sector declined due to productivity gains (in terms of real value-added per worker) and a fall in total labour cost per worker.

For the construction sector, ULC fell by 2.3 per cent, extending the 3.6 per cent decline in the previous quarter, as labour productivity growth for the sector outpaced the increase in total labour cost per worker.

Unit business cost (UBC) for the manufacturing sector rose by 1.1 per cent year-on-year in the second quarter, a reversal from the 2.0 per cent decline in the previous quarter (Exhibit 1.10). The increase in the manufacturing UBC was mainly due to a 5.5 per cent rise in the manufacturing ULC, which more than offset a 0.5 per cent drop in the unit services cost (which includes royalties, utilities, rental and other services costs such as professional and advertising fees).

Exhibit 1.10: Changes in Unit Business Cost for Manufacturing

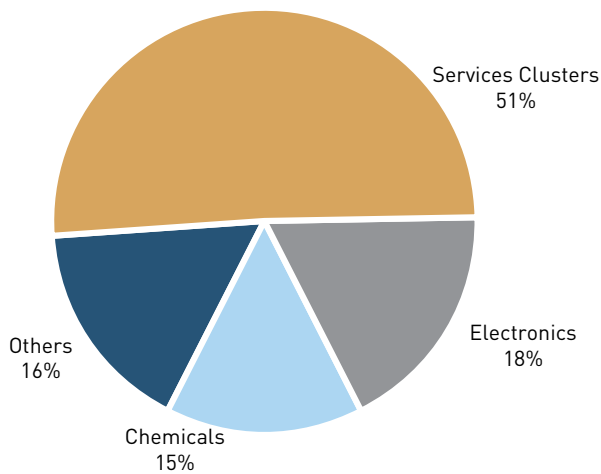


## Investment Commitments

Investment commitments in terms of Fixed Asset Investments (FAI) and Total Business Expenditure (TBE) amounted to \$4.3 billion and \$2.8 billion respectively in the second quarter (Exhibit 1.11 and Exhibit 1.12).

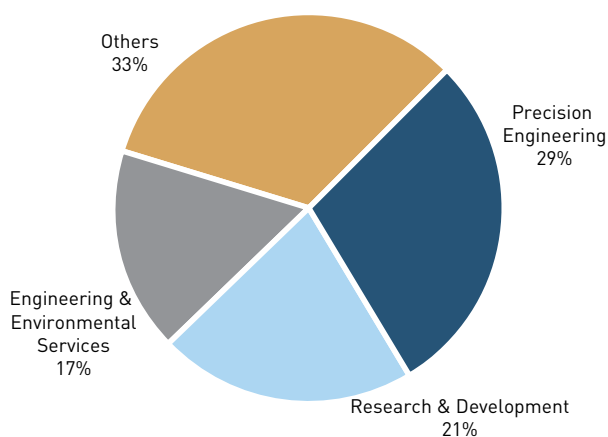
In terms of FAI, the services clusters contributed the most to FAI during the quarter, attracting \$2.2 billion worth of commitments, mostly from the research & development and engineering & environmental services clusters. This was followed by the electronics cluster, which garnered \$766 million of commitments. Investors from the United States contributed the most to total FAI, at \$2.3 billion (52 per cent), followed by European investors, at \$1.1 billion (24 per cent).

Exhibit 1.11: Fixed Asset Investments by Industry Cluster in 2Q 2019



For TBE, the largest contribution came from the precision engineering cluster, which attracted \$811 million of commitments. This was followed by the research & development cluster, at \$592 million. Investors from the United States were the largest source of TBE commitments, with commitments of \$1.1 billion (39 per cent). They were followed by investors from Europe who contributed \$700 million of TBE commitments (25 per cent).

Exhibit 1.12: Total Business Expenditure by Industry Cluster in 2Q 2019



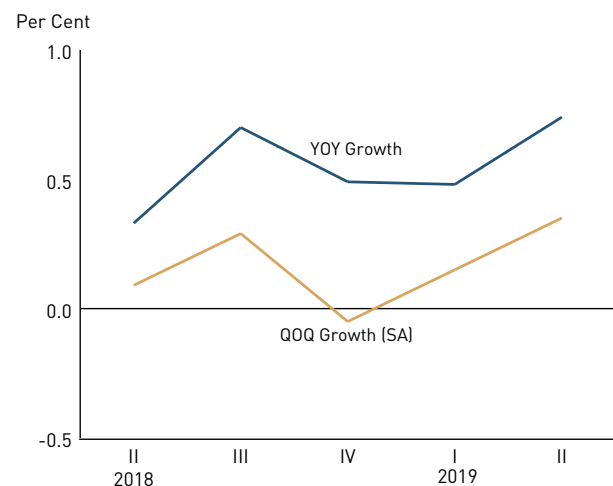
When fully realised, these commitments are expected to generate value-added amounting to \$14 billion and more than 7,000 jobs.

## PRICES

### Consumer Price Index

The Consumer Price Index-All Items (CPI-All Items) rose by 0.7 per cent on a year-on-year basis in the second quarter, slightly faster than the 0.5 per cent increase in the preceding quarter (Exhibit 1.13). On a quarter-on-quarter seasonally-adjusted basis, the CPI-All Items increased by 0.4 per cent, following the 0.2 per cent increase in the first quarter.

Exhibit 1.13: Changes in CPI-All Items



Among the CPI categories, food was the largest positive contributor to CPI-All Items inflation in the second quarter, with prices rising by 1.4 per cent on a year-on-year basis on the back of price increases for food servicing services like hawker food and restaurant meals, as well as non-cooked food items such as vegetables, fish & seafood and bread & cereals (Exhibit 1.14). Transport costs increased by 1.2 per cent as higher car prices, bus & train fares and petrol prices more than offset a fall in the prices of motorcycles & scooters.

Meanwhile, education costs rose by 2.6 per cent due to higher fees at commercial institutions, kindergartens & childcare centres, universities and polytechnics. Recreation & culture costs picked up by 2.1 per cent on account of a rise in the cost of holiday travel. Healthcare costs rose by 1.2 per cent as an increase in the costs of outpatient and hospital services more than offset a fall in the prices of medical products. The costs of household durables & services went up by 1.2 per cent due to a rise in the government levy for foreign domestic workers (FDWs) and higher salaries for FDWs. Prices of miscellaneous goods & services edged up by 0.2 per cent because of more expensive personal care items.

*Exhibit 1.14: Percentage Changes in CPI over Corresponding Quarter of Previous Year*

	2018			2019	
	II	III	IV	I	II
<b>All items</b>	0.3	0.7	0.5	0.5	<b>0.7</b>
<b>Food</b>	1.4	1.6	1.4	1.5	<b>1.4</b>
<b>Clothing &amp; Footwear</b>	1.0	2.3	1.6	1.2	<b>-0.9</b>
<b>Housing &amp; Utilities</b>	-2.0	-0.7	0.0	-0.4	<b>-0.8</b>
<b>Household Durables &amp; Services</b>	0.8	0.7	0.8	0.6	<b>1.2</b>
<b>Health Care</b>	2.2	2.0	1.7	1.6	<b>1.2</b>
<b>Transport</b>	-0.1	-0.2	-2.0	-1.1	<b>1.2</b>
<b>Communication</b>	-0.7	-1.0	-2.3	-2.1	<b>-1.1</b>
<b>Recreation &amp; Culture</b>	1.1	1.5	1.2	0.9	<b>2.1</b>
<b>Education</b>	2.9	2.6	3.2	2.8	<b>2.6</b>
<b>Miscellaneous Goods &amp; Services</b>	0.9	1.1	1.3	0.8	<b>0.2</b>

The price gains in these CPI categories were partially offset by declines in other categories. Clothing & footwear costs fell by 0.9 per cent on account of cheaper ready-made garments. Communications costs declined by 1.1 per cent due to a fall in the prices of telecommunication services and equipment. Housing & utilities costs dropped by 0.8 per cent as a decline in accommodation costs and electricity prices outweighed an increase in water and housing maintenance charges.

## INTERNATIONAL TRADE

### Merchandise Trade

Singapore's total merchandise trade decreased by 2.1 per cent year-on-year in the second quarter, after posting an increase of 2.1 per cent in the preceding quarter (Exhibit 1.15). The fall in total merchandise trade was due to declines in both oil and non-oil trade. Total oil trade decreased by 7.6 per cent in nominal terms, partly reflecting lower oil prices compared to a year ago, while non-oil trade fell by 0.6 per cent.

*Exhibit 1.15: Growth Rates of Total Merchandise Trade, Merchandise Exports and Merchandise Imports (In Nominal Terms)*

	2018				2019	
	II	III	IV	Ann	I	II
<b>Merchandise Trade</b>	10.2	14.7	9.2	9.2	2.1	<b>-2.1</b>
<b>Merchandise Exports</b>	9.3	12.7	7.2	7.9	0.0	<b>-4.5</b>
<b>Domestic Exports</b>	12.9	14.5	3.4	8.4	-6.4	<b>-10.6</b>
Oil	20.4	28.9	12.1	17.1	-6.5	<b>-2.9</b>
Non-Oil	9.3	8.0	-1.1	4.2	-6.4	<b>-14.6</b>
<b>Re-Exports</b>	5.7	11.1	11.2	7.4	6.8	<b>2.2</b>
<b>Merchandise Imports</b>	11.1	17.0	11.5	10.6	4.6	<b>0.6</b>
Oil	26.3	30.9	16.9	18.9	-4.3	<b>-9.6</b>
Non-Oil	6.9	13.4	9.9	8.3	7.4	<b>3.8</b>

Total merchandise exports declined by 4.5 per cent in the second quarter, after registering flat growth in the preceding quarter. Domestic exports fell by 11 per cent, while re-exports grew by 2.2 per cent during the quarter.

The fall in domestic exports was due to a decline in both oil and non-oil domestic exports. Specifically, oil domestic exports dropped by 2.9 per cent, reflecting lower oil prices compared to a year ago. In volume terms, oil domestic exports increased by 0.7 per cent.

At the same time, non-oil domestic exports (NODX) contracted by 15 per cent, following the 6.4 per cent decrease in the previous quarter. The decline in NODX was due to a fall in both electronics and non-electronics NODX.

Total merchandise imports grew by 0.6 per cent in the second quarter, following the 4.6 per cent increase in the previous quarter. This was due to a rise in non-oil imports, which outweighed a decline in oil imports. Specifically, oil imports fell by 9.6 per cent on account of lower oil prices compared to levels a year ago. On the other hand, non-oil imports rose by 3.8 per cent, driven by an increase in non-electronics imports which more than offset the drop in electronics imports.

## Services Trade

Total services trade expanded by 1.4 per cent on a year-on-year basis in the second quarter, higher than the 0.1 per cent growth in the previous quarter (Exhibit 1.16). Services exports grew by 0.9 per cent year-on-year, reversing the 0.4 per cent decline in the preceding quarter. The increase in services exports during the quarter was largely due to a rise in the exports of transport services and financial services. Meanwhile, services imports grew by 1.9 per cent, faster than the 0.5 per cent increase in the first quarter. The pickup in services imports was mainly due to an increase in the imports of travel services, financial services and transport services.

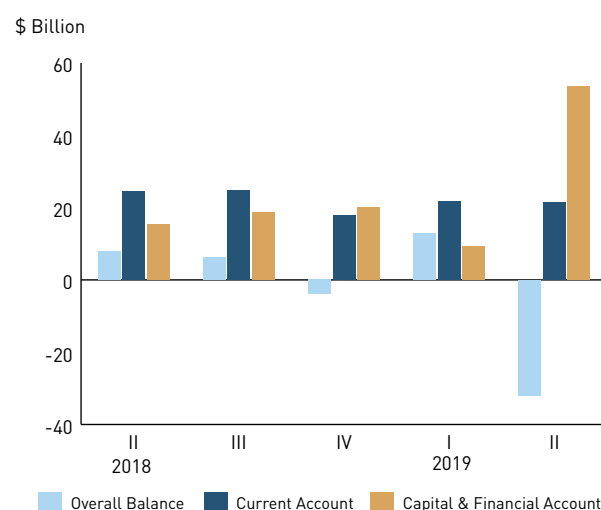
Exhibit 1.16: Growth Rates of Total Services Trade, Services Exports and Services Imports (In Nominal Terms)

	2018				2019	
	Per Cent					
	II	III	IV	Ann	I	II
<b>Total Services Trade</b>	1.6	2.1	0.8	2.1	0.1	<b>1.4</b>
<b>Services Exports</b>	3.2	4.3	2.1	3.9	-0.4	<b>0.9</b>
<b>Services Imports</b>	0.1	-0.1	-0.5	0.3	0.5	<b>1.9</b>

## BALANCE OF PAYMENTS

The overall balance of payments recorded a deficit of \$32 billion in the second quarter, a reversal from the surplus of \$13 billion in the first quarter (Exhibit 1.17).

Exhibit 1.17: Balance of Payments



## Current Account

The current account surplus declined to \$21 billion in the second quarter, from \$22 billion in the preceding quarter. Although the goods surplus increased, this was offset by larger deficits in the services, primary income and secondary income balances.

The surplus in the goods balance rose by \$1.9 billion from the previous quarter, to \$33 billion in the second quarter, as goods exports increased by more than imports.

The deficit in the services balance widened to \$1.1 billion in the second quarter, from \$0.8 billion in the first quarter. Net payments for other business services and telecommunications, computer & information services declined, while net receipts for financial services rose. However, these were more than offset by higher net payments for transport services and travel services.

At the same time, the deficit in the primary income balance rose by \$1.4 billion from the first quarter, to \$8.1 billion in the second quarter, as primary income payments to foreign investors increased by more than income receipts from abroad.

In addition, the secondary income deficit increased to \$2.4 billion in the second quarter, from \$2.0 billion in preceding quarter, due to a fall in secondary income receipts and a rise in payments.

## Capital and Financial Account<sup>6</sup>

Net outflows from the capital and financial account rose to \$54 billion in the second quarter, from \$9.4 billion in the preceding quarter. This was primarily due to a surge in net outflows of portfolio investment, which outweighed the increase in net inflows of direct investment and the reversal of “other investment” from a net outflow to net inflow position.

Net outflows of portfolio investment surged to \$82 billion in the second quarter, compared to \$6.6 billion in the first quarter. This was due in part to resident deposit-taking corporations reversing from net sales to net purchases of overseas securities.

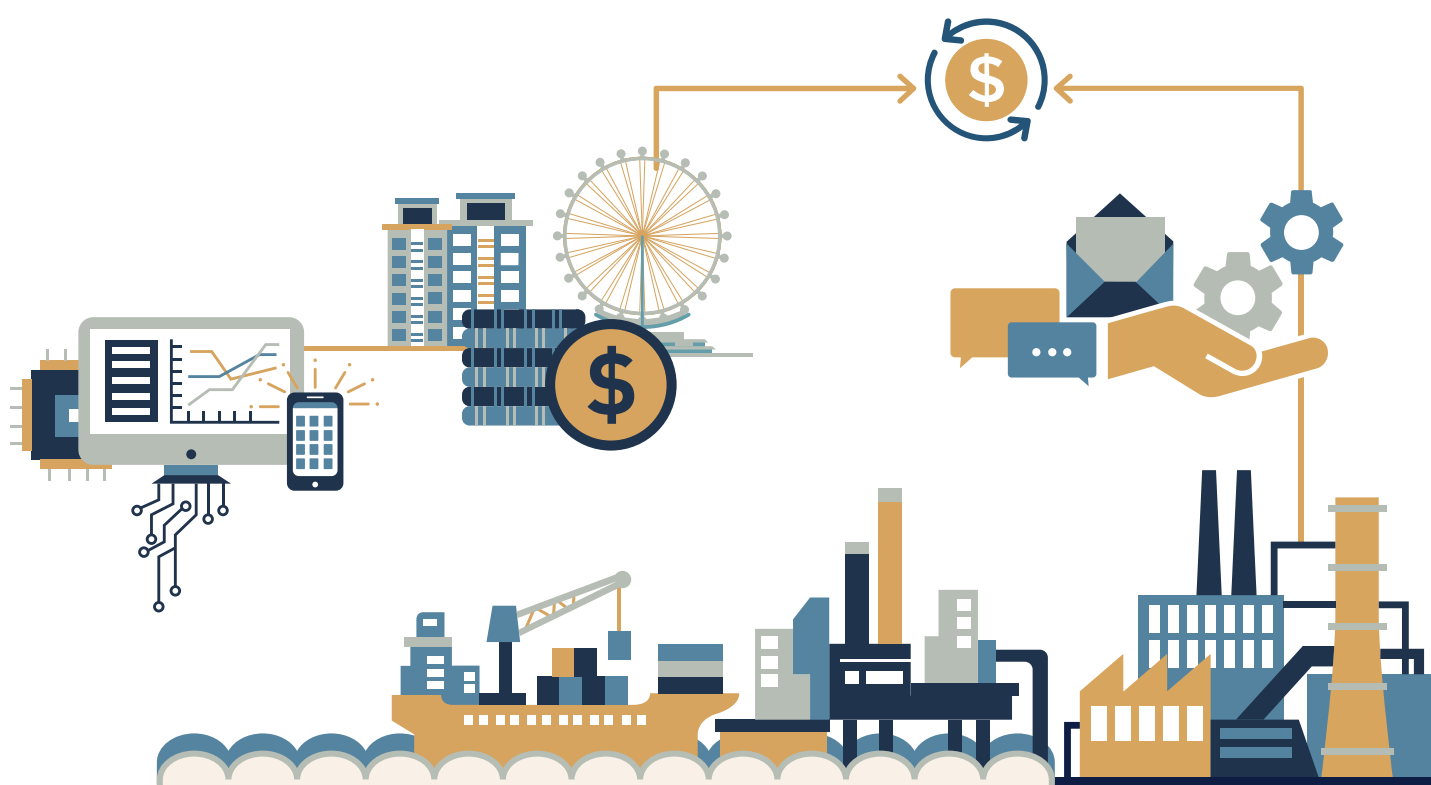
In comparison, net inflows of direct investment rose by \$6.1 billion from the previous quarter to \$28 billion in the second quarter, reflecting a rise in foreign direct investment into Singapore as well as a decline in residents’ direct investment abroad.

At the same time, other investment recorded net inflows of \$2.8 billion in the second quarter, a turnaround from the net outflows of \$22 billion in the first quarter. This reflected a shift by deposit-taking corporations from a net outflow to a net inflow position, as well as an increase in net inflows to the non-bank private sector.

Meanwhile, net outflows of financial derivatives fell slightly to \$2.7 billion in the second quarter, from \$2.8 billion in the preceding quarter.

<sup>6</sup> Net inflows in net balances are indicated by a minus (-) sign, and vice versa. 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”.





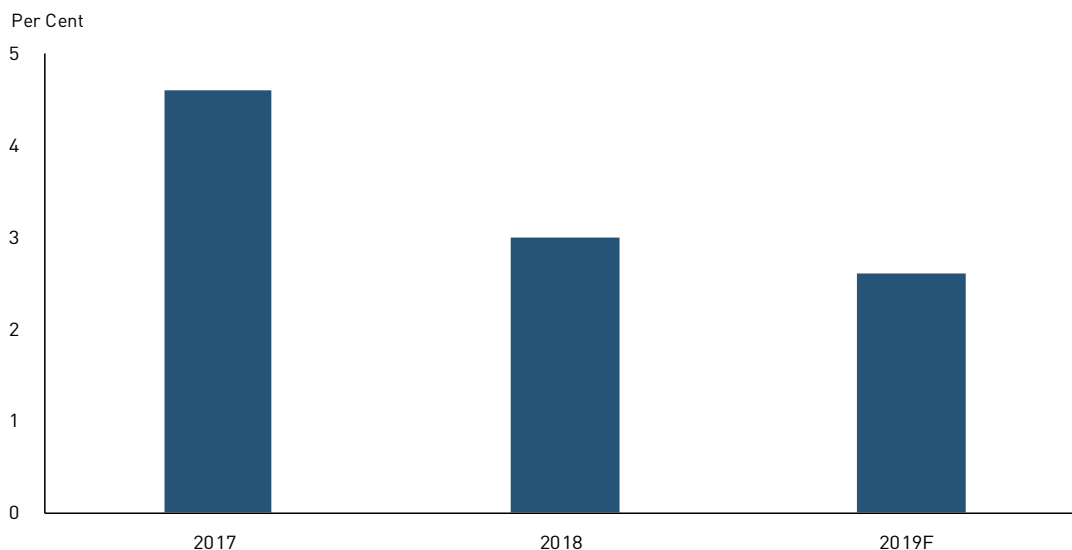
## BOX ARTICLE 1.1

## Recent Trends in Merchandise Exports of Singapore and Regional Economies

### Growth in world merchandise trade has slowed

Growth in world merchandise trade has slowed in recent years. After expanding by 4.6 per cent in 2017, the pace of expansion in world merchandise trade slowed to 3.0 per cent in 2018, and the World Trade Organisation (WTO) expects growth to ease further to 2.6 per cent in 2019 (Exhibit 1).<sup>1</sup> The latest 2019 forecast by the WTO represents a significant downgrade from its previous forecast of 3.7 per cent, with the downgrade coming on the back of weaker-than-expected trade growth in the first half of 2019 as well as contractions in several forward-looking trade indicators such as air freight shipments and new export orders.<sup>2</sup>

Exhibit 1: Growth in World Merchandise Trade



Source: World Trade Organisation

There are several factors driving the slowdown in world merchandise trade. First, global economic growth has weakened, with the International Monetary Fund (IMF) expecting full-year growth in 2019 to come in at 3.2 per cent compared to the 3.6 per cent recorded in 2018. Indeed, the pace of economic expansion in many advanced and regional economies such as the United States (US), China and ASEAN-5 has already eased, thus leading to weaker import demand from these economies. Second, electronics exports worldwide have been weighed down by the sluggish demand for major electronics end-products such as smartphones and personal computers. In particular, economies in Asia plugged into the global electronics value chain, such as Singapore, South Korea and Thailand, have seen a slowdown in their exports of electronics. Third, the bilateral tariffs imposed by the US and China on each other's merchandise products since the first half of 2018 have led to a fall in merchandise trade between both countries, with knock-on effects on the demand for intermediate goods up the value chain. Uncertainties arising from the US-China trade conflict have also led to weaker business confidence, which has further weighed on global investments and hence trade in capital goods.

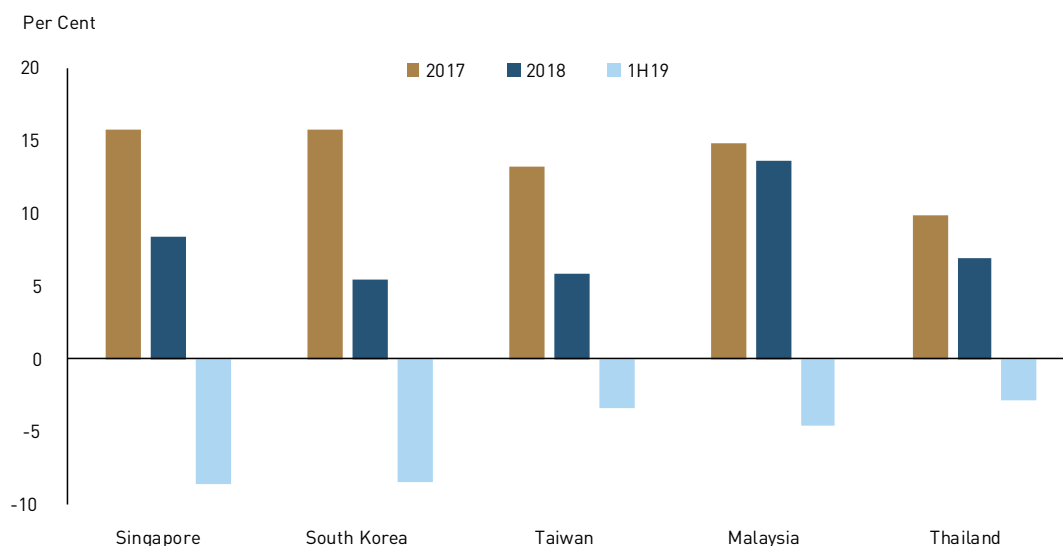
<sup>1</sup> Based on latest estimates by the WTO.

<sup>2</sup> WTO Press Release 837, April 2019.

## In line with the slowdown in global trade, Singapore's and other regional economies' merchandise exports have weakened in 2019

Amidst the slowdown in global trade, Singapore's exports have weakened in recent months. In the second quarter of 2019, Singapore's domestic exports (DX) declined by 11 per cent compared to the same period a year ago.<sup>3</sup> Taking into account the 6.4 per cent drop in the previous quarter, Singapore's DX fell by 8.6 per cent year-on-year in the first half of the year. Like Singapore, the merchandise exports of regional economies such as South Korea (-8.5 per cent), Taiwan (-3.4 per cent), Malaysia (-4.7 per cent) and Thailand (-2.9 per cent) also saw a decline over the same period (Exhibit 2).<sup>4</sup>

Exhibit 2: Growth in Singapore's Domestic Exports and Merchandise Exports of Regional Economies



Source: Enterprise Singapore Statlink, Korea International Trade Association, Taiwan Bureau of Foreign Trade, Malaysia Department of Statistics, Thailand Ministry of Commerce

The contraction in merchandise exports in Singapore and most regional economies in the first half of 2019 can be attributed to both electronics exports and non-electronics exports. We elaborate on the trends in electronics and non-electronics exports below.

## The slump in the global memory chip market has affected the electronics exports of Singapore and other regional economies

As Singapore and regional economies like South Korea and Thailand are plugged into the global electronics value chain, the sharper-than-expected downswing in the global electronics cycle has negatively affected their electronics exports. Specifically, Singapore's electronics non-oil domestic exports (NODX) contracted by 27 per cent year-on-year in the second quarter of 2019, extending the 17 per cent decline in the previous quarter. Overall, for the first half of the year, Singapore's electronics NODX fell by 22 per cent compared to a year ago. Over the same period, the electronics exports of South Korea and Thailand declined by 18 per cent and 10 per cent respectively (Exhibit 3).

<sup>3</sup> For a more accurate comparison, we use Singapore's domestic exports instead of Singapore's total exports, as re-exports account for a much larger share of Singapore's total exports as compared to the other regional economies. For example, re-exports accounted for 49 per cent of Singapore's total exports in 2018, but only 8.3 per cent of Taiwan's total exports and 0.1 per cent of Thailand's total exports.

<sup>4</sup> For this article, the exports growth of regional economies is computed based on nominal export values in USD, while Singapore's exports growth is computed based on nominal export values in SGD for consistency with trade figures reported by Enterprise Singapore. The trends and conclusions presented in the article are not affected if Singapore's exports growth is computed based on export values in USD.

The two largest contributors to the weak performance of Singapore's electronics NODX in the first half of 2019 were integrated circuits (ICs) and disk media products. Specifically, exports of ICs and disk media products declined by 20 per cent and 38 per cent year-on-year respectively in the first half of the year, accounting for 10 percentage-points (pp) and 4.9pp of the 22 per cent drop in electronics NODX respectively.

Focusing on ICs, the contraction in Singapore's domestic exports of ICs was due to poorer global demand for semiconductors<sup>5</sup>, especially memory chips. In particular, the global memory chip market is in a slump because of a severe supply glut as well as subdued demand conditions.<sup>6</sup> In turn, the weakness in the memory chip market has significantly affected the major exporters of memory chips in Asia, especially Singapore and South Korea, which collectively account for around 58 per cent of the world's total exports of memory chips. Specifically, the memory chips exports of Singapore and South Korea declined by 27 per cent and 32 per cent respectively in the first half of 2019 (Exhibit 3).

*Exhibit 3: Growth in Electronics Exports of Singapore and Regional Economies in First Half of 2019*

	Exports of Memory Chips <sup>7</sup>		Exports of Electronics
	As a share of electronics exports in 2018 (%)	1H19 (year-on-year change, %)	1H19 (year-on-year change, %)
<b>Singapore (DX)</b>	26	-27	-22
<b>South Korea</b>	41	-32	-18
<b>Taiwan</b>	7.6	-11	1.6*
<b>Malaysia</b>	4.1	7.7^	-2.9
<b>Thailand</b>	4.4	-22	-10

\* Although Taiwan's electronics exports remained expansionary in the first half of 2019, the pace of growth was significantly lower than the 6.8 per cent growth recorded in the first half of 2018.

^ Malaysia's share of the world's total exports of memory chips is smaller at around 2 per cent. As such, its exports of memory chips may not have been as badly affected by the supply overhang in the global memory chip market. Nonetheless, the performance of its memory chips exports has also weakened sharply compared to the 45 per cent growth registered in the first half of 2018.

Source: Enterprise Singapore Statlink, Korea International Trade Association, Taiwan Bureau of Foreign Trade, Malaysia Department of Statistics, Thailand Ministry of Commerce

### **Apart from electronics NODX, Singapore's non-electronics NODX has also weakened in tandem with the slowdown in global economic growth**

In the second quarter of 2019, Singapore's non-electronics NODX fell by 11 per cent year-on-year. The sharp drop came on the back of weaker external demand, as well as high base effects from a year ago when the value of non-electronics NODX had reached S\$36 billion, an all-time high in a single quarter.

Taking into account the 2.6 per cent decline posted in the first quarter of 2019, Singapore's non-electronics NODX fell by 6.8 per cent year-on-year in the first half of the year. The two largest contributors to the decline in non-electronics NODX during this period were specialised machinery and civil engineering equipment parts, which contributed 2.4pp and 1.8pp to the decline respectively.

Given the global nature of the slowdown in economic growth and hence import demand, the non-electronics exports of South Korea (-4.0 per cent), Taiwan (-7.2 per cent), Malaysia (-5.7 per cent) and Thailand (-1.6 per cent) similarly declined in the first half of 2019.

<sup>5</sup> The World Semiconductor Trade Statistics (WSTS) estimates that global semiconductor sales fell at a faster-than-anticipated pace of 17 per cent in the second quarter of 2019, extending the 13 per cent decline in the previous quarter.

<sup>6</sup> For example, based on Gartner's projections in July 2019, global sales of memory chips for 2019 are expected to fall by 28 per cent, a much steeper pace of decline as compared to the 9.6 per cent contraction projected for all types of semiconductor chips.

<sup>7</sup> Based on HS 854232 (Electronic Integrated Circuits: Memories)

### **In addition, the US-China trade conflict has weighed on the demand for intermediate goods from the region**

The tariffs imposed by the US and China on each other's merchandise products as part of the ongoing trade conflict have led to a fall in merchandise exports between the two countries. This has in turn adversely affected the demand for intermediate goods required for the production of these exports from the region.

In particular, China's exports to the US declined by 8.5 per cent year-on-year in the first half of 2019. This, along with the slowdown in the Chinese economy, led to a pullback in China's import demand, with its total imports from the world falling by 4.1 per cent over the same period. In line with this trend, Singapore's DX to China fell by 9.1 per cent year-on-year in the first six months of 2019, with the decline led by the exports of machinery & transport equipment and chemicals & chemical products. Regional economies like South Korea (-17 per cent), Taiwan (-9.1 per cent), Malaysia (-5.1 per cent) and Thailand (-9.7 per cent) also saw a drop in their merchandise exports to China over the same period.

### **Given the external headwinds, the outlook for Singapore's exports is expected to remain challenging for the rest of the year**

In the near-term, Singapore's exports will continue to face strong headwinds arising from the sharper-than-expected downturn in the global electronics cycle as well as weaker global economic growth. Heightened uncertainties due to the US-China trade conflict also present downside risks to global growth and global trade. Against this backdrop, and taking into account the weak performance of Singapore's NODX in the first half of 2019, Enterprise Singapore has downgraded its NODX forecast for the full year to "-9.0 per cent to -8.0 per cent", from its earlier forecast of "-2.0 per cent to 0.0 per cent".<sup>8</sup>

Notwithstanding the current downdrafts in the external environment, Singapore will continue to refine its economic strategies so as to be able to seize the opportunities that will position Singapore for growth over the longer term. For example, as digitalisation is expected to transform the nature of trade and competition, the government will continue to work with businesses to drive the adoption of digital technologies in order to capture opportunities beyond Singapore, especially in Asia and ASEAN. The government will also press on with efforts to restructure the Singapore economy, and help businesses and workers develop the new skills needed to remain internationally competitive.

In addition, Singapore will continue to deepen its trade and investment linkages with the world via Free Trade Agreements such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), as well as our Bilateral Investment Treaties. Such efforts will expand our international trade network, boost trade and investment flows, and allow Singapore companies to benefit from greater access to growth opportunities in the region and beyond.

*Contributed by:*

Economics Division  
Foreign Economic Policy Division  
Ministry of Trade and Industry

<sup>8</sup> Enterprise Singapore has also downgraded its total trade forecast for 2019 to "-3.0 per cent to -2.0 per cent", from "0.0 per cent to 2.0 per cent", on the back of the downgrade to the NODX forecast as well as the weaker outlook for oil prices.









## CHAPTER 2

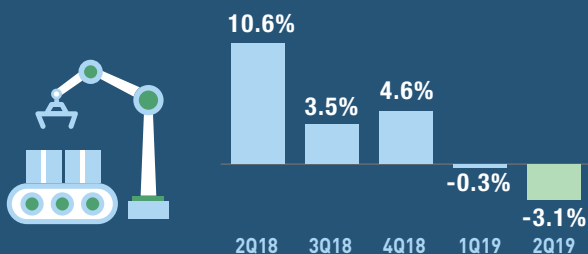
# SECTORAL PERFORMANCE

## CHAPTER 2

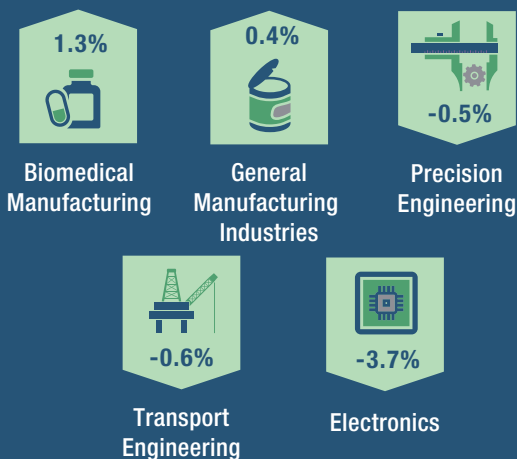
# SECTORAL PERFORMANCE

### MANUFACTURING

#### REAL GROWTH

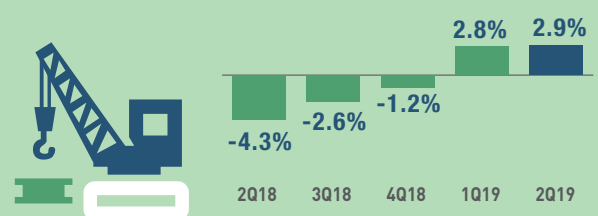


#### CLUSTERS IN MANUFACTURING SECTOR %-POINT CONTRIBUTION IN 2Q19

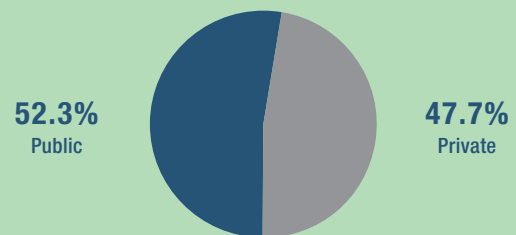


### CONSTRUCTION

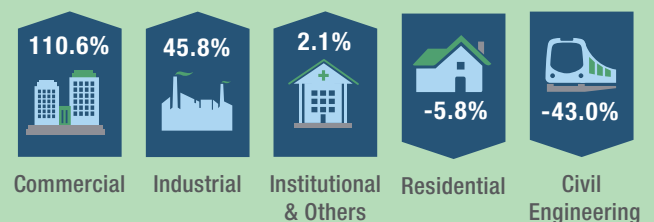
#### REAL GROWTH



#### CERTIFIED PAYMENTS IN 2Q19

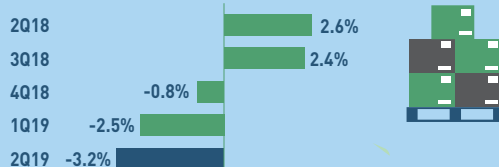


#### CONTRACTS AWARDED IN 2Q19



### WHOLESALE & RETAIL TRADE

#### REAL GROWTH



#### WHOLESALE TRADE

##### Real NORX Growth



##### Real NODX Growth



#### RETAIL TRADE

##### Retail Sales Index Growth (Non-Motor Vehicles)

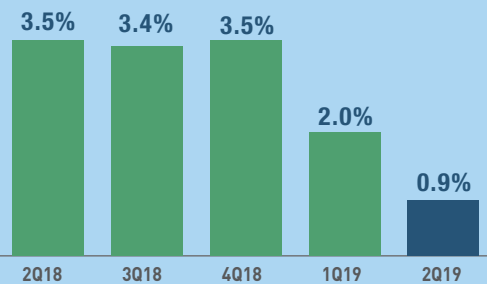


##### Retail Sales Index Growth (Motor Vehicles)



## ACCOMMODATION & FOOD SERVICES

### REAL GROWTH



### ACCOMMODATION

Occupancy Rates of Hotels  
(Y-O-Y Change)



Luxury  
0.5%-pt



Upscale  
-0.5%-pt



Mid-tier  
0.8%-pt



Economy  
-2.5%-pt

### FOOD SERVICES

F&B Sales Index Growth  
(Y-O-Y Change)



Fast Food  
5.5%



Others  
1.9%



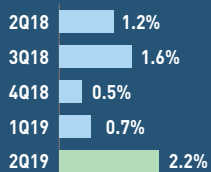
Restaurants  
1.0%



Food Caterers  
-1.4%

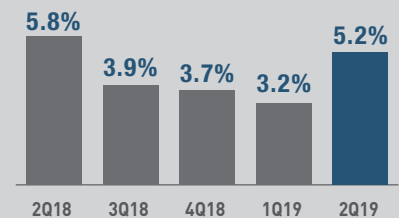
## TRANSPORTATION & STORAGE

### REAL GROWTH



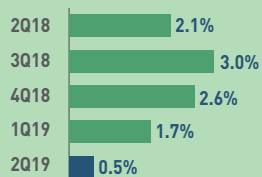
## FINANCE & INSURANCE

### REAL GROWTH



## BUSINESS SERVICES

### REAL GROWTH



### PRIVATE RESIDENTIAL REAL ESTATE



Units Transacted  
(Y-O-Y Change)

-33.7%



Price Index  
(Q-O-Q Change)

1.5%

### GROWTH OF BANK LOANS & ADVANCES TO NON-BANK CUSTOMERS IN 2Q19

Loans to  
Businesses



Consumer  
Loans



## OVERVIEW

In the second quarter of 2019,

- The manufacturing sector contracted by 3.1 per cent, steeper than the 0.3 per cent decline in the previous quarter. The sector was weighed down mainly by output declines in the electronics, transport engineering and precision engineering clusters, which more than offset output expansions in the biomedical manufacturing and general manufacturing clusters.
- The construction sector grew by 2.9 per cent, extending the 2.8 per cent growth in the preceding quarter. The increase in construction output during the quarter was due to public sector construction works.
- The wholesale & retail trade sector shrank by 3.2 per cent, worsening from the 2.5 per cent decline in the previous quarter. Both the wholesale trade and retail trade segments saw contractions during the quarter.
- The transportation & storage sector expanded at a faster pace of 2.2 per cent, compared to the 0.7 per cent growth in the previous quarter, with both the water transport and air transport segments posting moderate growth during the quarter.
- Growth in the accommodation & food services sector slowed to 0.9 per cent, from 2.0 per cent in the preceding quarter. Both the accommodation and food services segments expanded during the quarter.
- The finance & insurance sector grew by 5.2 per cent, accelerating from the 3.2 per cent growth in the previous quarter. Growth was driven by continued expansions in payments-related activities and a modest improvement in financial intermediation.
- The business services sector expanded at a slower pace of 0.5 per cent compared to the 1.7 per cent expansion recorded in the previous quarter. Growth during the quarter was supported by the professional services segment.

## MANUFACTURING

The manufacturing sector contracted by 3.1 per cent year-on-year in the second quarter, sharper than the 0.3 per cent contraction in the preceding quarter (Exhibit 2.1). Manufacturing output during the quarter was weighed down mainly by output declines in the electronics, transport engineering and precision engineering clusters. By contrast, the biomedical manufacturing and general manufacturing clusters saw an increase in output (Exhibit 2.2).

Exhibit 2.1: Manufacturing Sector's Growth Rate

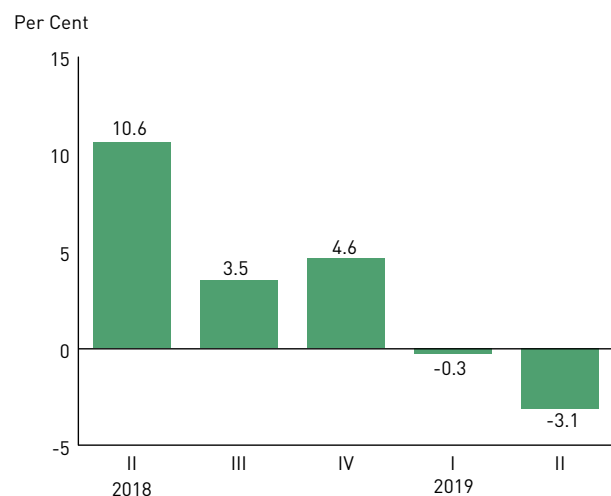
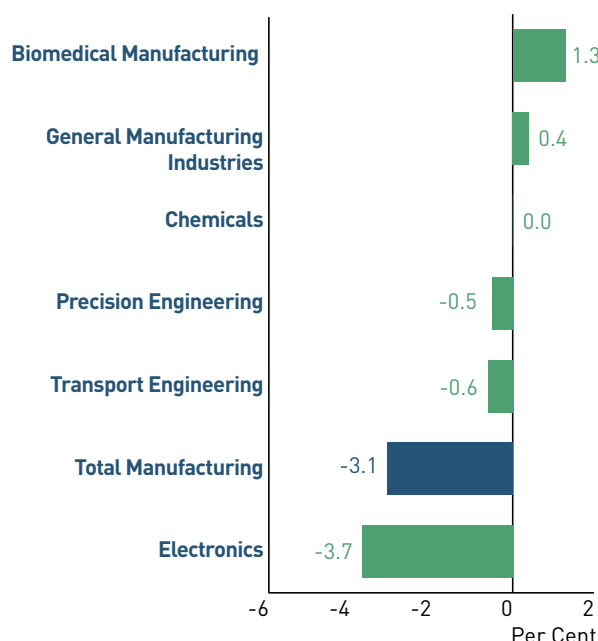




Exhibit 2.2: Percentage-Point Contribution to Manufacturing Sector's Growth in 2Q 2019



The biomedical manufacturing cluster expanded by 7.3 per cent in the second quarter. In particular, output in the pharmaceuticals segment rose by 9.0 per cent on the back of a higher level of production of pharmaceutical and biological products. At the same time, the medical technology segment grew by 2.5 per cent on account of steady export demand for medical devices.

Output in the general manufacturing cluster rose by 4.6 per cent in the second quarter. Growth of the cluster was driven by a 12 per cent increase in the output of the food, beverages & tobacco segment, which more than offset output declines in the printing and miscellaneous industries segments. Specifically, the performance of the food, beverages & tobacco segment was boosted by a higher level of production of infant milk and beverage products.

The chemicals cluster's output decreased slightly by 0.3 per cent in the second quarter on the back of a 7.4 per cent contraction in the petrochemicals segment, largely due to plant maintenance shutdowns. By contrast, the other chemicals and specialty chemicals segments grew by 5.9 per cent and 1.8 per cent respectively. In particular, the other chemicals segment recorded an increase in the output of fragrances.

Output in the precision engineering cluster fell by 3.4 per cent in the second quarter due to a decline in the output of the machinery & systems segment. Specifically, the machinery & systems segment contracted by 11 per cent on account of a fall in the output of industrial process control and semiconductor-related equipment. On the other hand, the precision modules & components segment provided some support to the cluster, growing by 10 per cent on the back of a higher level of production of optical products.

The transport engineering cluster's output declined by 5.0 per cent in the second quarter. The performance of the cluster was weighed down by the marine & offshore engineering segment, which saw its output fall by 23 per cent on account of a lower level of offshore and shipbuilding & repairing activity, as well as a high base in the same period a year ago. By contrast, the aerospace segment expanded by 13 per cent, supported by more repair and maintenance jobs from commercial airlines.

The electronics cluster contracted by 10 per cent in the second quarter. This was largely due to a 11 per cent fall in output in the semiconductors segment, which came on the back of a slump in global semiconductor demand. The latter was in turn due to weak demand conditions in major end-markets such as the smartphone and PC markets, as well as heightened uncertainty arising from the US-China trade conflict. At the same time, the computer peripherals and infocomms & consumer electronics segments recorded output declines of 20 per cent and 6.9 per cent respectively. By contrast, the data storage and other electronic modules & components segments grew by 4.9 per cent and 2.7 per cent respectively.

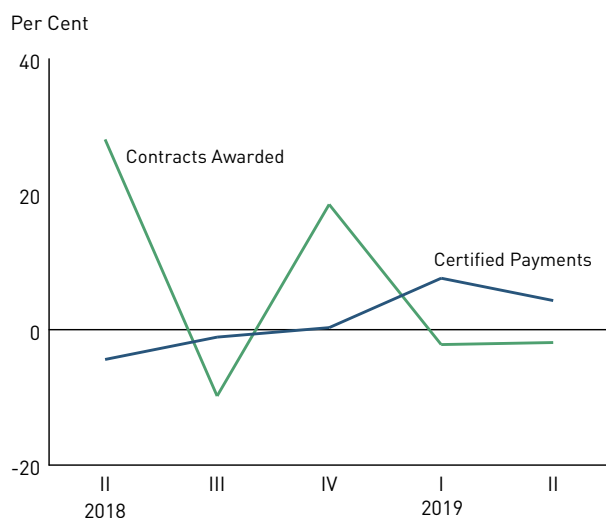
## CONSTRUCTION

The construction sector expanded by 2.9 per cent year-on-year in the second quarter, extending the 2.8 per cent growth in the previous quarter. Growth was supported by public sector construction works.

Nominal certified progress payments (a proxy for construction output) rose by 4.3 per cent in the second quarter, extending the 7.6 per cent increase in the previous quarter (Exhibit 2.3). Construction output during the quarter was bolstered by public certified progress payments (13 per cent), which was in turn driven by an increase in public civil engineering works (26 per cent), public industrial building works (44 per cent) and public institutional & others works (4.6 per cent). On the other hand, private certified progress payments fell (-3.7 per cent), mainly due to lower levels of private industrial building works (-13 per cent) and private commercial building works (-6.1 per cent).

Meanwhile, construction demand in terms of contracts awarded declined by 1.9 per cent in the second quarter, extending the 2.2 per cent drop in the previous quarter (Exhibit 2.3). The decline in construction demand was due to lower public sector construction demand (-31 per cent), which came on the back of a fall in demand for public civil engineering works (-63 per cent) and public residential building works (-26 per cent). By contrast, private sector construction demand expanded by 49 per cent, accelerating from the 22 per cent increase in the previous quarter. The increase was mainly due to a larger value of contracts awarded for private civil engineering works (375 per cent) and private industrial building works (60 per cent).

*Exhibit 2.3: Changes in Contracts Awarded and Certified Payments*

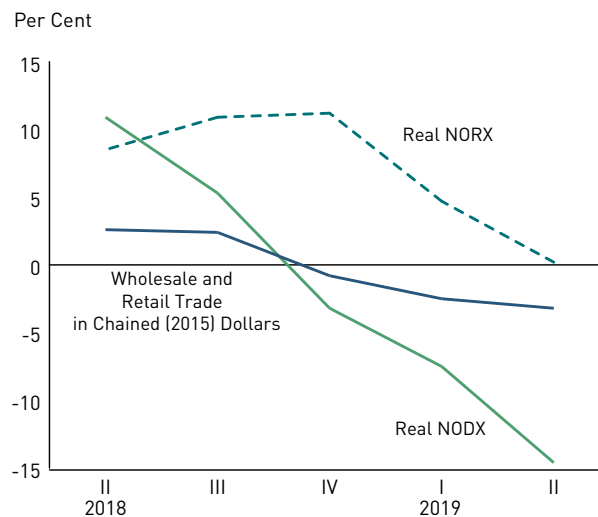


## WHOLESALE & RETAIL TRADE

The wholesale & retail trade sector shrank by 3.2 per cent year-on-year in the second quarter, steeper than the 2.5 per cent decline in the previous quarter. The performance of the sector was dragged down by both the wholesale trade and retail trade segments.

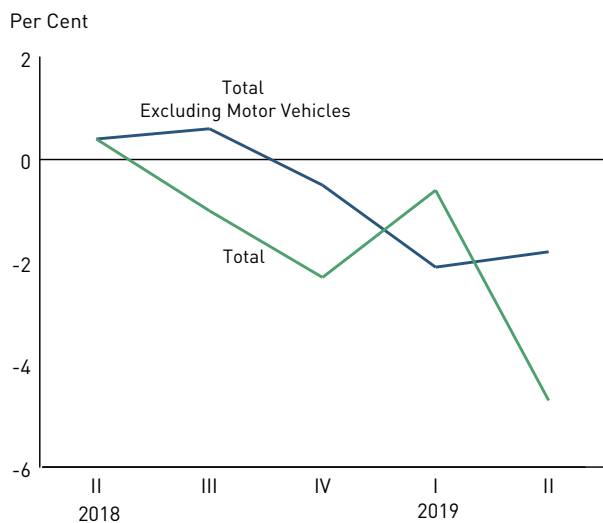
The wholesale trade segment contracted on the back of weaker non-oil domestic export volumes in Singapore, as the latter fell by 15 per cent in the second quarter, worsening from the 7.5 per cent decline in the previous quarter (Exhibit 2.4). The fall in overall NODX volume was primarily driven by weaker domestic exports of machinery & equipment, including electronics. On the other hand, the growth of non-oil re-exports (NORX) in volume terms was flat (0.2 per cent) in the second quarter, slowing from the 4.7 per cent expansion in the first quarter. While overall NORX volume was supported by growth in the re-exports of machinery & equipment as well as chemicals & chemical products, this was largely offset by the lower re-export volumes of miscellaneous manufactured goods.

*Exhibit 2.4: Changes in Wholesale & Retail Trade in Chained (2015) Dollars, Real NODX and Real NORX*



For the retail trade segment, overall retail sales volume declined by 4.7 per cent in the second quarter, worsening from the 0.6 per cent drop in the previous quarter. Retail sales volume was weighed down by a 17 per cent fall in motor vehicle sales on the back of lower COE quotas. Meanwhile, non-motor vehicle retail sales volume contracted by 1.8 per cent, led by a fall in the sales of furniture & household equipment (-8.5 per cent), computers & telecommunications equipment (-5.1 per cent) and supermarkets & hypermarkets (-1.3 per cent).

*Exhibit 2.5: Changes in Retail Sales Index at Constant Prices*

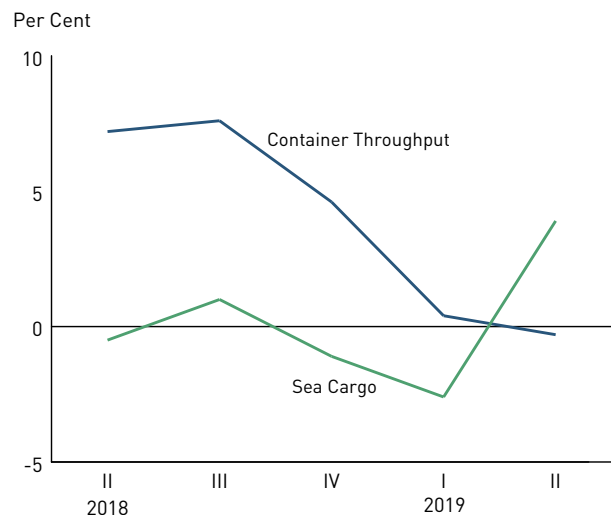


## TRANSPORTATION & STORAGE

The transportation & storage sector grew by 2.2 per cent year-on-year in the second quarter, faster than the growth of 0.7 per cent in the previous quarter. Growth was supported by the water transport and air transport segments.

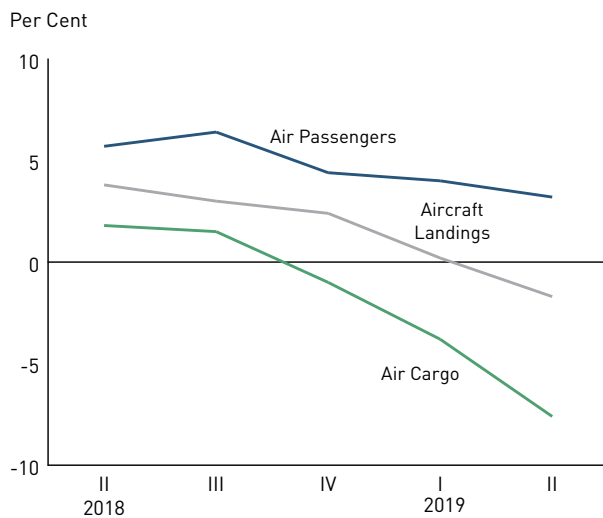
For the water transport segment, the volume of sea cargo handled increased by 3.9 per cent in the second quarter, a reversal from the 2.6 per cent decline recorded in the previous quarter (Exhibit 2.6). The higher volume of sea cargo handled came on the back of a 17 per cent increase in the volume of oil-in-bulk cargo handed at Singapore's ports, which more than offset a 0.3 per cent decline in container throughput.

*Exhibit 2.6: Changes in Container Throughput and Sea Cargo Handled*



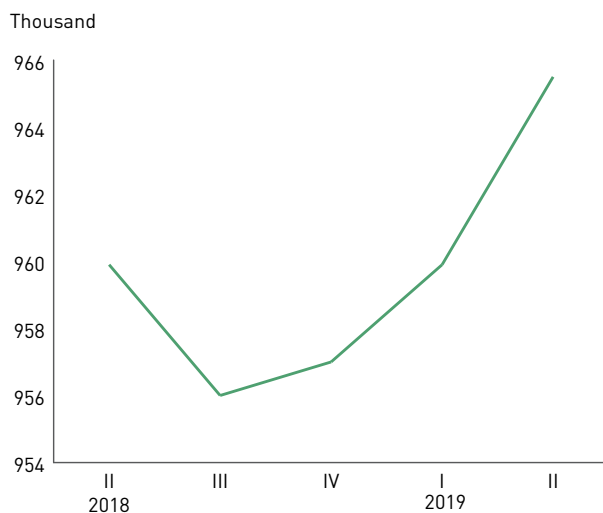
Meanwhile, the air transport segment was bolstered by a 3.2 per cent increase in the volume of air passenger traffic handled at Changi Airport, although this was a moderation from the 4.0 per cent increase registered in the previous quarter (Exhibit 2.7). The rise in air passenger traffic volume was underpinned by robust growth on routes to and from Changi Airport's key markets, including China, Oceania and Europe. On the other hand, total air cargo shipments handled at Changi Airport fell by 7.6 per cent in the second quarter, weakening from the 3.8 per cent contraction in the preceding quarter. The number of aircraft landings also declined by 1.7 per cent to reach 47,253 in the second quarter, reversing the 0.2 per cent increase in the previous quarter.

Exhibit 2.7: Changes in Air Transport



As of June 2019, the total number of motor vehicles registered with the Land Transport Authority was 965,547, representing a 0.6 per cent increase from a year ago (Exhibit 2.8). These comprised 555,611 private and company cars, 71,180 rental cars, 19,478 taxis, 19,527 buses, 138,772 motorcycles and scooters, and 160,979 goods vehicles & other vehicle types.

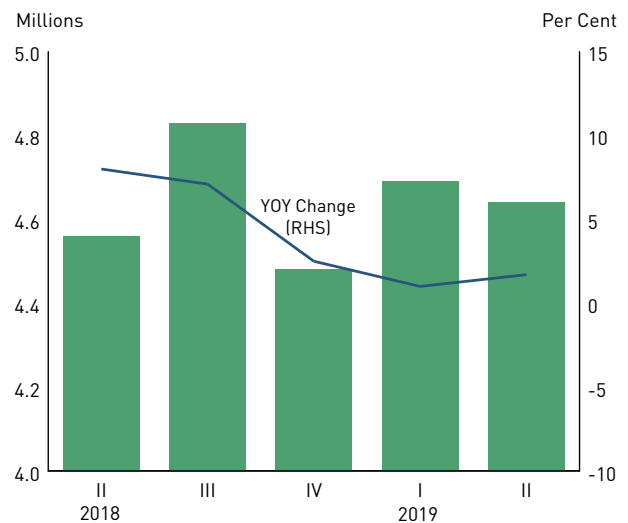
Exhibit 2.8: Motor Vehicles Registered



## ACCOMMODATION & FOOD SERVICES

The accommodation & food services sector expanded by 0.9 per cent year-on-year in the second quarter, slowing from the 2.0 per cent growth in the preceding quarter. The sector's expansion was supported by both the accommodation and food services segments.

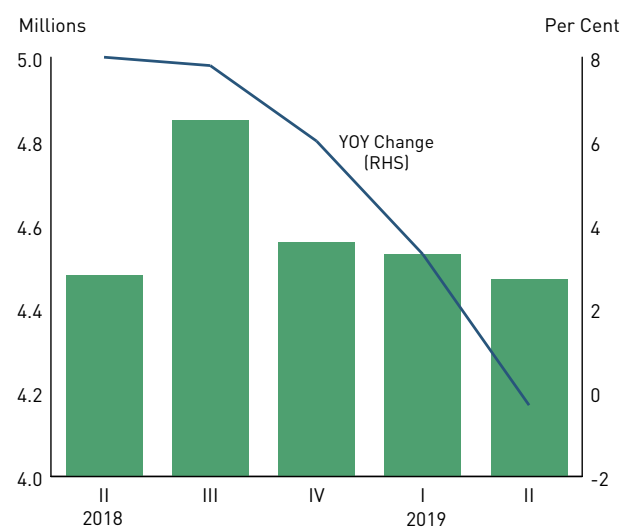
Exhibit 2.9: Visitor Arrivals



Total visitor arrivals rose by 1.7 per cent in the second quarter, improving from the 1.0 per cent growth in the previous quarter (Exhibit 2.9). The increase in visitor arrivals was led by inbound markets such as China, Japan and the United States, which recorded growth of 6.7 per cent, 15 per cent and 12 per cent respectively.

Despite the higher number of visitor arrivals, gross lettings at gazetted hotels fell marginally by 0.3 per cent in the second quarter, a reversal from the 3.3 per cent increase in the preceding quarter (Exhibit 2.10). As gross lettings fell and available room-nights rose by 0.1 per cent over the same period, the average occupancy rate of gazetted hotels dipped by 0.3 percentage-point on a year-on-year basis to reach 84.1 per cent in the second quarter.

Exhibit 2.10: Gross Lettings at Gazetted Hotels



The food services segment expanded in the second quarter, as food & beverage sales volume rose by 1.7 per cent, faster than the 0.5 per cent expansion in the first quarter (Exhibit 2.11). Higher sales volume was seen for fast food outlets (5.5 per cent), other eating places (1.9 per cent) and restaurants (1.0 per cent) during the quarter. On the other hand, the sales volume of food caterers fell by 1.4 per cent over the same period.

Exhibit 2.11: Changes in Food &amp; Beverage Services Index at Constant Prices

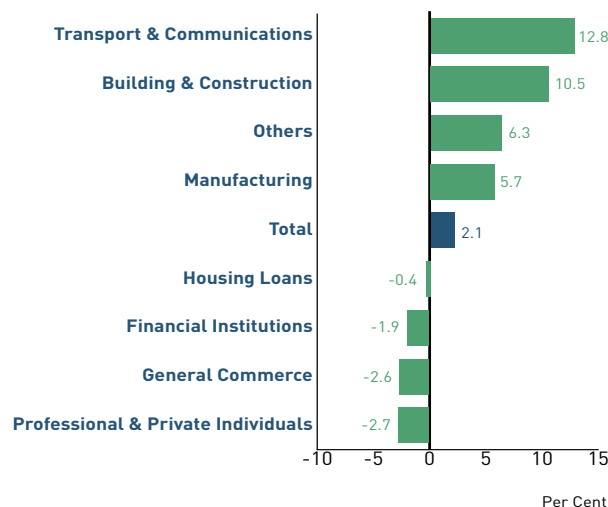


## FINANCE & INSURANCE

The finance & insurance sector grew by 5.2 per cent year-on-year in the second quarter, faster than the 3.2 per cent growth posted in the preceding quarter. Growth was largely driven by continued expansions in payment processing services. Financial intermediation and sentiment-sensitive segments like fund management and foreign exchange trading also saw growth pick up slightly compared to the previous quarter, even as growth in the insurance segment moderated.

In the financial intermediation segment, Asian Currency Unit (ACU) non-bank lending rose by a faster 6.1 per cent in the second quarter, supported by an uplift in demand from Asia, which more than offset weakness in the Americas. Growth of Domestic Banking Unit (DBU) non-bank lending stabilised at 2.1 per cent in the second quarter, comparable to the 2.2 per cent registered in the preceding quarter, helped by a pickup in loans to businesses (Exhibit 2.12). Notably, growth in loans to the building & construction sector remained firm, outweighing the declines seen in loans to non-bank financial institutions and general commerce.

Exhibit 2.12: Growth of DBU Loans &amp; Advances to Non-Bank Customers by Industry in 2Q 2019



Meanwhile, the fund management and foreign exchange trading segments turned around amidst improved investor sentiment after the US Federal Reserve indicated its willingness to ease policy. At the same time, growth in the insurance segment moderated, reflecting a slower expansion in life insurance services.

## BUSINESS SERVICES

The business services sector expanded by 0.5 per cent year-on-year in the second quarter, moderating from the 1.7 per cent growth in the preceding quarter. Growth was primarily driven by the professional services segment, which expanded on the back of sustained demand for its services domestically and in the region.

On the other hand, the real estate segment contracted in the second quarter. This was partly due to a decline in the sales transactions of private residential units during the quarter. Specifically, private residential property sales volume fell by 34 per cent year-on-year, extending the 30 per cent decline in the previous quarter. By contrast, private residential property prices rose by 1.5 per cent on a quarter-on-quarter basis in the second quarter, a turnaround from the 0.7 per cent decline in the previous quarter (Exhibit 2.13).

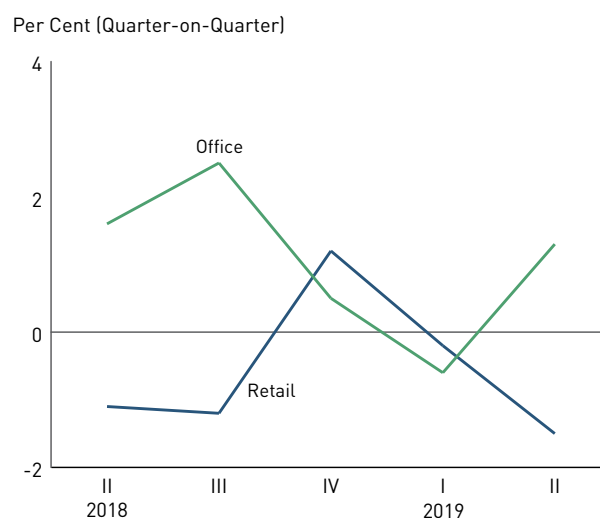
*Exhibit 2.13: Total Sales Transactions for Private Residential Units and Private Residential Property Price Index*



For the private retail space market, rentals fell by 1.5 per cent on a quarter-on-quarter basis in the second quarter, extending the 0.2 per cent decline in the previous quarter (Exhibit 2.14). Meanwhile, the average occupancy rate of private retail space rose marginally to 91 per cent in the second quarter, from 90 per cent in the first quarter.

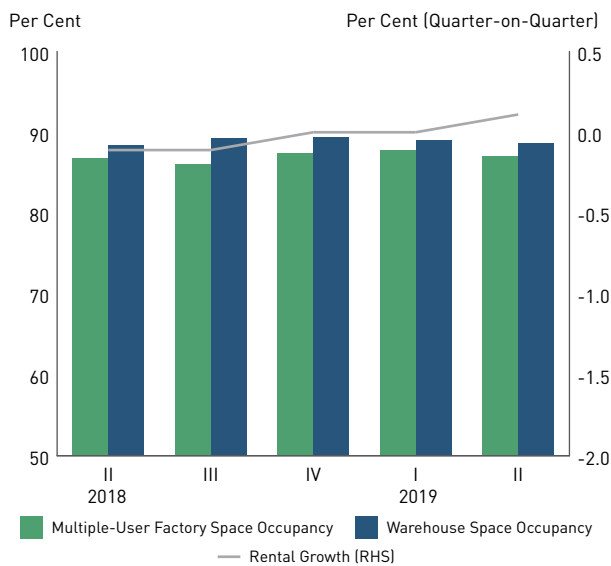
By contrast, rentals for private office space increased by 1.3 per cent on a quarter-on-quarter basis in the second quarter, a reversal from the 0.6 per cent decline in the previous quarter. The average occupancy rate of private office space came in at 88 per cent in the second quarter, inching up slightly from the 87 per cent in the first quarter.

*Exhibit 2.14: Changes in Rentals of Private Sector Office and Retail Spaces*



The private industrial space market remained stable, as rentals rose marginally by 0.1 per cent on a quarter-on-quarter basis in the second quarter, similar to the 0.0 per cent growth in the previous quarter. The occupancy rates for private sector multiple-user factory space and private sector warehouse space stood at 87 per cent and 89 per cent respectively in the second quarter, largely unchanged from the previous quarter's rates of 88 per cent and 89 per cent respectively.

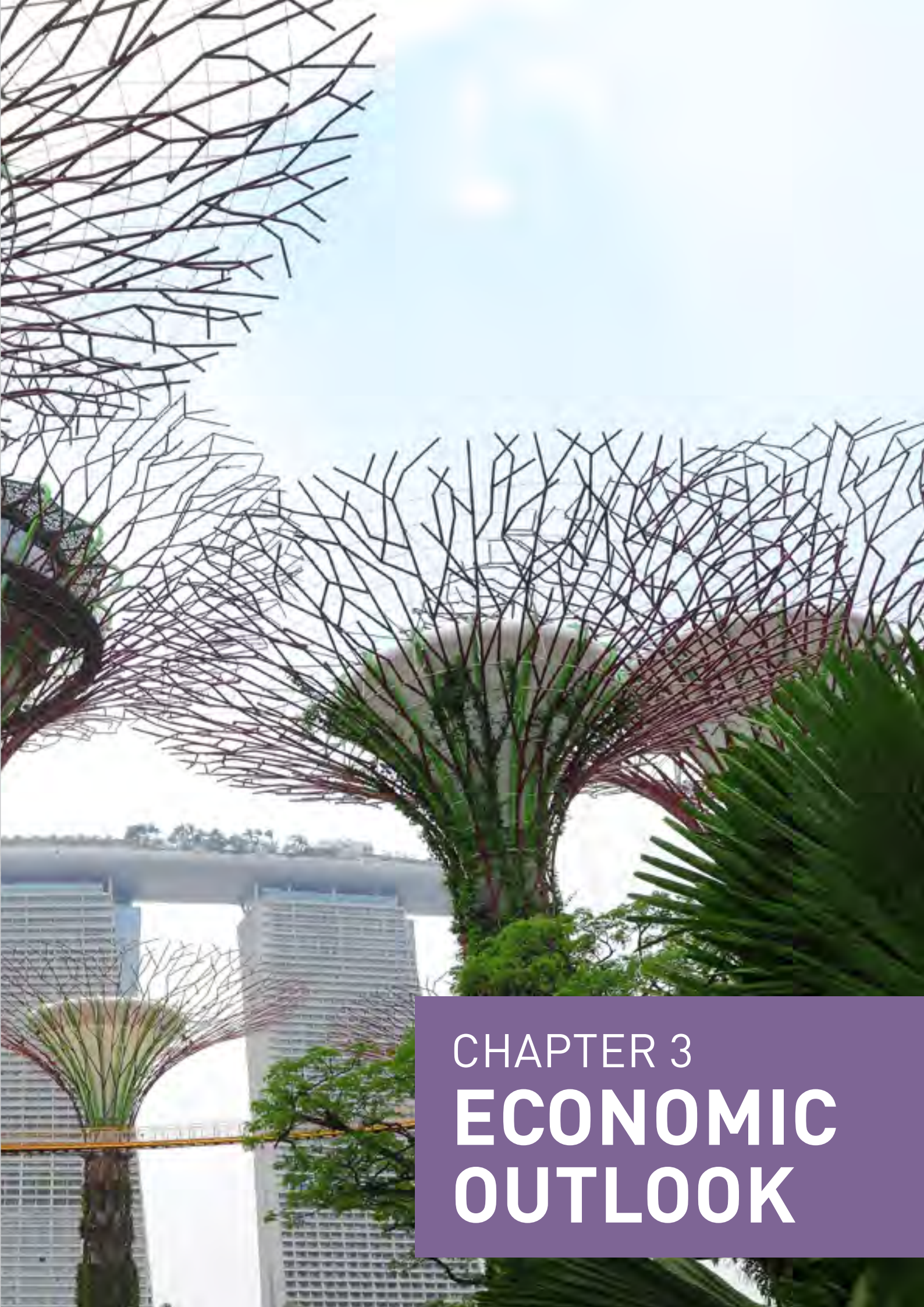
*Exhibit 2.15: Occupancy Rate and Rental Growth of Private Sector Industrial Space*











CHAPTER 3  
**ECONOMIC  
OUTLOOK**

## CHAPTER 3

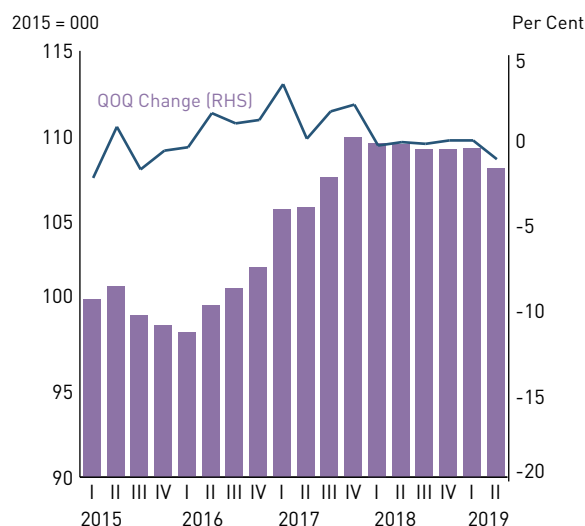
# ECONOMIC OUTLOOK

### LEADING INDICATORS

On a quarter-on-quarter basis, the composite leading index (CLI) fell by 1.1 per cent in the second quarter, after remaining unchanged in the previous quarter (Exhibit 3.1).

Of the nine components in the CLI, three of them increased on a quarter-on-quarter basis, namely money supply, stock price and non-oil retained imports. By contrast, new companies formed, non-oil sea cargo handled, stock of finished goods, domestic liquidity and the US Purchasing Managers' Index declined compared to a quarter ago.

Exhibit 3.1: Composite Leading Index Levels and Growth Rate



### OUTLOOK FOR 2019

Since the last Economic Survey of Singapore published in May, the global growth outlook has weakened further, with the IMF downgrading its global growth forecast for 2019 in its July review. In particular, the growth prospects of key emerging markets and developing economies such as ASEAN-5 and China have worsened, partly due to the escalation in the US-China trade conflict in recent months. Concurrently, the global electronics cycle has entered a sharper-than-expected downswing, with the ongoing downturn exacerbated by the uncertainty caused by the US-China trade conflict. The global electronics downswing will pose a greater drag on economies with sizeable electronics and related sectors.

Looking ahead, GDP growth in many of Singapore's key final demand markets in the second half of 2019 is expected to slow from, or remain similar to, that recorded in the first half. In the US, following a better-than-anticipated performance in the first half of 2019, GDP growth is expected to moderate in the second half of the year, as the effects of the fiscal stimulus implemented in early-2018 dissipate even as slowing global growth and prolonged trade uncertainty weigh on private investment. Nonetheless, growth for the rest of the year is likely to be supported by private consumption on the back of firm labour market conditions. Meanwhile, the Eurozone economy registered weaker growth in the second quarter as compared to the first quarter. Growth momentum is likely to remain subdued for the rest of the year, with some support coming from domestic demand. In particular, labour market conditions are likely to remain healthy, while borrowing costs are expected to remain low due to accommodative monetary policies.



In Asia, China's economy expanded at a slower pace in the second quarter of 2019 as compared to the first quarter. Growth is projected to ease further in the second half of the year on the back of weaker investment growth and a continued decline in exports, exacerbated by the increase in the US's tariffs on its exports. However, private consumption is likely to remain stable, supported in part by government measures to boost household spending. On the other hand, GDP growth in the key ASEAN economies is expected to remain resilient for the rest of the year. While slowing merchandise exports are likely to weigh on growth, consumer sentiments are expected to remain firm and hence largely supportive of private consumption.

At the same time, uncertainties and downside risks in the global economy have increased since three months ago. First, the US's recent announcement of possible tariffs on an additional US\$300 billion of imports from China has led to a further escalation of the trade conflict between the US and China. This could severely dent global business and consumer confidence, with adverse implications on global trade and global economic growth. Second, a steeper-than-expected slowdown of the Chinese economy could be precipitated by additional tariffs imposed by the US. This could in turn lead to a sharp fall in Chinese import demand and negatively affect the region's growth. Third, the risk of a "no-deal" Brexit has increased with the recent change in UK's political leadership. If it happens, substantial trade frictions between the UK and its trading partners could arise and adversely affect consumer and business sentiments in the UK and EU, with negative repercussions on their economic growth. Fourth, there are risks arising from the uncertainties in Hong Kong, the trade dispute between Japan and South Korea, as well as geopolitical tensions in North Korea and the Strait of Hormuz.

More broadly, prolonged uncertainties as a result of heightened risks in the global economy could further weaken business and consumer confidence, and lead to a cutback in global investment and consumption, thereby lowering global growth.

Against this challenging external macroeconomic backdrop, and the deepening downturn in the global electronics cycle, the Singapore economy is likely to continue to face strong headwinds for the rest of the year. In particular, the weaker-than-expected performance of the electronics and precision engineering clusters in the first half of 2019 is expected to be sustained into the remaining quarters of the year due to the deterioration in the outlook for global semiconductor demand. The downturn in these clusters will also continue to have negative spillover effects on the wholesale trade segment. At the same time, the chemicals cluster is likely to soften given weakening import demand from China. In addition to wholesale trade, growth in other trade-related services sectors like transportation & storage is likely to ease in tandem with slowing global trade volumes.

Nonetheless, there are several areas of strength in the Singapore economy. Within the manufacturing sector, the aerospace and food & beverage manufacturing segments are expected to continue to do well given firm demand conditions. Among the services sectors, the growth of the information & communications and finance & insurance sectors is projected to remain healthy, bolstered by sustained demand for enterprise IT solutions and increased demand for payment processing services respectively. Meanwhile, the education, health & social services segment's growth is likely to be resilient, supported by the ramp-up of operations in healthcare facilities. The recovery in the construction sector is also expected to be sustained.

Taking into account the global and domestic economic environment, as well as the performance of the Singapore economy in the first half of the year, the GDP growth forecast for 2019 is downgraded to **"0.0 to 1.0 per cent"**, from **"1.5 to 2.5 per cent"**, with **growth expected to come in at around the mid-point of the forecast range**.



Image courtesy of Singapore Tourism Board



**FEATURE  
ARTICLE**

## FEATURE ARTICLE

# EVALUATION OF THE SKILLSFUTURE EARN AND LEARN PROGRAMME (ELP)

## Study found positive wage returns for polytechnic graduates who enrolled in ELP

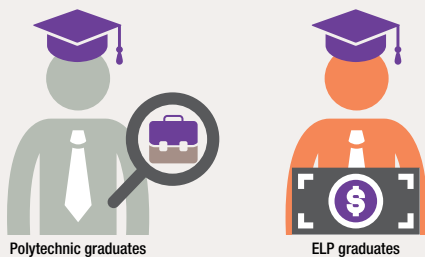
### INTRODUCTION

The SkillsFuture Earn and Learn Programme (ELP) was introduced in 2015 to give fresh graduates from the polytechnics and Institute of Technical Education (ITE) a head start in their careers by placing them in a work-study programme. During the ELP, individuals work full-time for their employers and receive on-the-job training, while pursuing part-time courses. Individuals also receive competitive starting salaries during the ELP. This study empirically examines the wage returns to polytechnic graduates who enrolled in the ELP leading to an Advanced or Specialist Diploma (recently rebranded as SkillsFuture Work-Study Post-Diplomas), as compared to their peers who transited directly into employment after graduating from the polytechnics, as well as those who pursued a full-time degree from a Private Education Institution (PEI).

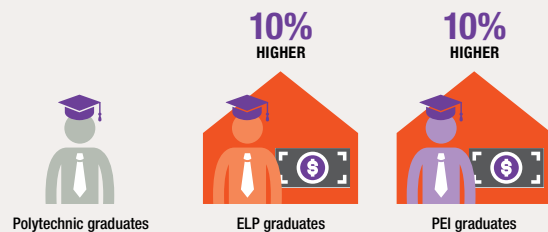


### FINDINGS

ELP participants were observed to receive a higher starting wage after ELP graduation as compared to their peers who transited directly to employment after polytechnic graduation.

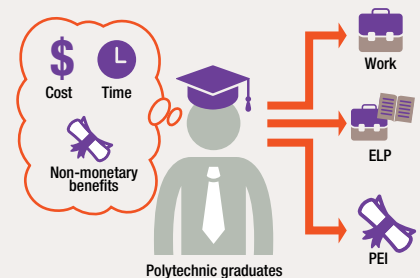


The wage premium that ELP graduates enjoyed over the polytechnic graduates appears to stabilise at about 10 per cent 19 months after ELP graduation, which was similar to the wage premium that PEI degree graduates enjoyed over the polytechnic graduates approximately one year after PEI graduation. However, the PEI graduates took twice as long to complete their programmes as compared to ELP graduates.



### POLICY TAKEAWAY

In deciding whether to enrol in the ELP, pursue a PEI degree or transit directly into employment after graduating from polytechnic, an individual would need to consider the costs related to job search, opportunity cost in terms of earnings foregone while studying, course fees to be incurred, as well as the monetary and non-monetary benefits of an Advanced/Specialist Diploma compared to a PEI degree. The findings from this study can help polytechnic graduates better weigh the costs and benefits of the different pathways so that they can make a more informed decision.





## EXECUTIVE SUMMARY

- ▶ The SkillsFuture Earn and Learn Programme (ELP) was introduced in 2015 to give fresh graduates from the polytechnics and Institute of Technical Education (ITE) a head start in their careers by placing them in a work-study programme. During the ELP, individuals work full-time for their employers and receive on-the-job training, while pursuing part-time courses. Individuals also receive competitive starting salaries throughout the programme.
- ▶ This objective of this study is to examine the wage returns to polytechnic graduates who enrolled in the ELP leading to an Advanced or Specialist Diploma (recently rebranded as SkillsFuture Work-Study Post-Diplomas), as compared to their peers who transited directly into employment after graduating from the polytechnics, as well as those who pursued a full-time degree from a Private Education Institution (PEI).
- ▶ Our findings suggest that ELP graduates received a higher starting wage compared to polytechnic graduates who transited directly to employment after graduation. Over time, the wage premium that ELP graduates enjoyed over their polytechnic counterparts narrowed and stabilised at around 10 per cent, 19 months after graduating from the ELP, suggesting that employers valued the human capital accumulated during the ELP. This ELP wage premium was also similar to the wage premium that PEI degree graduates had over the polytechnic graduates, even though the average time taken to complete the ELP was around half the time taken to obtain a PEI degree.

*The views expressed in this paper are solely those of the authors and do not necessarily reflect those of the Ministry of Trade and Industry (MTI), Ministry of Education (MOE), SkillsFuture Singapore (SSG), or the Government of Singapore.<sup>1</sup>*

## INTRODUCTION

Introduced in 2015, the SkillsFuture Earn and Learn Programme (ELP) is a work-study programme aimed at giving fresh graduates from the polytechnics and Institute of Technical Education (ITE) a head start in their careers.<sup>2</sup> During the ELP, individuals work full-time for their employers, drawing a competitive salary while undergoing training. At the end of the ELP, individuals obtain industry-recognised Diplomas or certifications. For ELPs targeted at polytechnic graduates, these are typically Advanced or Specialist Diplomas. Similar to the apprenticeship programmes in countries such as the United Kingdom or Germany where apprentices receive compensation and training at the same time, the ELP entails facilitated learning in the classroom, structured on-the-job training and work-based projects to allow participants to deepen their skill sets at the workplace.

To incentivise employers to participate in the ELP, participating employers receive a grant of up to \$15,000 per participant placed on the ELP to defray the costs of developing and providing structured on-the-job training, as well as to encourage them to set out career progression pathways. Similarly, individuals successfully placed on the ELP receive a sign-on incentive of \$5,000.

In order to help graduating polytechnic students make more informed decisions about the pathway to take upon graduation, this study empirically examines the wage outcomes of three groups of polytechnic graduates, namely those who (i) participated in the ELP leading to an Advanced/Specialist Diploma (recently rebranded as SkillsFuture Work-Study Post-Diplomas); (ii) went on to obtain a full-time degree from a Private Education Institution (PEI); and (iii) transited into work directly after graduation.

<sup>1</sup> We would like to thank Ms Yong Yik Wei, Dr Kuan Ming Leong and Mr Lee Zen Wea for their useful suggestions and comments, as well as the MOE and SSG for their inputs to this study. All errors belong to the authors.

<sup>2</sup> The ELP has been introduced in 34 sectors, including Aerospace, Biomedical Sciences, Food Services, Games Development, Healthcare, Hotel, Infocomm Technology and Retail.

The rest of the article is organised as follows. We first conduct a brief review of the academic literature related to the employment outcomes of individuals who participated in work-study programmes and those who pursued a university degree. We then describe the data and methodology employed in our study, before reporting our findings. The final section concludes.

## LITERATURE REVIEW

Various studies overseas have examined the returns to university education and apprenticeship training, and generally concluded that both have positive effects on the employment outcomes and earnings of individuals.

Broadly, the wage premium from pursuing an undergraduate degree has been found to range from 20 per cent to 48 per cent, with the premium varying depending on the course taken (Sloane & O’Leary, 2005) and the quality of the educational institution (Brewer et al., 1999). The wage premium has also been found to persist despite higher university participation rates that have led to an increase in the inflow of degree graduates into the workforce over time (Walker & Zhu, 2008; Elias & Purcell, 2010).

Similarly, firm-based apprenticeships and on-the-job training programmes have been found to lead to wage premiums ranging from 2 to 4 per cent, although there is significant heterogeneity in the premium received depending on when an individual participates in training (Feinstein et al., 2003) and the amount of education received prior to the training (Monk et al., 2008). Studies have also found that apart from wage returns, apprenticeships and on-the-job training lead to other positive effects on the employment outcomes of participants as the human capital gained from such industry-specific experiences is typically applicable and relevant to their future employment (Ryan, 1998; Parey, 2016). These include longer job durations and lower unemployment rates.

While there have been studies that directly compared the wage returns from apprenticeship or on-the-job training with that from vocational schooling (Alet & Bonnal, 2011; Riphahn & Zibrowius, 2015), little work has been done to compare the wage returns from apprenticeship or on-the-job training with that from a university education. Moreover, estimates on the wage returns to vocational schooling based on studies done overseas might not be directly applicable to Singapore due to differences in education systems (e.g., vocational schooling in other countries may be different from what polytechnic students in Singapore are exposed to).

As far as we are aware, this is the first study that seeks to estimate the wage returns to the ELP and compare that to the returns from other pathways that polytechnic graduates in Singapore might take upon graduation (i.e., transiting directly into employment or pursuing a full-time degree in a PEI).

## DATA AND SUMMARY STATISTICS

To compare the wage outcomes of the polytechnic graduates who took different pathways, data on ELP graduates and a sample of polytechnic and PEI graduates were obtained from the Ministry of Education (MOE) and SkillsFuture Singapore (SSG), and merged with individual-level administrative data (e.g., monthly wages and employment history) from the Ministry of Manpower (MOM).<sup>3</sup> The sample of PEI and polytechnic graduates used for the study was selected from the same polytechnic graduating cohorts as the ELP graduates using a stratified sampling method to ensure that their polytechnic course distributions are similar to the ELP graduates’.

As the ELP was introduced in 2015, there were only about 480 ELP graduates<sup>4</sup> by 2017. Most of these ELP graduates came from the polytechnic graduating cohorts of 2013 to 2016 since participants must enrol in the ELP within three years of graduation from the polytechnics, or their Operationally Ready Date in the case of National Servicemen, in order to qualify for the \$5,000 ELP sign-on incentive. We find that males are generally underrepresented among the ELP graduates from the more recent polytechnic graduating cohorts (i.e., 2015 onwards) as National Service (NS) would have delayed their entry into the ELP.

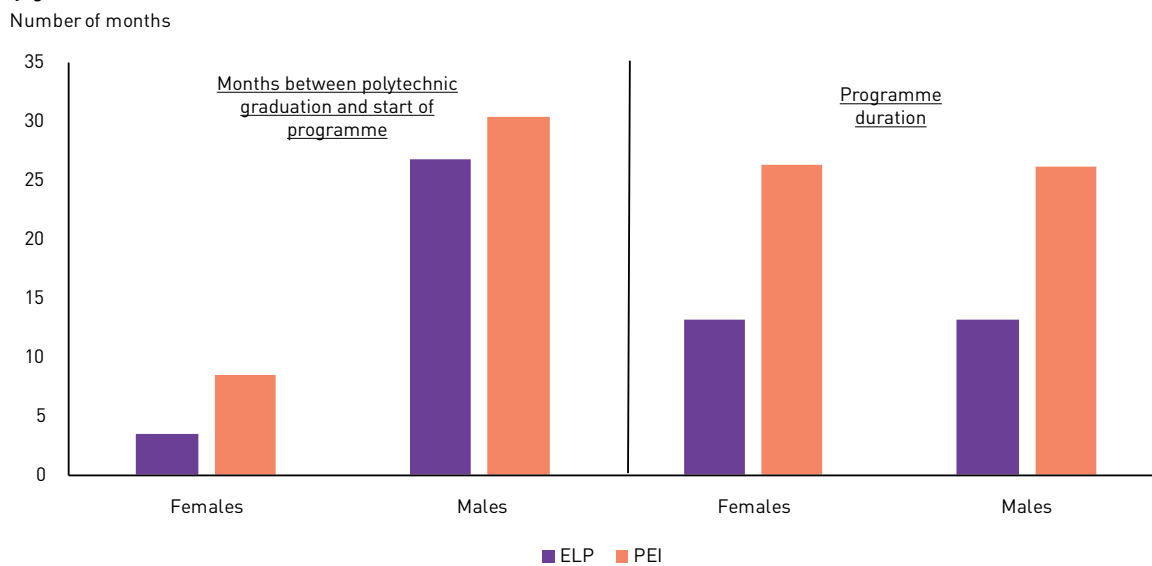
<sup>3</sup> The sample pool only included Singapore Citizens (SCs) and Permanent Residents (PRs), and excluded polytechnic graduates who went on to pursue studies in Autonomous Universities (AUs).

<sup>4</sup> A small percentage of ELP graduates – less than 4 per cent – subsequently furthered their studies in the AUs.

An examination of the data shows that the average number of months between polytechnic graduation and entry into the ELP was shorter as compared to that between polytechnic graduation and entry into the PEI programme, at 3.5 months and 8.5 months respectively for females (Exhibit 1). This is likely because the ELP semesters are better synchronised with polytechnic graduation, unlike the case for PEIs. Similarly, for males, the duration between polytechnic graduation and the start of the ELP (26.8 months) was shorter as compared to that for the PEI programme (30.4 months), although both durations were longer than that experienced by females because of NS.

As for the duration of the programme, the ELP took 13.1 months to complete on average,<sup>5</sup> whereas a PEI degree took 26.1 months to complete on average (Exhibit 1).

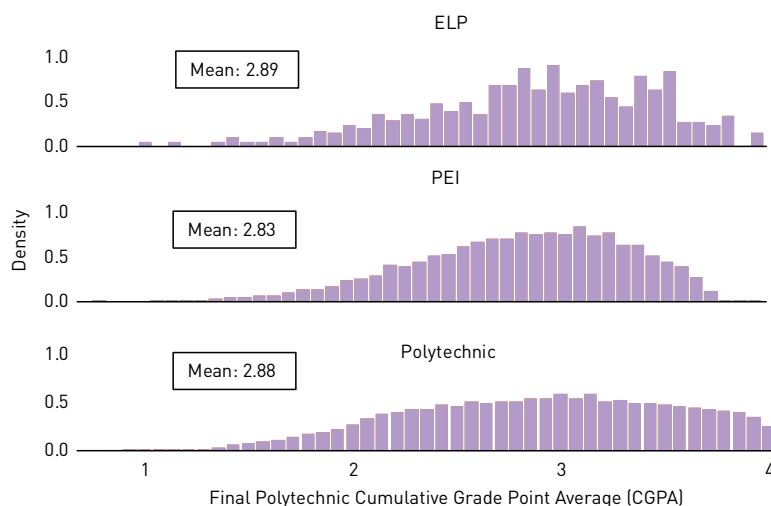
*Exhibit 1: Average duration (i) between polytechnic graduation, and start of ELP and PEI, and (ii) of ELP and PEI programmes, by gender*



Source: Authors' calculation, based on data from MOE, MOM and SSG

In terms of prior academic attainment, the data shows that the distributions of the final polytechnic cumulative grade point average (CGPA) for ELP graduates and also the sample of PEI and polytechnic graduates are similar (Exhibit 2). This suggests that there is no selection of polytechnic graduates by academic performance into the different pathways, i.e., ELP, PEI or directly into employment.

*Exhibit 2: Distribution of final polytechnic cumulative grade point average by group type*



Source: Authors' calculation, based on data from MOE, MOM and SSG

<sup>5</sup> By design, ELPs typically last between 12 and 18 months.

In terms of wages, the average starting salary of ELP graduates one month after ELP graduation was around \$2,900 (Exhibit 3), and remained approximately the same six months after graduation. In comparison, their peers who transitioned directly into employment upon graduating from the polytechnics and those who graduated from PEIs had lower average starting salaries one month after graduation, although they saw an increase in their salaries of around \$500 and \$600 respectively six months after graduation. This is likely because ELP participants were full-time employees from the time they commenced the ELP, whereas a significant proportion of polytechnic and PEI graduates could have been holding on to part-time jobs one month after graduation with some transitioning to full-time jobs only six months later.

Exhibit 3: Average 1-month and 6-month post-graduation wages

	Average wage 1 month post-graduation	Average wage 6 months post-graduation
ELP	\$2,943	\$2,894
PEI	\$1,914	\$2,526
Polytechnic	\$1,175	\$1,698 <sup>6</sup>

Source: Authors' calculation, based on data from MOE, MOM and SSG

## METHODOLOGY

In order to isolate the effect of the different pathways taken by individuals upon polytechnic graduation on their wage outcomes, it is important to compare the wage outcomes of polytechnic graduates who are similar except for their eventual decision to enrol in ELP, PEI or transit directly into work. We do so in two ways.

We first match the ELP graduates to polytechnic graduates who transitioned directly into work based on their observable characteristics (e.g., age, gender, year of polytechnic graduation, and polytechnic course) using propensity score matching (PSM).<sup>7</sup> PSM is similarly carried out between the ELP graduates and PEI graduates to find a group of PEI graduates who are similar in characteristics to the ELP graduates. Individuals who are not matched are excluded from the subsequent analysis. This step thus allows us to obtain matched samples of PEI and polytechnic graduates who have characteristics that are similar to the ELP graduates and also to each other.<sup>8</sup>

However, apart from observable characteristics, polytechnic graduates who participated in the ELP may also differ from those who pursued a PEI degree or those who transitioned directly into work in terms of *unobservable* characteristics such as their intrinsic motivations and preferences. For example, polytechnic graduates who have a stronger preference to start their career rather than continue their studies or who prefer hands-on learning experiences outside a classroom environment may systematically choose to participate in the ELP, rather than pursue a PEI degree. Differences in the wage outcomes of ELP graduates vis-à-vis PEI graduates may then reflect differences in these unobserved characteristics rather than the effect of participation in the ELP or PEI programme. To reduce such selection bias, we also match the ELP graduates to PEI and polytechnic graduates based on the part-time wages<sup>9</sup> earned during their polytechnic studies (i.e., before polytechnic graduation), as we posit that the presence or absence of part-time wages would serve as a rough proxy for an individual's preferences with respect to academic learning and the desire to gain work experience.

<sup>6</sup> The average six-month post-graduation wage for polytechnic graduates was lower than the median full-time salary reported in the Graduate Employment Survey, likely due to the inclusion of polytechnic graduates who may still be in part-time employment in our sample.

<sup>7</sup> The assumption is that observable pre-treatment variables (e.g., CGPA, polytechnic courses, part-time employment during polytechnic studies) would contribute to an individual's decision to enter the ELP. PSM will first assign each individual a propensity score based on these variables and then match each ELP graduate with the polytechnic and PEI graduates based on their respective propensity scores.

<sup>8</sup> We run statistical analyses to ensure that the characteristics (or covariates) of the PEI and polytechnic graduates are also similar.

<sup>9</sup> Individuals are defined to have worked part-time as long as they have at least one wage drawn before polytechnic graduation.

By using the final matched sample of ELP, PEI and polytechnic graduates in our subsequent analyses, the differences in the wage outcomes of the three groups of graduates can be attributed to the different pathways taken. Specifically, we use the following ordinary least squares (OLS) regression on the final matched sample to estimate the wage premium that ELP graduates have over polytechnic graduates, as well as the wage premium that PEI graduates have over polytechnic graduates:

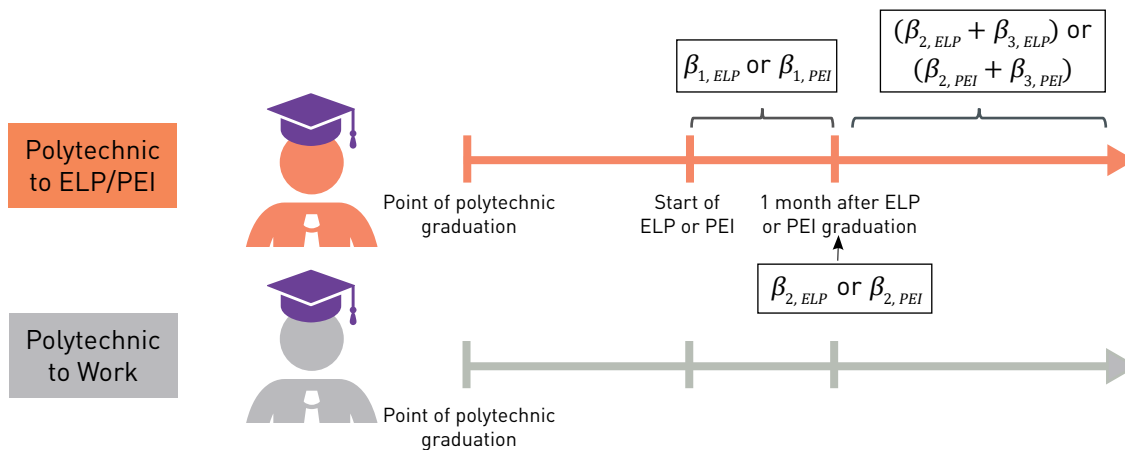
$$Y_{it} = \beta_0 + \beta_{1,ELP} \text{During ELP}_{it} + \beta_{1,PEI} \text{During PEI}_{it} + \beta_{2,ELP} \text{Post ELP}_{it} + \beta_{2,PEI} \text{Post PEI}_{it} + \beta_{3,ELP} \{\text{Post ELP}_{it} \times i.\text{period}_{it}\} + \beta_{3,PEI} \{\text{Post PEI}_{it} \times i.\text{period}_{it}\} + \beta_4 \text{industry}_{it} + \beta_5 \gamma_t + \beta_6 \delta_i + \varepsilon_{it} \quad (1)$$

where:

- $Y_{it}$  denotes the natural log of wage of individual  $i$  in time  $t$ ;
- $\text{During ELP}_{it}$  and  $\text{During PEI}_{it}$  are dummy variables that take on a value of 1 in the year-months that individual  $i$  is in the ELP or PEI programme, and 0 otherwise;
- $\text{Post ELP}_{it}$  and  $\text{Post PEI}_{it}$  are dummy variables that take on a value of 1 in the year-months after individual  $i$  has graduated from the ELP or PEI programme, and 0 otherwise;
- $\text{period}_{it}$  indicates the number of months after individual  $i$  has graduated from his/her respective programme - 1;
- $\text{industry}_{it}$  denotes the industry individual  $i$  is working in at time  $t$ ;
- $\gamma_t$  denotes individual time-fixed effects which capture the changes in macroeconomic conditions affecting an individual's wage;
- $\delta_i$  denotes a vector of time-invariant individual characteristics that would affect the wages of individual  $i$  (e.g., age, gender, year of polytechnic graduation, polytechnic CGPA);
- $\varepsilon_{it}$  is the error that captures the unobservable factors that determine  $Y_{it}$ .

There are several coefficients of interest: (i)  $\beta_{1,ELP}$  and  $\beta_{1,PEI}$  refer to the average effect that the ELP and PEI programme have on wages during the respective programmes as compared to the wages received by polytechnic graduates; (ii)  $\beta_{2,ELP}$  and  $\beta_{2,PEI}$  refer to the average effect that the ELP and PEI programme have on wages one month after the respective programmes as compared to the wages received by polytechnic graduates; and (iii)  $\beta_{3,ELP}$  and  $\beta_{3,PEI}$  provide the additional effects of the ELP and PEI programme on wages over time. Exhibit 4 provides a visual illustration of the coefficients of interest in this study. The findings are reported in the next section.

Exhibit 4: Visual representation of coefficients of interest



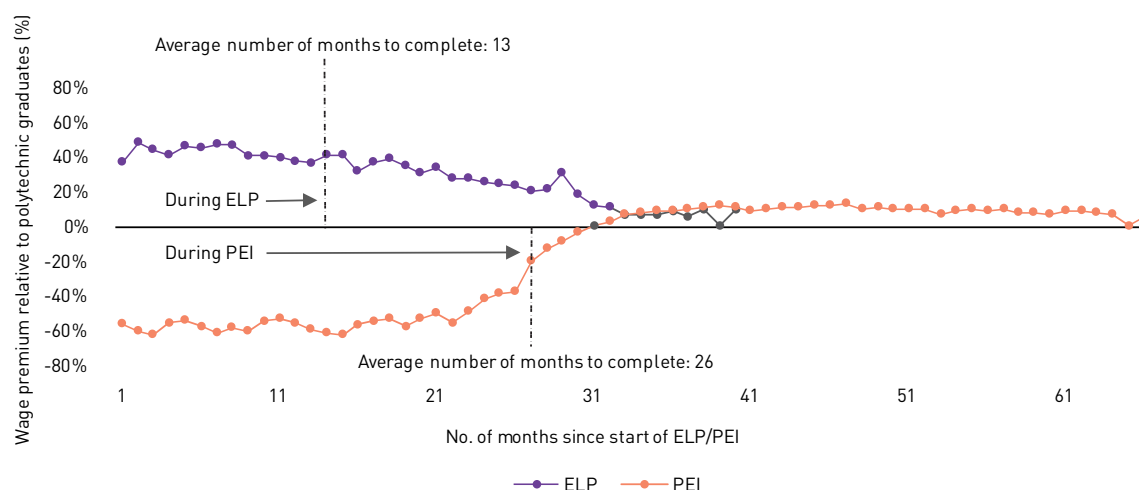
## RESULTS AND DISCUSSION

Our findings suggest that ELP graduates enjoyed a starting wage premium relative to polytechnic graduates. Specifically, we find that relative to polytechnic graduates, ELP graduates earned 44 per cent more during the programme and 41 per cent more one month after graduating from the programme (Exhibit 5).<sup>10</sup> According to the employer learning and statistical discrimination hypothesis, as employers have limited information about the quality and actual productivity of new employees, they tend to offer starting wages that reflect the expected productivity of employees based on easily-observable characteristics such as education (Farber & Gibbons, 1996; Altonji & Pierret, 2001; Arcidiacono et al., 2010). In this context, employers might have used application to the ELP as a proxy for the graduates' expected productivity and hence paid them higher starting wages.

Over time, however, we find that the wage premium for ELP graduates narrowed. While this could in part be due to the effect of learning by employers of ELP graduates, the narrowing of the wage premium was more likely to be due to the wages of polytechnic graduates catching up. Specifically, unlike ELP graduates, polytechnic graduates might take time to transit to full-time employment and/or find better job matches after graduation, thereby taking a longer time to earn higher wages. Our data provides some evidence of this as the average wages of polytechnic graduates in our sample is observed to increase from \$1,200 one month after polytechnic graduation to \$1,700 six months after polytechnic graduation.

We next examine whether the wages of polytechnic graduates eventually caught up with the wages of ELP graduates. Preliminary evidence shows that even though the ELP wage premium narrowed over time, it stabilised at around 10 per cent, 19 months after ELP graduation.<sup>11</sup> Since there is empirical evidence that employers learn fairly quickly (Lange, 2007), the sustained wage premium over the polytechnic graduates was likely to reflect the higher productivity of ELP graduates, possibly due to the human capital that they had accumulated during the ELP.

Exhibit 5: Estimated wage premium of ELP/PEI graduates relative to polytechnic graduates over time



Notes: Since this was a log-linear specification, coefficients for the treatment period and one-month post-treatment were transformed using  $(e^{\beta_{1,ELP}} - 1)$  &  $(e^{\beta_{1,PEI}} - 1)$  and  $(e^{\beta_{2,ELP}} - 1)$  &  $(e^{\beta_{2,PEI}} - 1)$  respectively to obtain the estimated effects. The wage differential at each subsequent month post treatment for the treatment group relative to the control group was approximated by the following formula:  $(e^{\beta_{1,ELP} + \beta_{2,ELP} + \beta_{3,ELP}} - 1)$  and  $(e^{\beta_{1,PEI} + \beta_{2,PEI} + \beta_{3,PEI}} - 1)$  for ELP and PEI graduates respectively. The lines and markers in grey indicate that  $(\beta_{2,ELP} + \beta_{3,ELP})$  or  $(\beta_{2,PEI} + \beta_{3,PEI})$  for a given month was statistically insignificant at the five per cent level.

10 This three percentage-points difference in the wage premium experienced during the ELP and that experienced one month after graduation is statistically insignificant.

11 The wage premium for ELP graduates remained at about 10 per cent, 27 months after graduation, although the premium from the 20<sup>th</sup> month onwards is statistically insignificant at the five per cent level, likely due to the smaller number of wage observations as time passes (i.e., most ELP graduates would not have wage observations beyond 20 months as the ELP was only introduced in 2015).

Furthermore, we find that the ELP wage premium at 19 months after ELP graduation was similar to the wage premium that PEI graduates earned over their polytechnic counterparts, which was estimated to stabilise at around 10 per cent approximately one year after PEI graduation (Exhibit 5).<sup>12</sup> It is worth highlighting that even though both the ELP and PEI wage premiums relative to polytechnic graduates converged to around 10 per cent, PEI graduates would have taken longer to realise this benefit as they would have taken twice as long to complete their full-time programmes (26.1 months) compared to ELP graduates (13.1 months). Moreover, PEI graduates would have experienced negative wage premiums compared to their polytechnic counterparts during the PEI programme, whereas ELP graduates would have earned positive wage premiums during the ELP. In addition, PEI graduates would likely have incurred course fees for their PEI programmes, unlike ELP participants who would have received employer sponsorship for their course fees.

## CONCLUSION

Our study finds encouraging results for the ELP, a work-study programme which was introduced in 2015. In particular, there is evidence to suggest that the ELP has a positive effect on wages, with the ELP participants enjoying a wage premium over polytechnic graduates during the ELP and after graduating from the ELP. We also find some indicative evidence that even though the ELP wage premium narrows over time, possibly due to employment changes among polytechnic graduates leading to their wages catching up with the wages of ELP graduates, the premium stabilises at around 10 per cent. The sustained ELP wage premium suggests that employers value the human capital that ELP graduates accumulate during the ELP. The ELP wage premium of 10 per cent is also similar to the wage premium enjoyed by PEI graduates over their polytechnic counterparts, even though the average time taken to complete the ELP is around half the time taken to obtain a PEI degree.

While these early results are encouraging, MOE and SSG should continue to monitor the outcomes of the ELP over time. In particular, given that the ELP is a new programme, our study was only able to observe the wage outcomes of ELP graduates over a relatively short period of time. As more data becomes available, there is scope to examine whether the wage premium obtained by the ELP graduates and hence, the benefits of participating in the ELP, are sustained over the longer term. There is also scope to examine the non-wage outcomes of the ELP, e.g., probability of unemployment, in future extensions of the study.

### *Contributed by:*

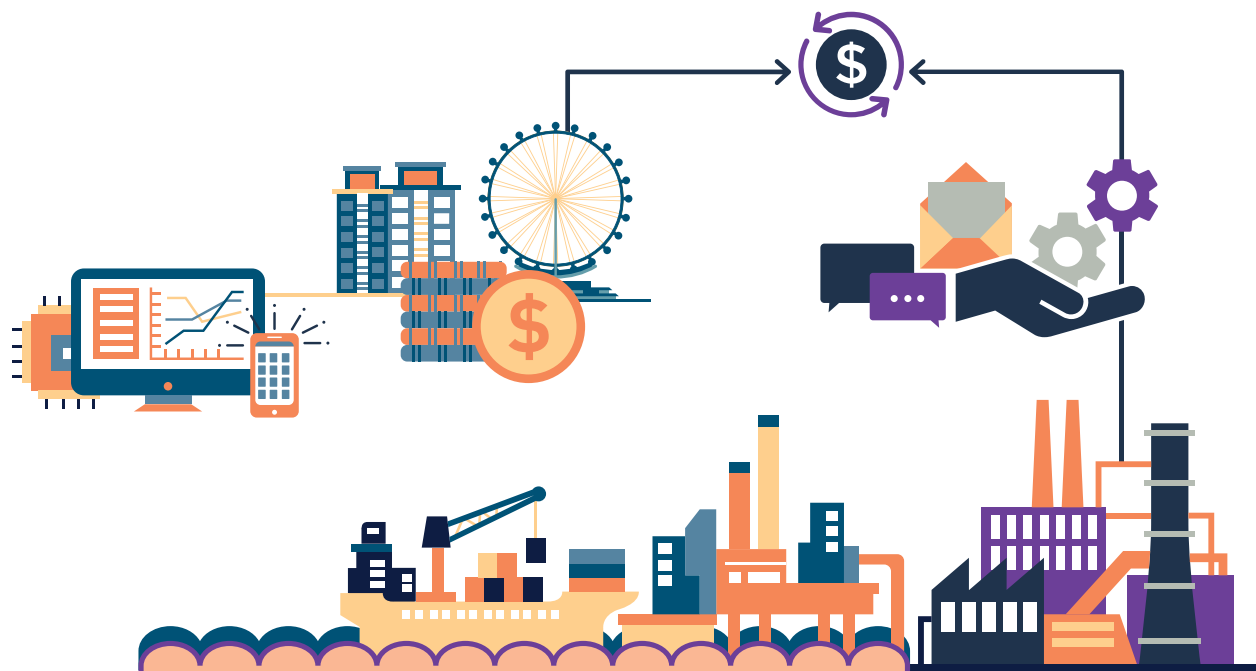
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<sup>12</sup> From the 17<sup>th</sup> month after ELP/PEI graduation onwards, the ELP wage premium relative to the polytechnic graduates is not statistically different from the PEI wage premium relative to the polytechnic graduates.



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ISSN 2382-6541