ECONOMIC SURVEY OF SINGAPORE

Third Quarter 2016

MTI MINISTRY OF TRADE AND INDUSTRY SINGAPORE

November 2016

Ministry of Trade and Industry
Republic of Singapore

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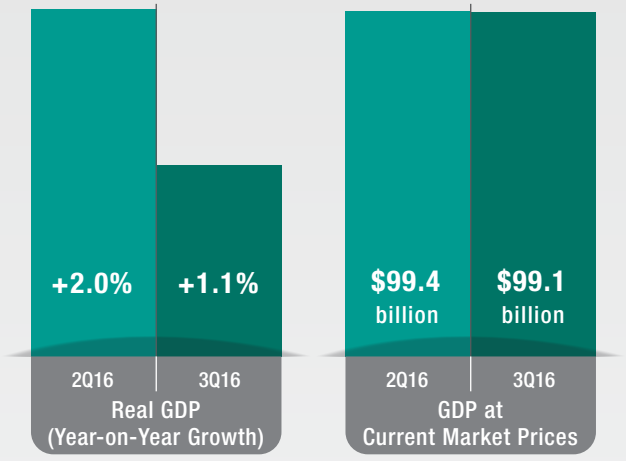
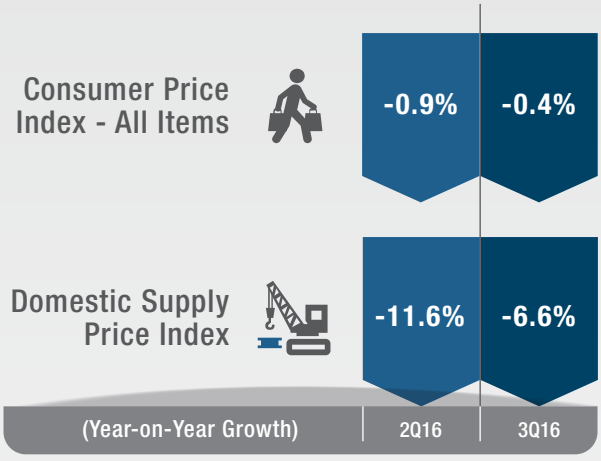
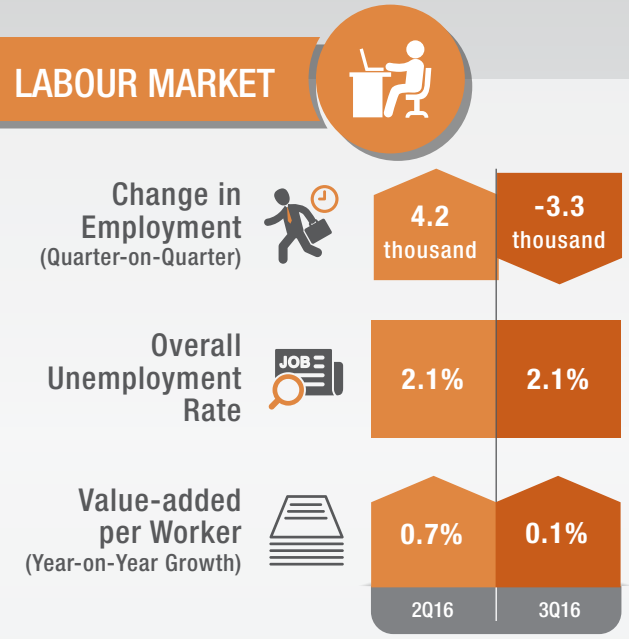
OVERALL ECONOMY



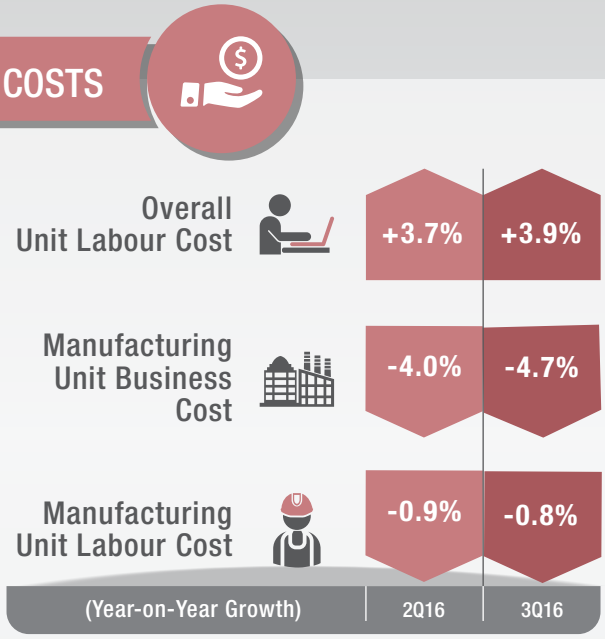
PRICES



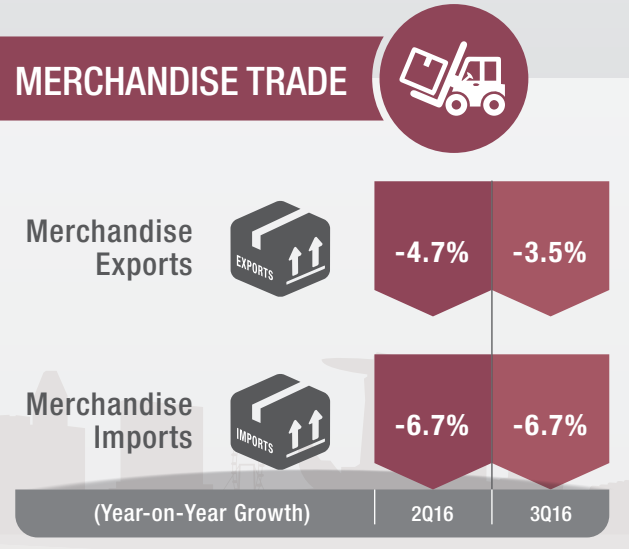
LABOUR MARKET



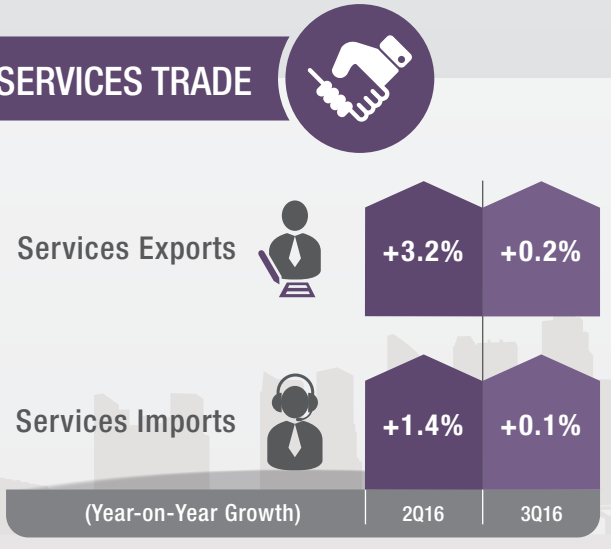
COSTS



MERCHANDISE TRADE



SERVICES TRADE



CHAPTER 1
Economic Performance

CHAPTER 1

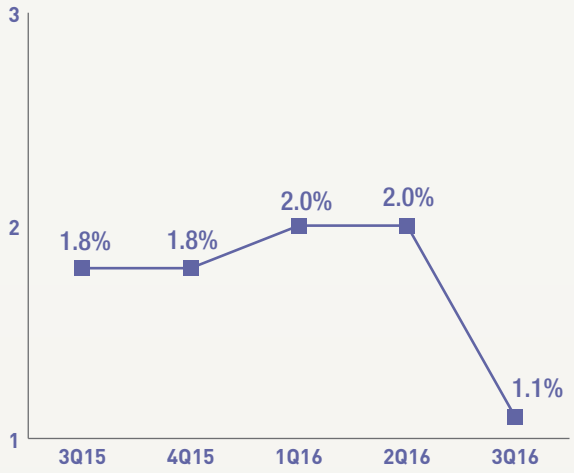
THE SINGAPORE ECONOMY

ECONOMIC PERFORMANCE

Real GDP grew by

1.1% in 3Q16

Quarterly Growth (Year-on-Year)



Main Drivers of Growth in 3Q16

MANUFACTURING

0.2%-point contribution

OTHER SERVICES INDUSTRIES

0.2%-point contribution

INFORMATION & COMMUNICATIONS

0.1%-point contribution

In total, these sectors accounted for **50%** of GDP growth

LABOUR MARKET

RESIDENT UNEMPLOYMENT RATE

2.9% in 3Q16

EMPLOYMENT (Q-O-Q CHANGE)

-3,300 employed

Sectors with the Highest Employment Growth in 3Q16

OTHER SERVICES INDUSTRIES	ACCOMMODATION & FOOD	INFORMATION & COMMUNICATIONS
+3,100 employed	+1,600 employed	+1,000 employed

PRODUCTIVITY

VALUE-ADDED PER WORKER (Y-O-Y GROWTH)

+0.1%

Sectors with the highest Value-added per Worker Growth in 3Q16

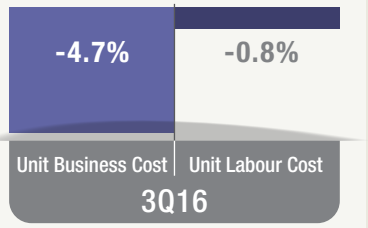
MANUFACTURING	CONSTRUCTION
+4.5%	+1.4%

COSTS

Overall Unit Labour Cost rose by

3.9% in 3Q16

WITHIN THE MANUFACTURING SECTOR

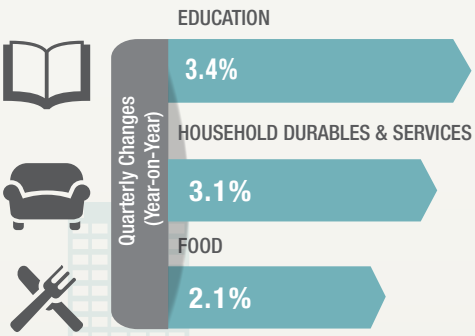


PRICES

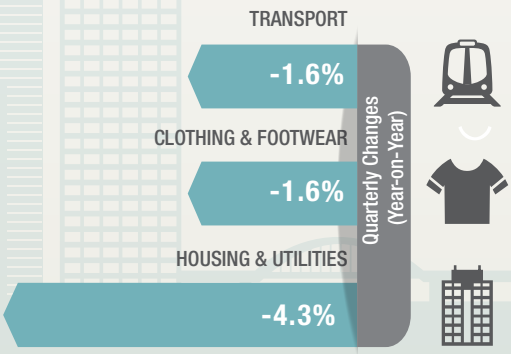
The Consumer Price Index (CPI) declined by

0.4% in 3Q16

CATEGORIES WITH PRICE INCREASES



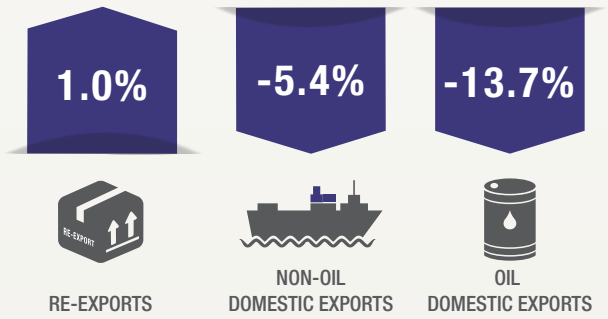
CATEGORIES WITH PRICE DECLINES



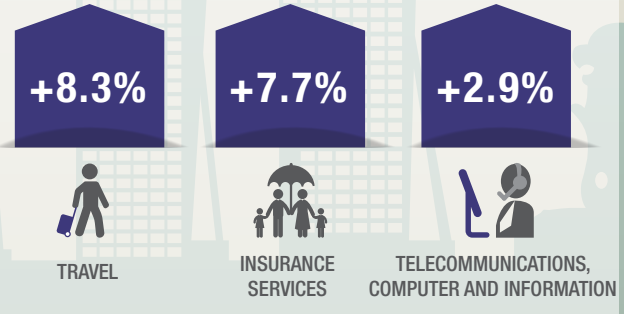
INTERNATIONAL TRADE

Total Merchandise Exports declined by

3.5% in 3Q16



Main Drivers of Services Export Growth were...



OVERVIEW

In the third quarter of 2016,

- The economy expanded by 1.1 per cent compared to the same period last year. The sectors that contributed the most to growth were the manufacturing, "other services industries" and information & communications sectors.
- The seasonally-adjusted overall unemployment rate remained unchanged at 2.1 per cent. Total redundancies fell compared to the second quarter, but were higher compared to the same period a year ago.
- Total employment declined by 3,300 on a quarter-on-quarter basis, as compared to the gains of 12,600 in the same period a year ago.
- The Consumer Price Index declined by 0.4 per cent on a year-on-year basis.

OVERALL PERFORMANCE

The economy grew by 1.1 per cent year-on-year in the third quarter, easing from the 2.0 per cent growth in the previous quarter (Exhibit 1.1). On a quarter-on-quarter seasonally-adjusted annualised basis, the economy contracted by 2.0 per cent, a reversal from the 0.1 per cent growth in the preceding quarter.

Exhibit 1.1: GDP and Sectoral Growth Rates in 3Q 2016

The manufacturing sector expanded by 1.3 per cent, similar to the 1.4 per cent growth in the preceding quarter. Growth was supported by the electronics and precision engineering clusters.

The construction sector grew by 1.6 per cent, moderating from the 2.0 per cent growth in the previous quarter. Growth was supported by an expansion in public sector construction works such as public civil engineering works.

The services producing industries recorded flat growth in the third quarter, a moderation from the 1.2 per cent expansion in the previous quarter. Among the services sectors, "other services industries" posted the strongest growth of 2.3 per cent, supported by the education, health & social services segment. This was followed by the information & communications (2.2 per cent) and accommodation & food services (2.1 per cent) sectors. Meanwhile, the transportation & storage (0.6 per cent) and business services (0.2 per cent) sectors also recorded expansions in the third quarter. On the other hand, the wholesale & retail trade and finance & insurance sectors contracted by 1.5 per cent and 0.7 per cent respectively.

The sectors that contributed the most to GDP growth in the third quarter were the manufacturing, "other services industries" and information & communications sectors (Exhibit 1.2). Collectively, they accounted for 50 per cent of overall GDP growth in the quarter.

Exhibit 1.2: Percentage-Point Contribution to Growth in Real GDP in 3Q 2016 (By Industry)

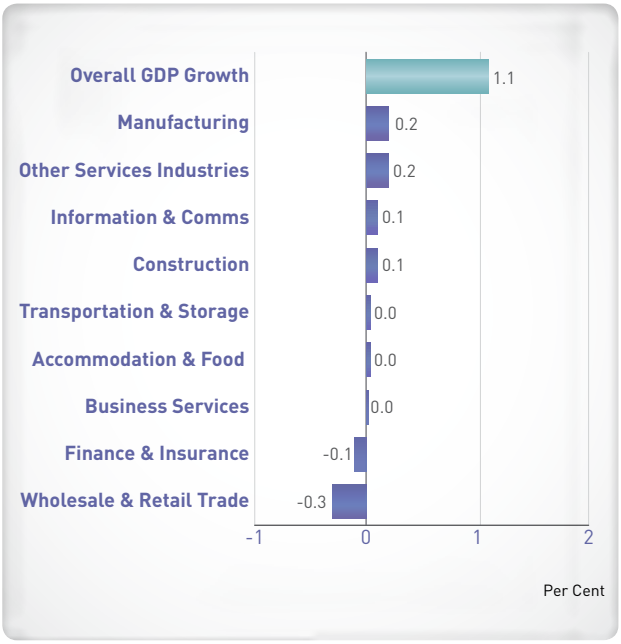


*Exhibit 1.3: Changes in Total Demand**

	2015		2016		
	III	IV	I	II	III
Total Demand	4.2	1.7	1.9	2.1	**-0.2**
External Demand	2.7	2.8	-0.8	4.8	**3.1**
Total Domestic Demand	8.7	-1.4	9.7	-5.3	**-9.3**
Consumption Expenditure	6.1	6.3	5.2	3.2	**0.4**
Public	12.2	9.4	9.1	11.9	**-0.5**
Private	4.6	5.5	3.9	1.3	**0.6**
Gross Fixed Capital Formation	-1.6	-0.7	-2.2	0.1	**-2.7**
Changes in Inventories	3.8	-3.6	4.7	-5.2	**-6.2**

* *For inventories, this refers instead to change as percentage of GDP in the previous year.*

SOURCES OF GROWTH

Total demand fell by 0.2 per cent in the third quarter, a reversal from the 2.1 per cent growth in the preceding quarter (Exhibit 1.3). The contraction was attributable to the weakness in domestic demand, which fell by 9.3 per cent, extending the 5.3 per cent decline in the second quarter. By contrast, external demand increased by 3.1 per cent, following the 4.8 per cent growth in the previous quarter.

Domestic demand was weighed down by a drawdown in inventories and a decline in gross fixed capital formation, which more than offset the increase in consumption expenditure.

Consumption expenditure rose by 0.4 per cent in the third quarter, supported by a 0.6 per cent increase in private consumption. On the other hand, gross fixed capital formation fell by 2.7 per cent on the back of a 7.1 per cent decline in private investments. Private investments were in turn primarily weighed down by weakness in the construction of private residential buildings. By contrast, public investments registered a 16 per cent increase, supported by an expansion in public construction works.

LABOUR MARKET

Unemployment and Redundancy[1]

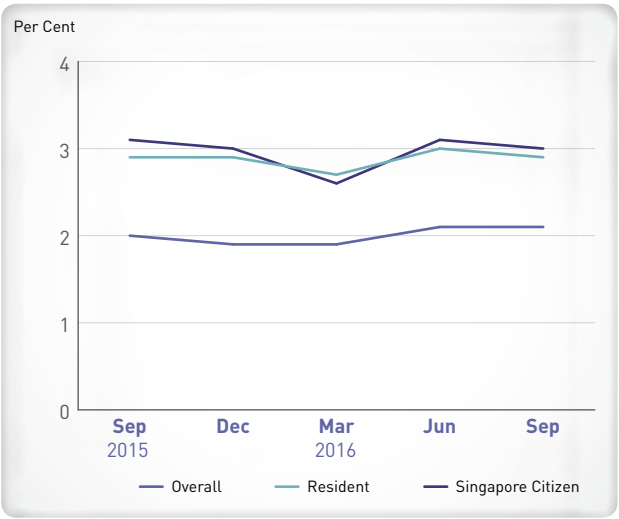
The seasonally-adjusted overall unemployment rate remained unchanged at 2.1 per cent in September 2016 compared to June 2016 (Exhibit 1.4). Over the same period, the unemployment rate was broadly similar for residents (2.9 per cent in September compared to 3.0 per cent in June) and citizens (3.0 per cent in September compared to 3.1 per cent in June).

In September 2016, an estimated 66,500 residents, including 58,500 Singapore citizens, were unemployed. These were lower than the 68,400 and 60,200 respectively in June 2016.[2]

[1] *Figures pertain to private sector establishments with at least 25 employees and the public sector.*

[2] *Based on seasonally-adjusted data on the number of unemployed persons.*

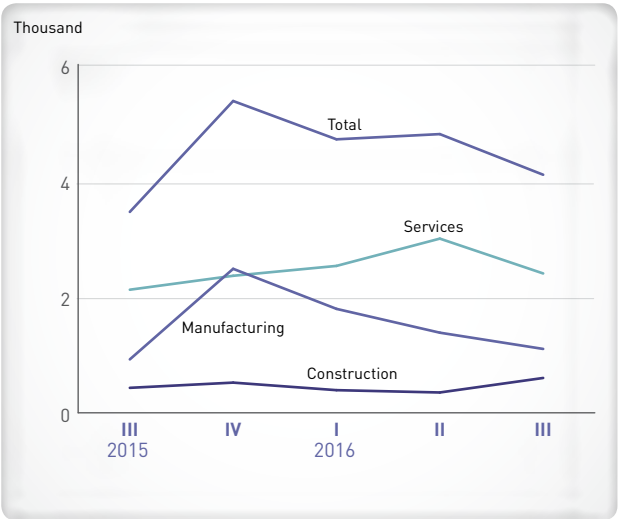
Exhibit 1.4: Unemployment Rate (Seasonally Adjusted)



Redundancies also fell over the quarter. Around 4,100 workers were made redundant in the third quarter, down from the 4,800 in the previous quarter. However, the number of redundancies in the third quarter was higher than the 3,460 a year ago, amidst subdued global economic conditions and domestic economic restructuring.

Across broad sectors, redundancies fell over the quarter in the services (from 3,000 in the second quarter to 2,400 in the third quarter) and manufacturing (from 1,380 to 1,100) sectors. By contrast, redundancies in the construction sector increased to 600 in the third quarter, from 350 in the previous quarter.

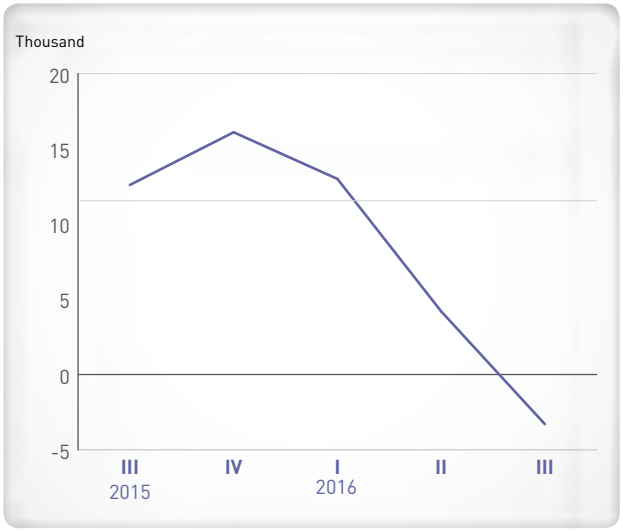
Exhibit 1.5: Total Redundancies



EMPLOYMENT[3]

Total employment declined by 3,300 on a quarter-on-quarter basis in the third quarter, as compared to the growth of 12,600 registered a year ago (Exhibit 1.6). This was the second time that quarterly employment had declined since the 2008/2009 recession, with the last contraction seen in the first quarter of 2015.

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



The weakness in employment in the third quarter was broad-based. The manufacturing sector registered its eighth consecutive quarter of employment decline (-3,700). This was largely due to a fall in employment in the precision engineering and transport engineering clusters as firms supporting the global oil & gas industry faced weak demand conditions as a result of low oil prices (Exhibit 1.7).

Employment in the construction sector contracted by 5,200 on the back of sluggish private sector construction activities. This was the first quarterly employment decline in the sector since the first quarter of 2015.

Employment in the services sector rose by 5,700 in the third quarter. However, this was lower than the gains seen in the previous quarter (7,600) and the third quarter of 2015 (13,300). Among the services sectors, the wholesale & retail trade sector registered the largest employment decline (-1,400), in part due to the sluggish performance of retail sales (excluding motor vehicles). By contrast, employment growth remained strong in the "other services industries" (3,100), supported by robust growth in the education, health & social services segment.

As at September 2016, total employment reached 3,670,200, 0.8 per cent higher compared to a year ago.

[3] *Based on preliminary estimates.*

Exhibit 1.7: Changes in Employment by Industry in 3Q 2016

Hiring Expectations

The hiring outlook of the manufacturing sector continued to be negatively affected by firms in the oil-related segments. According to EDB's Business Expectations Survey for the Manufacturing Sector, a net weighted balance of 9 per cent of manufacturers expected to hire fewer workers in the fourth quarter of 2016 as compared to the third quarter. This was primarily driven by negative hiring expectations in the marine & offshore engineering segment, in which a net weighted balance of 44 per cent of firms expected lower levels of hiring. By contrast, firms in the semiconductors and medical technology segments were more optimistic, with a net weighted balance of 10 per cent and 38 per cent of firms in the respective segments expecting to increase hiring in the fourth 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 6 per cent of services firms expected to increase hiring in the fourth quarter of 2016. In particular, a net weighted balance of 24 per cent of firms in the retail trade and 20 per cent of firms in the food & beverage services industries expected to hire more workers, potentially reflecting labour demand for year-end seasonal festivities.

COMPETITIVENESS

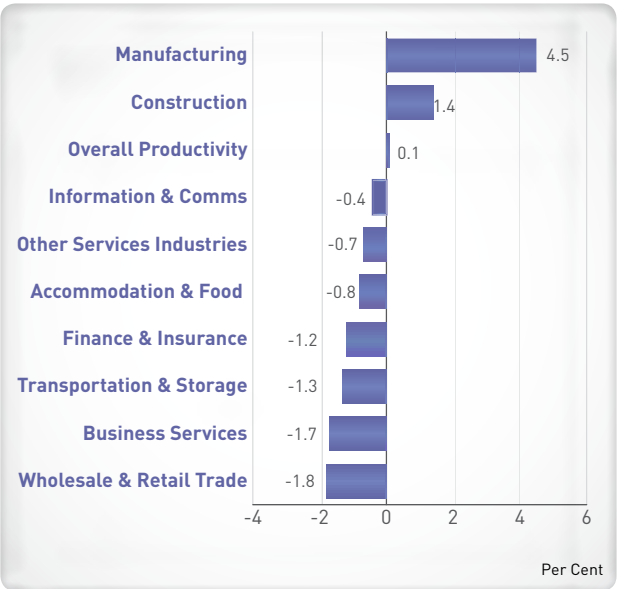
Productivity

Overall labour productivity, as measured by value-added per worker, grew by 0.1 per cent in the third quarter compared to the same period a year ago (Exhibit 1.8).

The manufacturing (4.5 per cent) and construction (1.4 per cent) sectors saw the highest productivity growth rates. By contrast, the wholesale & retail trade (-1.8 per cent), business services (-1.7 per cent) and transportation & storage (-1.3 per cent) sectors experienced the sharpest declines in productivity.

Outward-oriented sectors as a whole registered higher productivity growth than domestically-oriented sectors. Compared to the same period last year, the productivity of outward-oriented sectors improved by 0.5 per cent in the third quarter, while that of domestically-oriented sectors declined by 0.8 per cent.[4]

Exhibit 1.8: Changes in Value-added per Worker for the Overall Economy and Sectors in 3Q 2016



[4] *Based on MTI estimates. Outward-oriented sectors refer to manufacturing, wholesale trade, transportation & storage, accommodation, information & communications, and finance & insurance. Domestically-oriented sectors refer to construction, retail trade, food & beverage services, business services and other services industries.*

Unit Labour Cost and Unit Business Cost

Overall unit labour cost (ULC) for the economy rose by 3.9 per cent in the third quarter, faster than the 3.7 per cent increase in the second quarter (Exhibit 1.9). The increase in overall ULC was driven by an increase in total labour cost per worker and weak labour productivity growth.

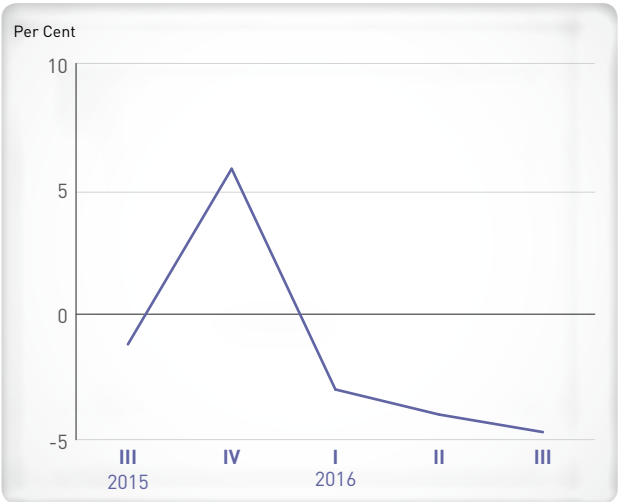
Across broad sectors, the ULC for the manufacturing sector declined by 0.8 per cent, the third consecutive quarter of decline. The dip in ULC continued to be the result of productivity gains in the sector.

By contrast, services ULC increased by 5.0 per cent in the third quarter. All the services sectors saw increases in their respective ULCs, in part due to a decline in their productivity. Construction ULC also increased by 3.6 per cent, as the rise in total labour cost per worker outpaced the growth in labour productivity for the sector.

Exhibit 1.9: Changes in Unit Labour Cost in 3Q 2016

Unit business cost (UBC) for the manufacturing sector fell by 4.7 per cent in the third quarter, extending the 4.0 per cent decline in the previous quarter (Exhibit 1.10). The decline in manufacturing UBC was driven by a fall in the unit services cost (including utilities and rental costs) and also the ULC for the sector.

Exhibit 1.10: Changes in Unit Business Cost for Manufacturing

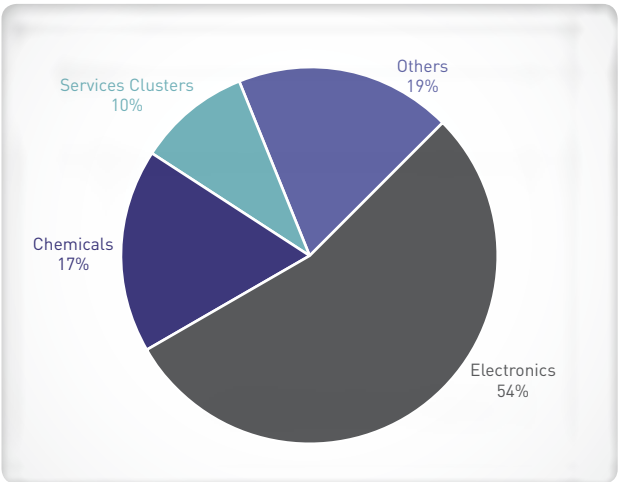


Investment Commitments

Investment commitments in terms of total fixed asset investments (FAI) and total business expenditure (TBE) amounted to $1.8 billion and $0.9 billion respectively in the third quarter (Exhibit 1.11 and Exhibit 1.12).

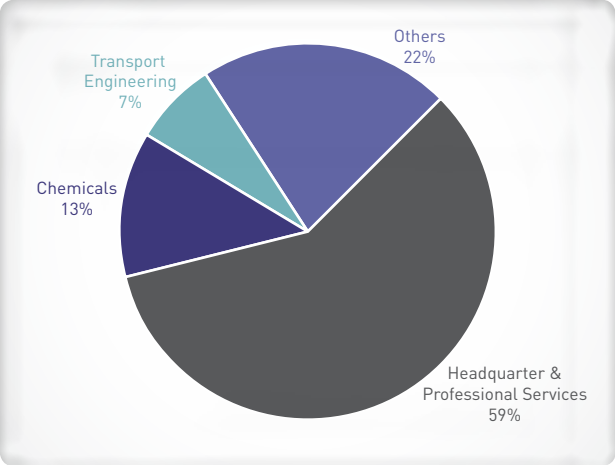
In terms of FAI, the largest contribution came from the electronics cluster, which garnered $1.0 billion in commitments, mainly from the semiconductors segment. This was followed by the chemicals cluster which secured $0.3 billion in commitments, the bulk of which were in the specialty chemicals segment. Investors from the United States contributed the most to FAI commitments, accounting for 66 per cent ($1.2 billion) of total FAI committed.

Exhibit 1.11: Fixed Asset Investments by Industry Cluster in 3Q 2016



In terms of TBE, the headquarters & professional services cluster garnered the highest amount of commitments, at $0.5 billion, followed by the chemicals cluster, at $0.1 billion. Similarly, investors from the United States were the largest contributors to TBE, accounting for 30 per cent ($0.3 billion) of total TBE committed.

Exhibit 1.12: Total Business Expenditure by Industry Cluster in 3Q 2016



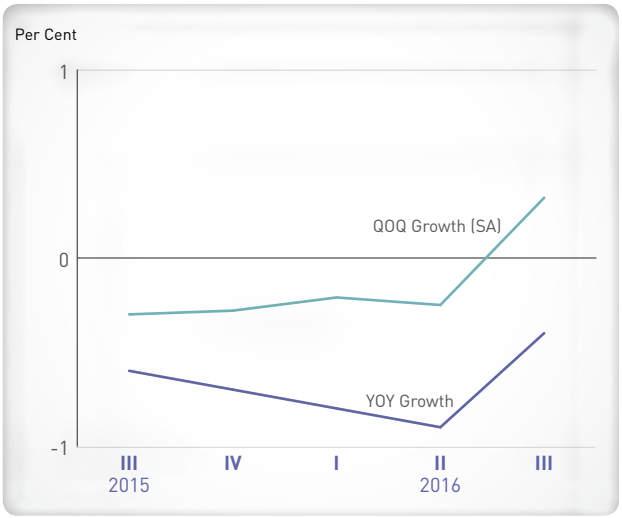
When fully realised, these commitments are expected to generate value-added of $2.1 billion and more than 3,500 jobs.

PRICES

Consumer Price Index

The Consumer Price Index (CPI) fell by 0.4 per cent on a year-on-year basis in the third quarter, following the 0.9 per cent decline in the previous quarter (Exhibit 1.13). On a quarter-on-quarter seasonally-adjusted basis, the CPI rose by 0.3 per cent, reversing the 0.2 per cent decline in the preceding quarter.

Exhibit 1.13: Changes in CPI



Among the CPI categories, food was the largest positive contributor to CPI inflation in the third quarter, with prices rising by 2.1 per cent on a year-on-year basis (Exhibit 1.14). This was due to price increases for hawker food and restaurant meals, as well as non-cooked food items such as fish & seafood, vegetables and meat. Education costs rose by 3.4 per cent as a result of higher fees at commercial institutions, universities, polytechnics, childcare centres and kindergartens. The prices of household durables & services went up by 3.1 per cent due to an increase in the salaries of foreign domestic workers.

Recreation & culture costs increased by 1.1 per cent on account of the higher costs of holiday travel and newspapers, which more than offset the fall in the cost of cinema tickets. Healthcare costs rose by 0.6 per cent as the higher cost of outpatient services outweighed the decline in the cost of hospital services. Communications costs edged up by 0.8 per cent because of the higher cost of telecommunication services.

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

					Per Cent
	2015		2016		
	III	IV	I	II	III
All items	-0.6	-0.7	-0.8	-0.9	**-0.4**
Food	1.8	1.7	2.0	2.2	**2.1**
Clothing & Footwear	0.7	1.2	2.1	0.6	**-1.6**
Housing & Utilities	-3.6	-4.2	-4.1	-4.2	**-4.3**
Household Durables & Services	-1.9	-1.4	-0.8	2.3	**3.1**
Health Care	-0.1	-0.2	0.7	0.9	**0.6**
Transport	-1.4	-1.2	-2.9	-5.2	**-1.6**
Communication	-0.6	-0.5	-1.1	-0.5	**0.8**
Recreation & Culture	0.4	0.9	0.4	1.2	**1.1**
Education	3.6	3.7	2.5	3.2	**3.4**
Miscellaneous Goods & Services	-0.3	-0.4	0.5	0.4	**0.0**

The price gains in these CPI categories were outweighed by declines in other categories. In particular, housing & utilities continued to pose the largest drag on headline inflation, with prices declining by 4.3 per cent as the fall in accommodation costs, electricity tariffs and gas tariffs more than offset the rise in housing maintenance charges. Transport costs saw a decline of 1.6 per cent as lower petrol prices, car prices, air fares and bus & train fares outweighed the effect of higher vehicle repair & maintenance fees and road tax. Clothing & footwear costs came down by 1.6 per cent due to cheaper footwear and ready-made garments.

On the other hand, the cost of miscellaneous goods & services was unchanged as the lower prices of personal care items were fully offset by the higher prices of cigarettes and personal effects.

INTERNATIONAL TRADE

Merchandise Trade

Singapore's total merchandise trade fell by 5.0 per cent year-on-year in the third quarter, following the 5.7 per cent decline in the preceding quarter (Exhibit 1.15). This was mainly due to the 20 per cent drop in oil trade in nominal terms.

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

						Per Cent
	2015			2016		
	III	IV	Ann	I	II	III
Merchandise Trade	-8.5	-7.7	-9.5	-9.7	-5.7	**-5.0**
Merchandise Exports	-8.0	-5.7	-7.2	-11.6	-4.7	**-3.5**
Domestic Exports	-14.4	-12.9	-12.9	-16.8	-6.0	**-8.0**
Oil	-32.6	-29.9	-32.2	-33.3	-18.0	**-13.7**
Non-Oil	-2.2	-3.5	-0.1	-9.3	-0.2	**-5.4**
Re-Exports	-0.5	1.4	-0.9	-6.5	-3.4	**1.0**
Merchandise Imports	-9.1	-9.9	-12.1	-7.4	-6.7	**-6.7**
Oil	-34.1	-40.0	-38.2	-37.6	-29.2	**-23.9**
Non-Oil	2.4	1.2	-0.3	1.2	0.3	**-1.6**

Total merchandise exports declined by 3.5 per cent in the third quarter, extending the 4.7 per cent contraction in the preceding quarter. This marked the ninth consecutive quarter of decline, and was caused by an 8.0 per cent drop in domestic exports which more than offset the 1.0 per cent growth in re-exports.

The fall in domestic exports was due to declines in both oil and non-oil domestic exports. In particular, oil domestic exports declined by 14 per cent in the third quarter, continuing the 18 per cent decrease in the previous quarter, due to lower oil prices on a year-ago basis. In volume terms, oil domestic exports rose by 4.1 per cent.

Non-oil domestic exports (NODX) contracted at a faster pace of 5.4 per cent in the third quarter, as compared to the 0.2 per cent decrease in the previous quarter. This was due to declines in both electronics and non-electronics NODX.

Total merchandise imports fell by 6.7 per cent in the third quarter, mirroring the decline registered in the previous quarter. This was due to declines in both oil and non-oil imports. Specifically, oil imports decreased by 24 per cent on the back of weak oil prices and lower import volumes. Meanwhile, non-oil imports fell by 1.6 per cent, driven by declines in both electronics and non-electronics imports.

Services Trade

Total services trade expanded by 0.1 per cent in the third quarter, moderating from the 2.3 per cent growth in the previous quarter (Exhibit 1.16). Services exports rose by 0.2 per cent, slower than the 3.2 per cent growth in the preceding quarter. The rise in services exports can be attributed to an increase in travel, insurance, and telecommunications, computer & information services exports. Services imports grew by 0.1 per cent, following the 1.4 per cent growth in the previous quarter. This was mainly due to increases in payments for the use of intellectual property and imports of insurance services.

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

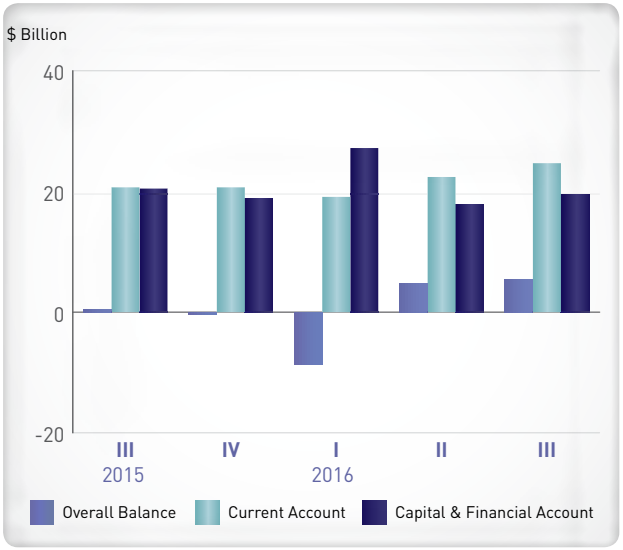
Per Cent

	2015			2016		
	III	IV	Ann	I	II	III
Total Services Trade	1.1	-0.3	0.3	-0.2	2.3	**0.1**
Services Exports	1.4	0.0	0.5	-0.5	3.2	**0.2**
Services Imports	0.8	-0.5	0.1	0.2	1.4	**0.1**

BALANCE OF PAYMENTS

The overall balance of payments rose slightly to $5.4 billion in the third quarter from $4.8 billion in the preceding quarter. This was due to a larger surplus in the current account, which more than offset the increase in net outflows from the capital and financial account.

Exhibit 1.17: Balance of Payments[5]



Current Account

The rise in the current account surplus to $25 billion in the third quarter, from $22 billion in the previous quarter, was due to a slightly higher goods surplus, as well as smaller deficits in both the services and primary income balances. Meanwhile, the secondary income deficit was relatively stable.

The surplus in the goods balance increased by $0.4 billion to $31 billion in the third quarter, as exports rose slightly and imports fell. In comparison, the services deficit shrank by $0.9 billion to $0.6 billion. This largely reflected a decline in net payments for travel and other business services as well as for the use of intellectual property, while net receipts from financial and transport services rose. These factors more than offset the decline in net receipts from maintenance & repair and insurance services.

Meanwhile, the deficit in the primary income balance narrowed to $2.9 billion from $3.8 billion in the previous quarter, as income receipts rose faster than income payments.

[5] *Decrease in assets and liabilities, and net inflows in net balances, are indicated by a minus (-) sign. For more details regarding the change in sign convention to the financial account, please refer to DOS's information paper on "Singapore's International Accounts: Methodological Updates and Recent Developments".*

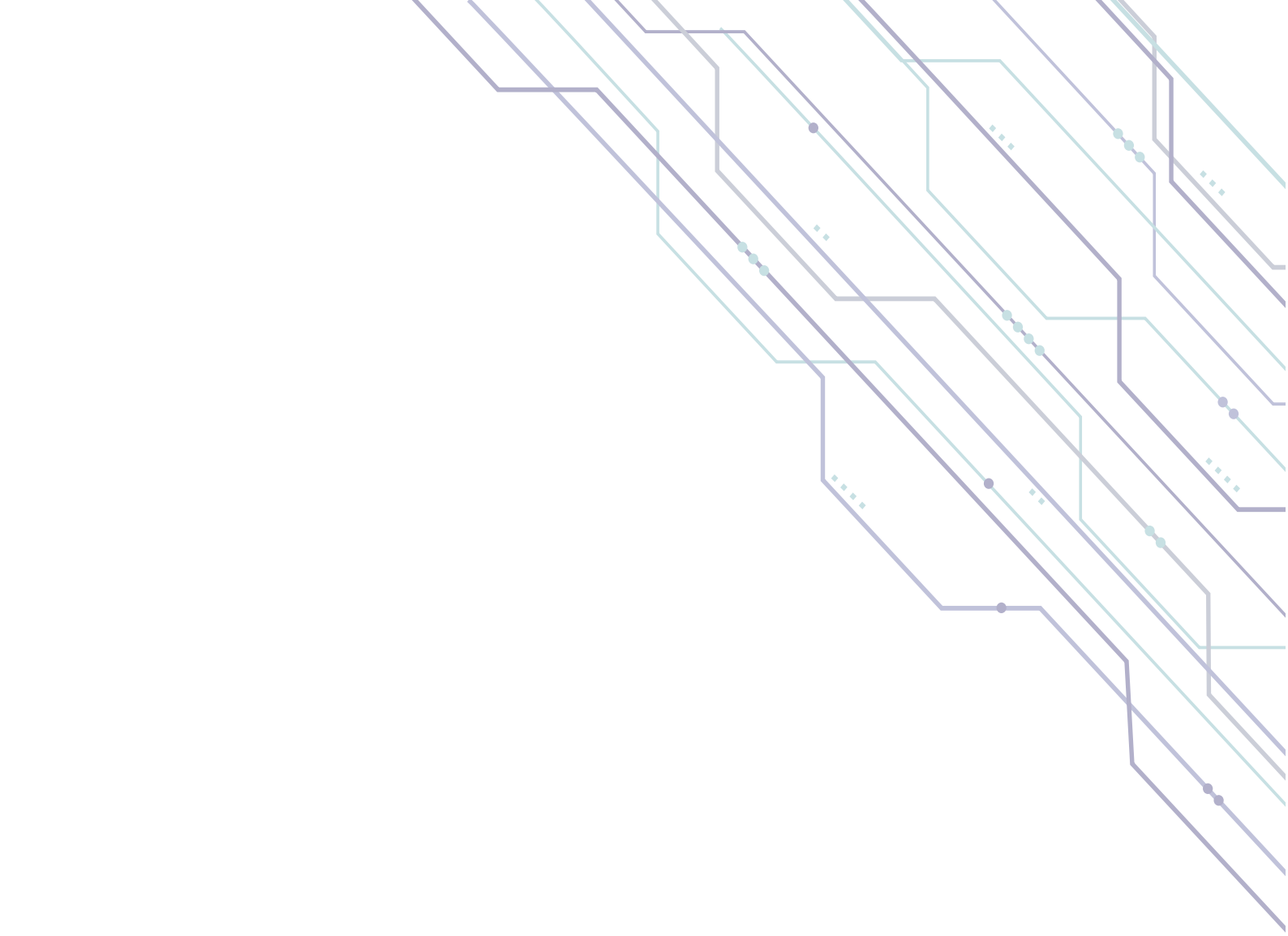
Capital and Financial Account

Net outflows from the capital and financial account rose to $19 billion in the third quarter, from $18 billion in the preceding quarter. Smaller net inflows of financial derivatives as well as larger net outflows of portfolio investment more than offset the decline in the net outflows of "other investment".

In the financial derivatives account, net inflows fell by $4.1 billion to $0.7 billion in the third quarter, while in the portfolio investment account, net outflows increased by $1.2 billion to $14 billion. For the latter, domestic deposit-taking corporations increased their net purchases of foreign securities, alongside foreigners' disposal of securities issued by domestic banks. Net portfolio investment saw increased outflows from the domestic banking sector, which more than offset the effect of the reversal from small net outflows to net inflows by the domestic non-bank private sector.

In the "other investment" account, net outflows declined by $3.6 billion to $19 billion in the third quarter. This was driven by an increase in net inflows to the domestic non-bank private sector, as well as a reduction in net outflows from domestic deposit-taking corporations.

Meanwhile, net inflows of direct investment remained broadly unchanged at $13 billion in the third quarter, as a fall in foreign direct investment into Singapore was offset by a decline in residents' investment abroad.

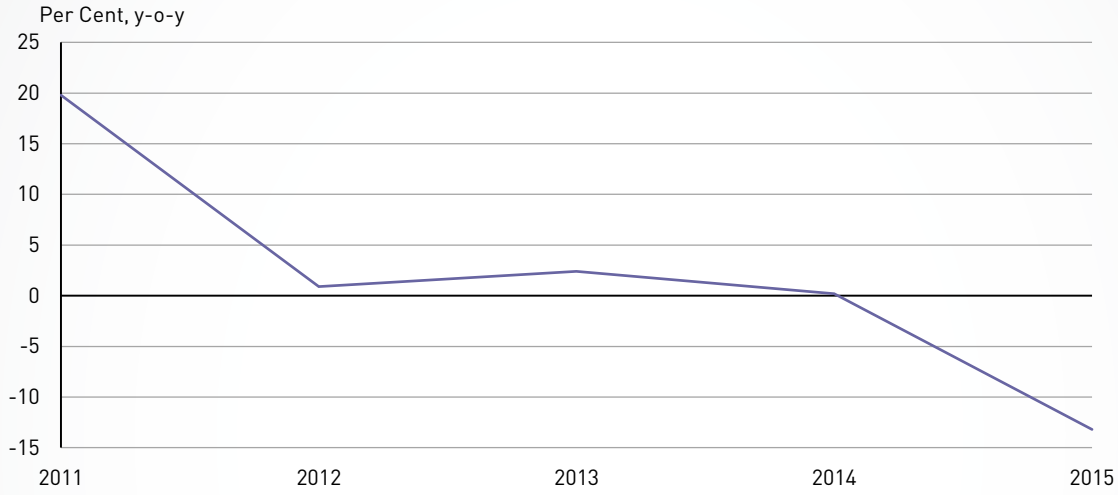


Box 1.1: Recent Trends in Singapore's Merchandise and Services Exports

Global merchandise exports growth has weakened in recent years

Growth in global merchandise exports has been sluggish in recent years. After rebounding strongly from the Global Financial Crisis (GFC) in 2009, global merchandise exports growth slowed between 2012 and 2014 before turning negative in 2015 (Exhibit 1). Compared to the pre-GFC period of 2004 to 2008, when global merchandise exports rose at a compound annual growth rate (CAGR) of 15 per cent, global merchandise exports declined at a CAGR of 2.6 per cent from 2011 to 2015.

Exhibit 1: Growth in Global Merchandise Exports

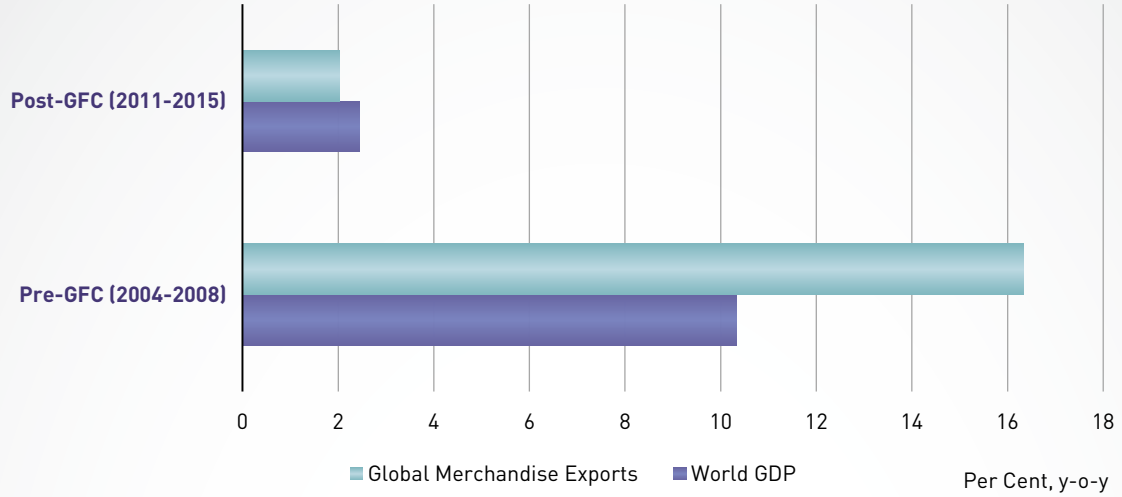


Source: World Trade Organization

There are a few factors for the slowdown in global merchandise exports. The first is sluggish global growth in the post-GFC period. The second is a weakening of the elasticity of global merchandise trade growth with respect to global GDP growth during this period (Exhibit 2). The reasons for the weaker trade elasticity include the shift towards consumption-driven growth and weaker investments[1], especially in the US and China. Increased in-sourcing of intermediate goods such as electronics parts and components, particularly in China, has also posed headwinds to merchandise exports. The third factor is the sharp decline in global oil prices in the second half of 2014 and 2015, which in turn weighed on the nominal value of oil trade in recent years.

[1] *Investments tend to be more goods import intensive than consumption.*

Exhibit 2: Average Annual Growth of World GDP and World Merchandise Exports



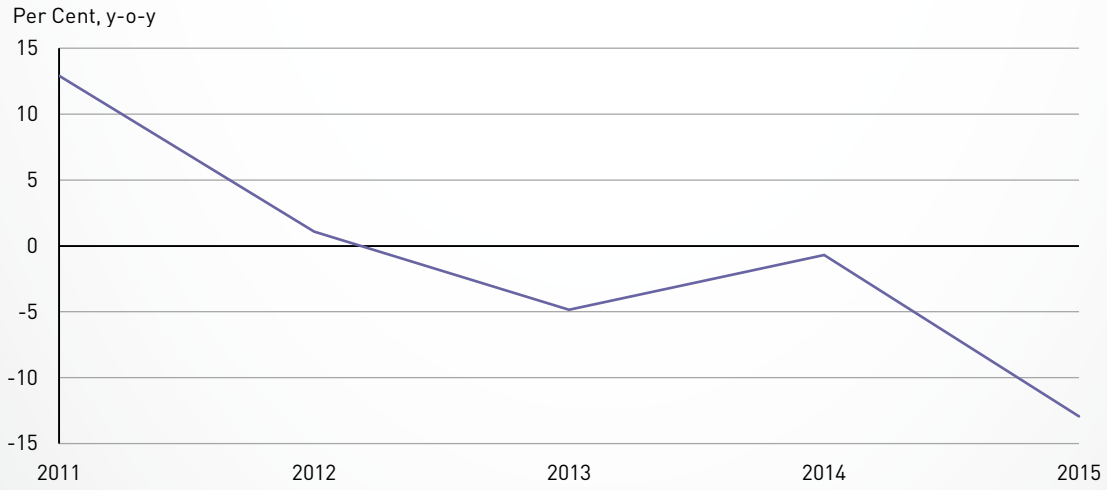
Source: International Monetary Fund, World Trade Organization

In line with this trend, Singapore's and other regional economies' merchandise exports have also performed sluggishly in recent years

Mirroring global trends, regional economies and Singapore also experienced sluggish merchandise exports growth in the post-GFC period. For example, in South Korea and Taiwan, merchandise exports rose by a CAGR of only 0.9 and 0.3 per cent respectively from 2011 to 2015; while in Malaysia and Indonesia, merchandise exports declined by 1.1 and 5.2 per cent respectively over the same period.

In Singapore, merchandise exports contracted by a CAGR of 1.9 per cent between 2011 and 2015, after seeing a strong rebound following the GFC. This was in contrast to the pre-GFC years, when merchandise exports grew by a robust CAGR of 9.2 per cent between 2004 and 2008. The current weakness in merchandise exports is mainly due to domestic exports, which declined by a CAGR of 4.5 per cent between 2011 and 2015 (Exhibit 3).

Exhibit 3: Changes in Singapore's Domestic Exports



Source: International Enterprise Singapore

In particular, Singapore's domestic exports were weighed down by a relatively large exposure to oil exports. As Singapore is a major oil trading and refinery hub, oil accounted for 31 per cent of its domestic exports in 2015, significantly higher than that for many regional economies.[2] Due to the sharp decline in global oil prices, the nominal value of Singapore's oil domestic exports fell by 8.6 per cent on a CAGR basis between 2011 and 2015, a much larger fall compared to the 2.3 per cent decline in non-oil domestic exports (NODX) over the same period.[3]

Another factor underpinning the sluggish performance of Singapore's domestic exports is the weak performance of electronics exports. There are three main reasons for this. First, global semiconductor demand has been weak in recent years, with global semiconductor sales projected to contract by 0.9% in 2016 after falling by 1.9% in 2015.[4] Second, as China moves up the electronics value chain, it is in-sourcing more of the electronics components required to meet its domestic production needs. As a key player in the regional electronics supply chain, Singapore's exports have been adversely affected by China's import substitution. Third, Singapore's electronics cluster has seen a shift towards fabless semiconductor companies. Such companies tend to offshore their production to production bases in the region, even as they strengthen their focus on higher-value activities (e.g., IC design, R&D, regional distribution and supply chain management) in Singapore. While this has contributed to the growth of the domestic electronics cluster, it has weighed on the shipment of electronics goods from Singapore.

Excluding oil and electronics exports, Singapore's domestic exports registered a marginal decline of 0.5 per cent on a CAGR basis from 2011 to 2015. This is far more moderate than the 4.5 per cent decline seen in overall domestic exports, and is comparable to that experienced by regional economies like Taiwan and South Korea (excluding oil and electronics exports).

Services exports are expected to play an increasingly important role in the Singapore economy

While merchandise exports remain an important part of the Singapore economy, services exports are expected to play an increasingly prominent role in Singapore's economic growth. Between 2011 and 2015, services exports grew by a robust CAGR of 6.4 per cent, even as merchandise exports saw a decline for the reasons given above. This strong performance was supported by healthy growth in the exports of financial services and other business services[5]. Specifically, the exports of financial services and other business services rose by a CAGR of 9.9 per cent and 11 per cent respectively between 2011 and 2015, outperforming the performance of the Newly Industrialised Economies (NIEs) and ASEAN-4[6] (Exhibit 4). The growth in our exports in these segments was supported by expanding regional demand, and likely reflects Singapore's competitive strengths in such trade with Asia. On the other hand, the segments of our services exports which support merchandise trade, such as the exports of transport services, have weakened in tandem with merchandise trade. For example, in 2015, the exports of transport services registered a 0.3 per cent decline, following the 15 per cent growth in the preceding year.

[2] Oil accounts for a much lower share of exports in regional economies such as China (1.2 per cent), South Korea (6.3 per cent) and Hong Kong (0.1 per cent).

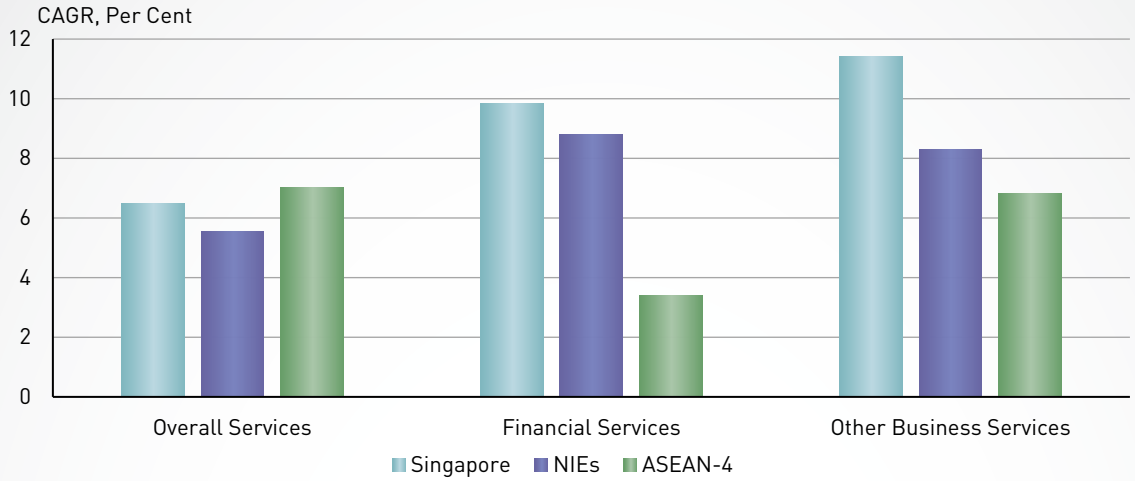
[3] The decline in oil domestic exports was entirely due to oil prices. Real oil domestic exports, which measure the volume of oil exported, registered a CAGR of 4.9 per cent during the period.

[4] Gartner estimates.

[5] Examples of other business services include accounting, legal, engineering, business management, and trade-related services.

[6] ASEAN-4 comprises Indonesia, Malaysia, Thailand and Philippines.

Exhibit 4: Growth in Services Exports for Singapore and Selected Regional Economies from 2011 to 2015, by Services Segments



Source: World Trade Organization

Looking ahead, structural shifts in the global economy present both headwinds and new opportunities to Singapore's exports

Given sluggish global demand and structural headwinds affecting merchandise trade, Singapore's merchandise exports performance has remained lacklustre in 2016. In the first three quarters of 2016, domestic exports fell by 10 per cent, largely weighed down by oil and electronics domestic exports. On the other hand, services exports grew by 1.0 per cent over this period.

While the on-going structural shifts in the global and regional economies are likely to continue to pose headwinds to Singapore's merchandise exports, they also present new opportunities for Singapore to grow our services exports over the longer term. For example, the shift towards consumption-driven growth in China could bring about new opportunities for sectors that are able to cater to their increasing consumption needs either directly or via global value chains. Sustained economic growth and the rising middle class in ASEAN and India will also lead to increased consumption and infrastructure spending in these economies, and present export opportunities for Singapore.

Singapore companies in key outward-oriented services sectors – such as the finance & insurance, information & communications and professional services sectors – have already tapped on the opportunities in these regions to grow their services exports in recent years. As Singapore continues to deepen its Free Trade Agreements (FTAs) with regional economies, in particular through the ASEAN Economic Community (AEC) and the Regional Comprehensive Economic Partnership (RCEP), the improved market access will position our companies well for growth opportunities in the region in the years ahead.

Contributed by:

Economics Division
Foreign Economic Policy Division
Ministry of Trade and Industry

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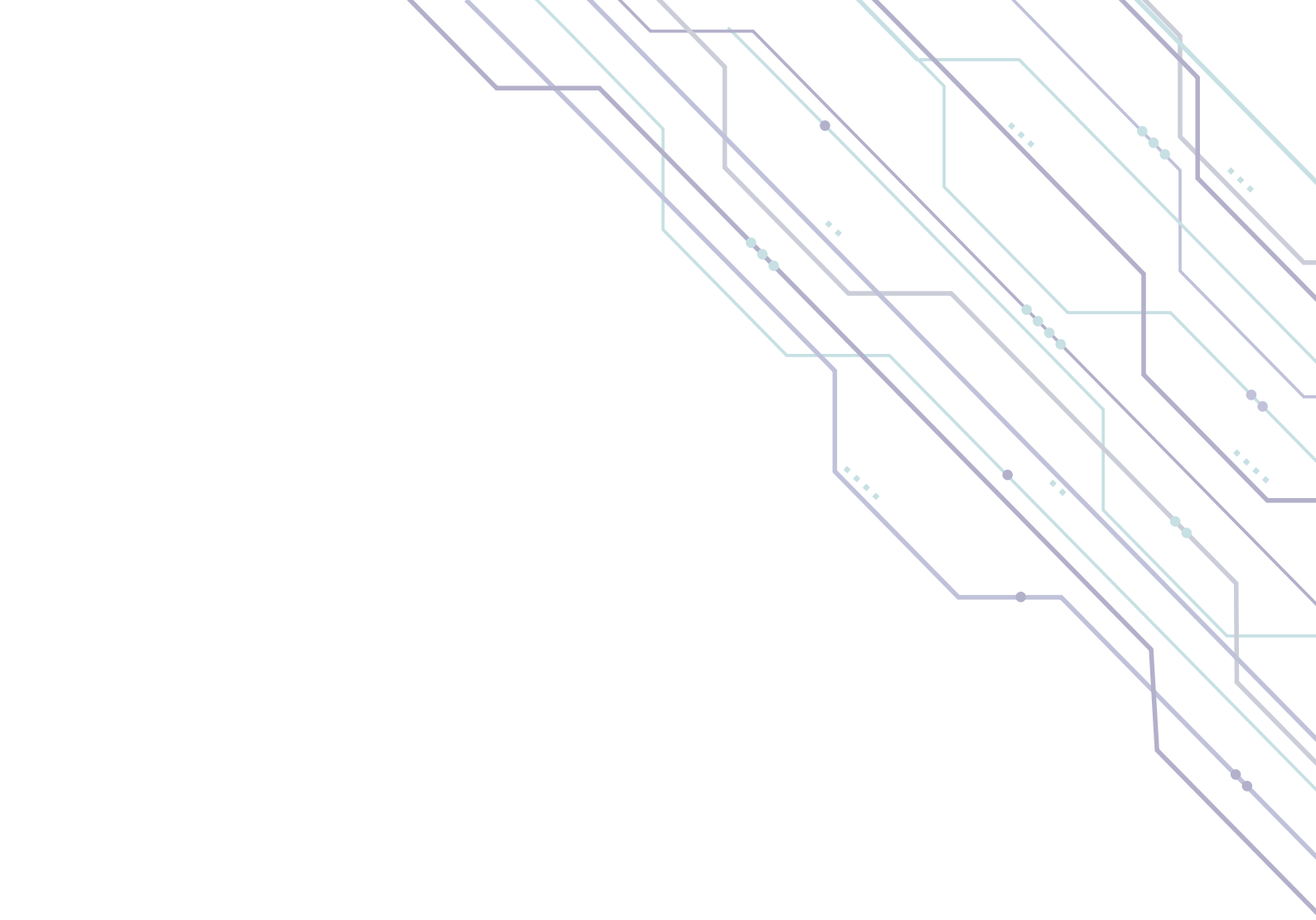


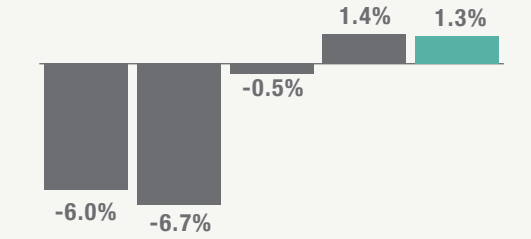
CHAPTER 2
Sectoral Performance

Image courtesy of Singapore Economic Development Board

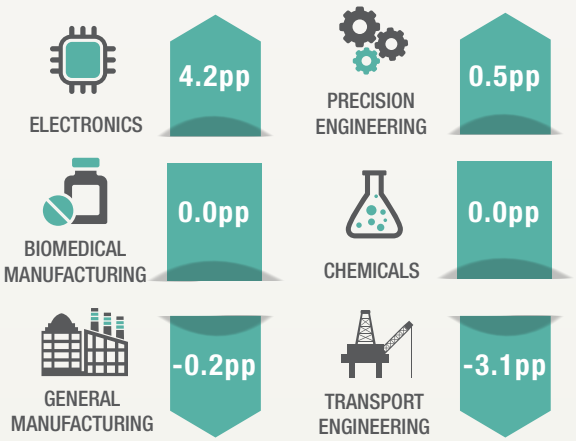
CHAPTER 2
SECTORAL PERFORMANCE

MANUFACTURING

Real Growth

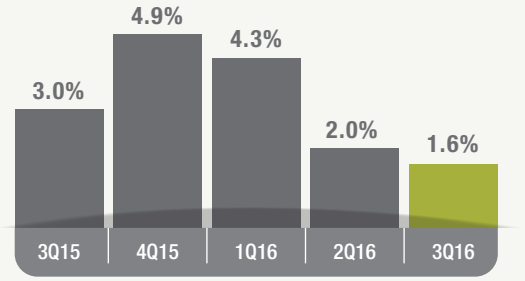


Clusters in Manufacturing Sector %-point contribution in 3Q16

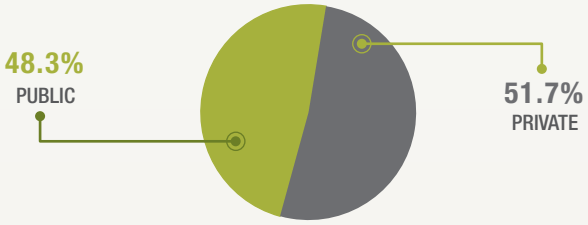


CONSTRUCTION

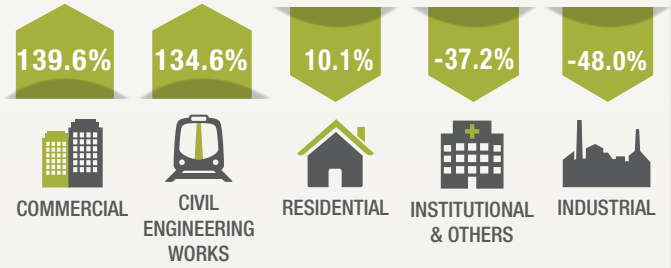
Real Growth



Certified Payments in 3Q16

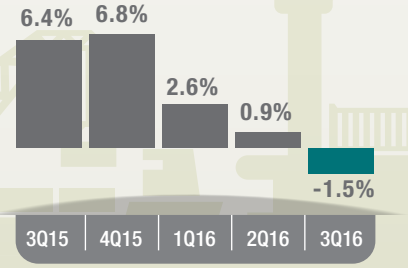


Contracts Awarded in 3Q16

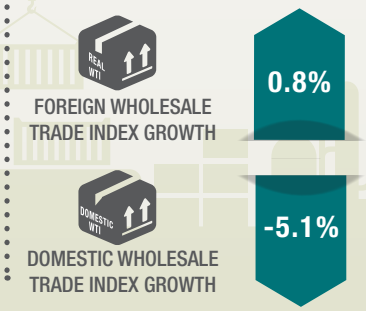


WHOLESALE & RETAIL TRADE

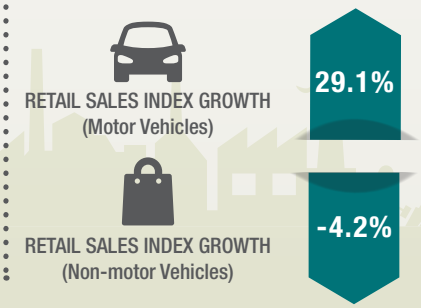
Real Growth



Wholesale Trade

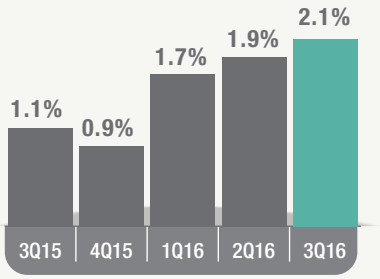


Retail Trade



ACCOMMODATION & FOOD SERVICES

Real Growth



Accommodation

Performance of hotels

LUXURY

UPSCALE

MID-TIER

ECONOMY

Gross lettings growth: 5.4%

Room revenue growth: 2.8%

Food Services

Performance of F&B (Sales growth)

FAST FOOD 3.2%

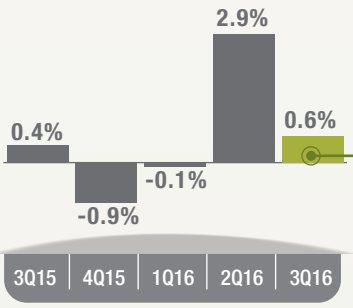
OTHERS 2.7%

CATERING -1.0%

RESTAURANTS -4.5%

TRANSPORTATION & STORAGE

Real Growth



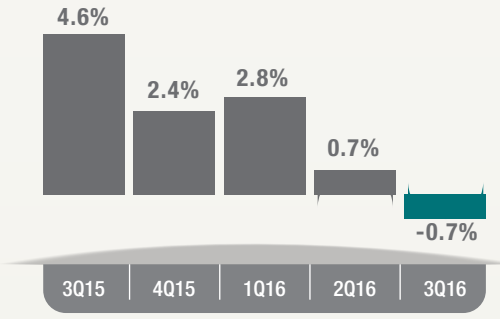
TOTAL SEA CARGO HANDLED GROWTH 0.1%

MOTOR-VEHICLE POPULATION GROWTH -0.3%

AIR PASSENGERS HANDLED GROWTH 3.1%

FINANCE & INSURANCE

Real Growth



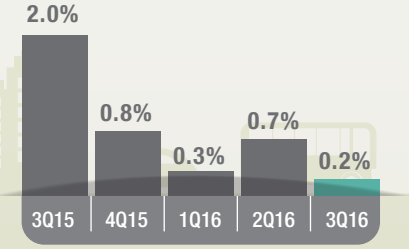
Growth of bank loans & advances to non-bank customers in 3Q16

LOANS TO BUSINESSES -3.4%

CONSUMER LOANS +3.1%

BUSINESS SERVICES

Real Growth



Private Residential Real Estate

UNITS TRANSACTED (Y-O-Y CHANGE) 10.5%

PRICE INDEX (Q-O-Q CHANGE) -1.5%

OVERVIEW

In the third quarter of 2016,

- The manufacturing sector expanded by 1.3 per cent, extending the growth of 1.4 per cent in the previous quarter. Growth was supported by higher output in the electronics and precision engineering clusters, while lower output levels in the biomedical manufacturing, chemicals and transport engineering clusters weighed on growth.

- The construction sector grew by 1.6 per cent, easing from the 2.0 per cent expansion in the preceding quarter. The slowdown came on the back of a decline in private sector construction activities, which was in turn weighed down by a slump in private residential building works.

- The wholesale & retail trade sector contracted by 1.5 per cent, reversing the 0.9 per cent expansion in the previous quarter. The contraction was due to the weak performance of the wholesale trade segment.

- The transportation & storage sector grew by 0.6 per cent, moderating from the 2.9 per cent expansion in the previous quarter. The moderation was primarily due to the air transport and water transport segments, which were weighed down by a slowdown in the growth of air passenger traffic and sea cargo volume respectively.

- The accommodation & food services sector expanded by 2.1 per cent, extending the 1.9 per cent growth in the previous quarter. Growth was supported by the accommodation segment on the back of a continued increase in visitor arrivals.

- The finance & insurance sector contracted by 0.7 per cent, a pullback from the 0.7 per cent growth in the preceding quarter. Persistent weakness in offshore lending, fund management and security dealing activities posed a drag on growth.

- The business services sector grew by 0.2 per cent, moderating slightly from the 0.7 per cent expansion in the preceding quarter. Growth in the sector was pulled down primarily by the real estate segment. However, the professional services segment provided some support to growth.

MANUFACTURING

In the third quarter, manufacturing output rose by 1.3 per cent, similar to the 1.4 per cent increase in the second quarter (Exhibit 2.1). Growth was supported by higher output in the electronics and precision engineering clusters, which more than offset lower output levels in the biomedical manufacturing, chemicals and transport engineering clusters (Exhibit 2.2).

Exhibit 2.1: Manufacturing Sector's Growth Rates

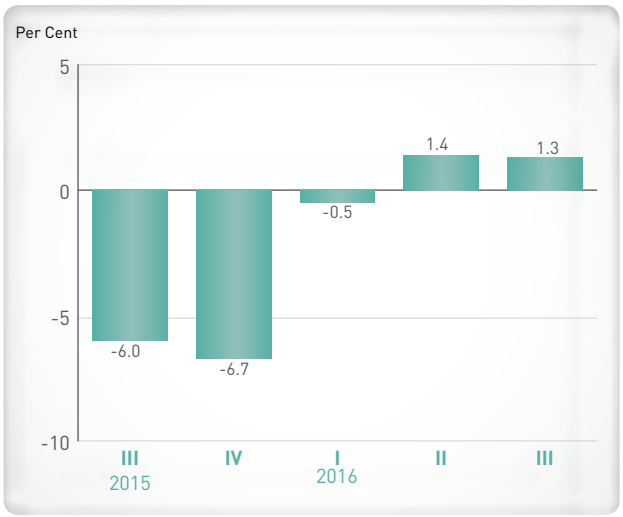
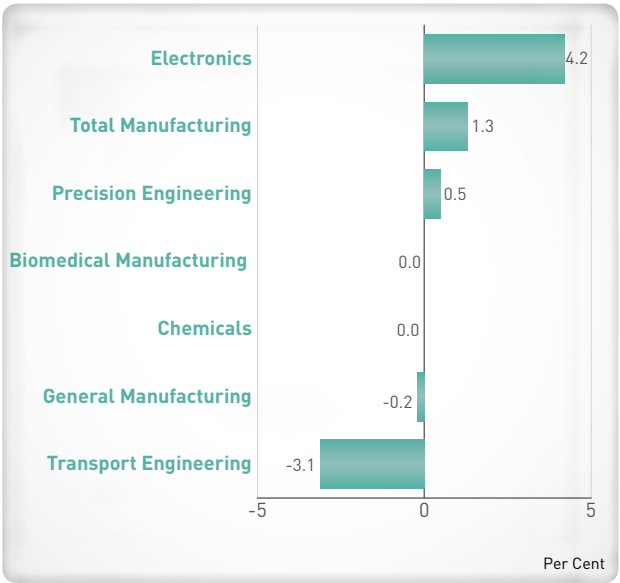


Exhibit 2.2: Percentage-Point Contribution to Manufacturing Sector's Growth in 3Q 2016



Output of the electronics cluster rose by 15 per cent in the third quarter, as improved global semiconductor demand boosted output in the semiconductors segment (30 per cent). However, growth in the semiconductors segment was partially offset by declines in the rest of the electronics segments. In particular, the infocomms & consumer electronics, data storage, computer peripherals and other electronic modules & components segments contracted by 18 per cent, 16 per cent, 8.0 per cent and 0.9 per cent respectively.

The precision engineering cluster expanded by 3.6 per cent in the third quarter. The machinery & systems segment of the cluster grew by 8.0 per cent on the back of an increase in the production of semiconductor-related equipment and mechanical engineering works. On the other hand, the precision modules & components segment contracted by 3.2 per cent, weighed down by lower levels of production of optical instruments, metal precision components and fabricated metal products.

Output of the biomedical manufacturing cluster inched down by 0.1 per cent in the third quarter, pulled down by the 2.8 per cent decline in the output of the pharmaceuticals segment. On the other hand, the output of the medical technology segment continued to post healthy growth, increasing by 8.8 per cent on the back of higher export demand for medical instruments.

The chemicals cluster shrank by 0.4 per cent in the third quarter, mainly because of the petrochemicals segment, which contracted by 14 per cent due to plant maintenance shutdowns. By contrast, output in the other chemicals (9.6 per cent), specialty chemicals (5.6 per cent) and petroleum (5.4 per cent) segments increased and provided some support to the cluster. In particular, the other chemicals segment was bolstered by a higher output of fragrances, underpinned by healthy export demand.

The general manufacturing industries registered a 1.7 per cent drop in output in the third quarter, led by output declines in the printing and miscellaneous industries segments. Specifically, the printing segment contracted by 21 per cent due to weaker demand for commercial printing, while the miscellaneous industries segment shrank by 7.7 per cent on account of the lower output of fiberglass products, wooden furniture & fixtures and construction related materials. On the other hand, the food, beverages & tobacco segment expanded by 11 per cent due to higher export demand.

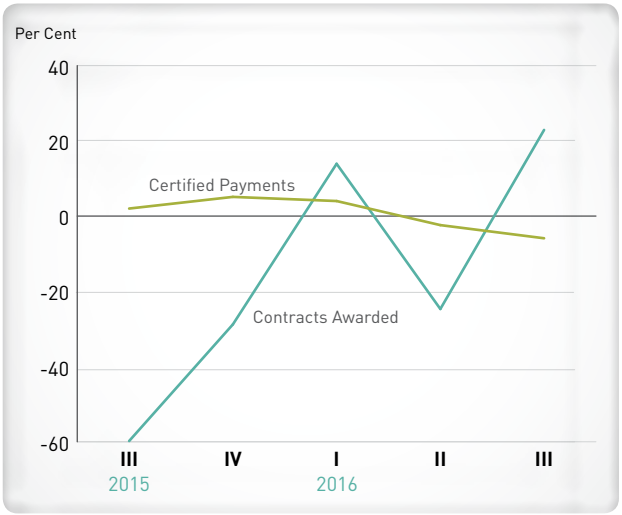
Output of the transport engineering cluster continued to shrink, declining by 19 per cent in the third quarter. Even as the land transport and aerospace segments registered output growth of 5.9 per cent and 1.3 per cent respectively, the contraction seen in the marine & offshore engineering (M&OE) segment (-32 per cent) weighed on the cluster's growth. Specifically, the output of the M&OE segment fell for the eighth consecutive quarter, as sluggish global capital expenditure for offshore production and exploration amidst the low oil price environment continued to place a drag on rig-building activities and the demand for oilfield & gasfield equipment.

CONSTRUCTION

The construction sector expanded by 1.6 per cent in the third quarter, moderating from the 2.0 per cent expansion registered in the previous quarter. The slowdown in growth came on the back of a drop in private sector construction activities, which was in turn dragged down by a contraction in private residential building works.

Nominal certified progress payments (a proxy for construction output) declined by 5.9 per cent in the third quarter, extending the 2.4 per cent fall in the previous quarter (Exhibit 2.3). The contraction was due to an 18 per cent decline in private certified progress payments, which was in turn mainly attributable to a weakness in private residential building works (-25 per cent) and private industrial building works (-21 per cent). The decline in private sector construction works was partially offset by healthy public sector construction works. Specifically, public certified progress payments grew by 13 per cent, in tandem with a robust expansion in public civil engineering works (26 per cent). Examples of public civil engineering works include the construction of various stations and associated tunnels for the Thomson-East Coast MRT Line.

Exhibit 2.3: Changes in Contracts Awarded and Certified Payments



Construction demand in terms of contracts awarded rebounded in the third quarter, increasing by 23 per cent, a reversal from the 25 per cent decline in the previous quarter (Exhibit 2.3). The expansion was due to a pick-up in private sector construction demand (56 per cent), which came on the back of a surge in private civil engineering contracts (679 per cent) – such as for construction works related to the 3-runway system project for Changi Airport – and private commercial building contracts (251 per cent). By contrast, public sector construction demand fell (-17 per cent) on the back of a decline in public commercial building contracts (-98 per cent) and public civil engineering contracts (-29 per cent).

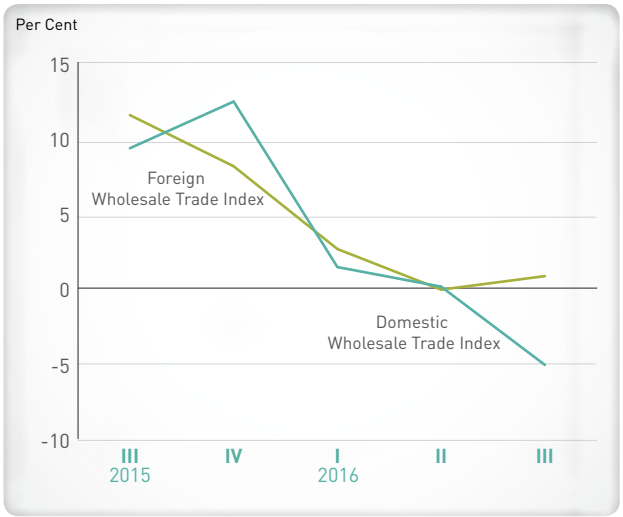
WHOLESALE & RETAIL TRADE

The wholesale & retail trade sector contracted by 1.5 per cent in the third quarter, a reversal from the 0.9 per cent growth in the previous quarter.

The wholesale trade segment was weighed down by weakness in domestic wholesale trade sales volume. In particular, the domestic wholesale trade index declined by 5.1 per cent in the third quarter, sliding from the 0.1 per cent expansion in the previous quarter (Exhibit 2.4). The weak performance in domestic wholesale trade could largely be attributed to a decline in the volume of sales of petroleum & petroleum products (-4.6 per cent), telecommunications & computers (-19 per cent) and electronic components (-12 per cent).

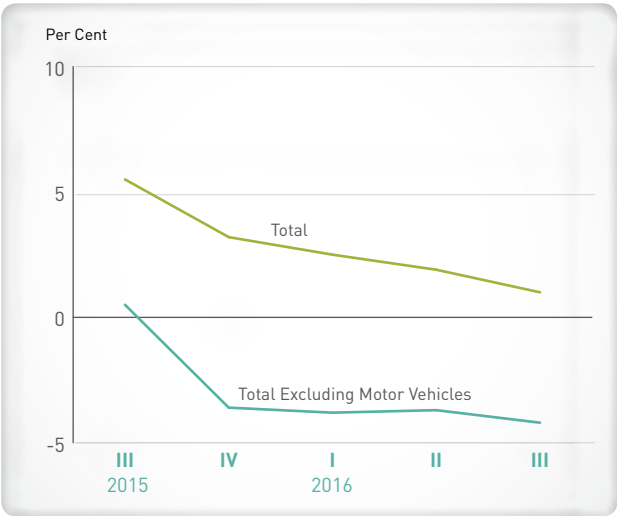
On the other hand, the foreign wholesale trade index expanded marginally by 0.8 per cent, an improvement from the 0.1 per cent contraction in the previous quarter. The increase in the index was largely driven by a rise in the sales volume of telecommunications & computers (13 per cent) and petroleum & petroleum products (1.8 per cent).

Exhibit 2.4: Changes in Wholesale Trade Index at Constant Prices



For the retail trade segment, the overall retail trade sales volume rose by 1.0 per cent in the third quarter, slower than the 1.9 per cent increase in the second quarter (Exhibit 2.5). Growth was supported primarily by a 29 per cent increase in the volume of motor vehicle sales, in tandem with a year-on-year uptick in the supply of Certificate of Entitlements in the third quarter. Excluding motor vehicle sales, the retail sales volume shrank by 4.2 per cent in the third quarter, extending the 3.7 per cent contraction recorded in the preceding quarter. The decline in retail sales volume (excluding motor vehicles) was more keenly felt by the retailers of discretionary goods. In particular, the sales of watches & jewellery and computer & telecommunications equipment registered the largest declines of 16 per cent and 15 per cent respectively.

Exhibit 2.5: Changes in Retail Price Index at Constant Prices

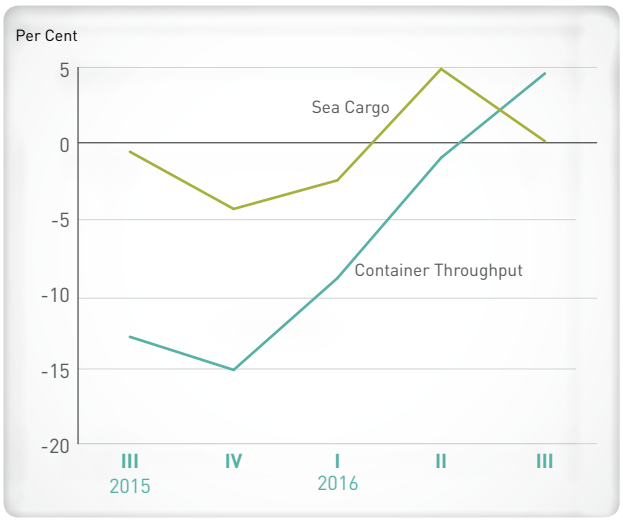


TRANSPORTATION & STORAGE

Growth in the transportation & storage sector came in at 0.6 per cent in the third quarter, slower than the 2.9 per cent in the previous quarter.

The water transport segment saw a moderation in growth in the third quarter, as growth in the volume of sea cargo handled slowed to 0.1 per cent, from 4.9 per cent in the previous quarter (Exhibit 2.6). The slower pace of growth in sea cargo handled was due to a 0.4 per cent contraction in oil-in-bulk cargo handled. By comparison, the amount of container throughput handled at Singapore's ports rose by 4.6 per cent, reversing the 1.0 per cent contraction in the previous quarter.

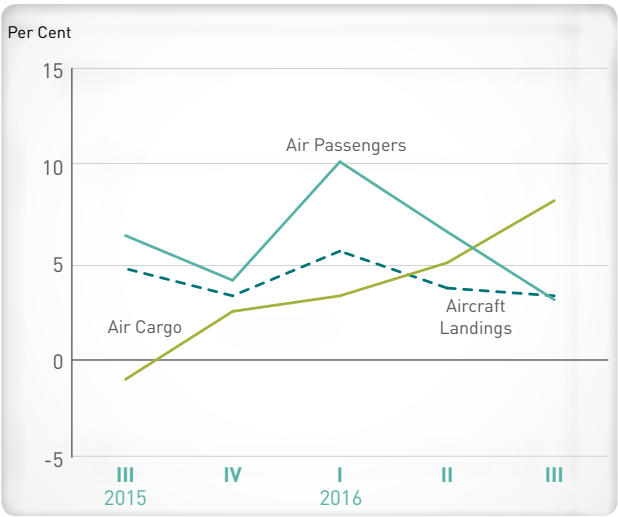
Exhibit 2.6: Changes in Container Throughput and Sea Cargo Handled



Similarly, the performance of the air transport segment moderated on the back of a slowdown in the growth of air passenger volume handled at Changi Airport. Specifically, the volume of air passenger traffic passing through Changi Airport rose by 3.1 per cent in the third quarter, easing from the 6.6 per cent increase in the second quarter (Exhibit 2.7). While the pace of growth in air passenger traffic slowed, the growth in total air cargo shipments handled at Changi Airport accelerated to 8.2 per cent, from 5.0 per cent in the preceding quarter.

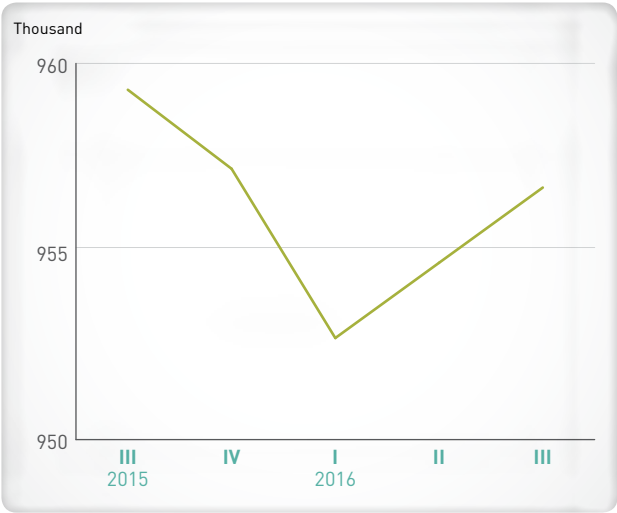
The number of aircraft landings rose by 3.3 per cent in the third quarter to reach 45,190, slightly lower than the 3.7 per cent expansion in the previous quarter.

Exhibit 2.7: Changes in Air Transport



As of September 2016, the total number of vehicles registered with the Land Transport Authority fell by 0.3 per cent to a total of 956,719 (Exhibit 2.8). These comprised 558,090 private and company cars, 45,917 rental cars, 27,708 taxis, 18,715 buses, 143,331 motorcycles and scooters, and 162,958 goods vehicles & other vehicle types.

Exhibit 2.8: Motor Vehicles Registered



ACCOMMODATION & FOOD SERVICES

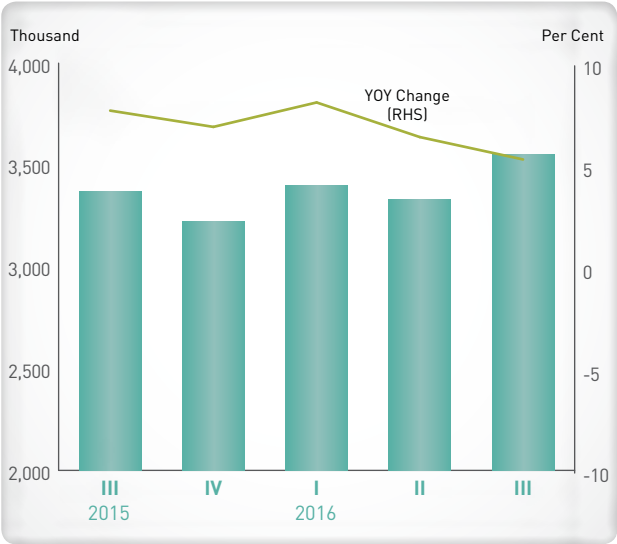
The accommodation & food services sector registered growth of 2.1 per cent in the third quarter, extending the 1.9 per cent expansion in the previous quarter. The improved performance was largely supported by the accommodation segment, which grew in tandem with the increase in visitor arrivals.

Exhibit 2.9: Visitor Arrivals

Total visitor arrivals rose by 3.7 per cent in the third quarter, easing from the 11 per cent increase in the previous quarter (Exhibit 2.9). The increase in visitor arrivals in the third quarter was largely contributed by the sustained growth in travel demand from the Chinese and Indonesian source markets. Specifically, Chinese arrivals rose by 20 per cent in the third quarter, extending the growth of 65 per cent in the previous quarter. At the same time, the number of visitors from Indonesia increased by 2.6 per cent, following the 3.7 per cent growth recorded in the second quarter.

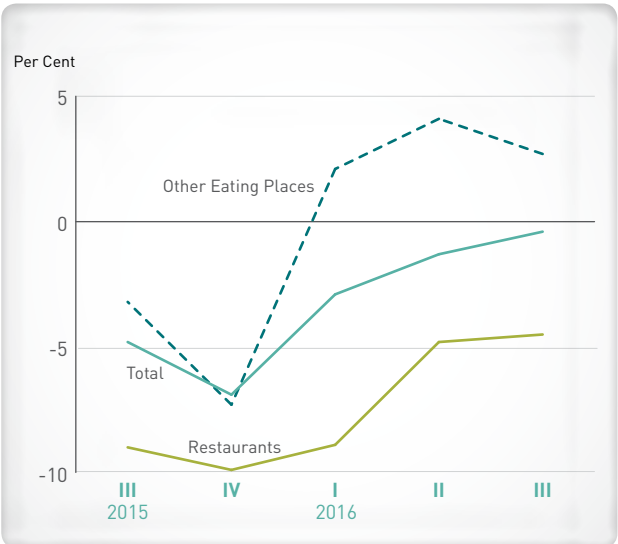
In tandem with the increase in visitor arrivals, the gross lettings of gazetted hotels rose by 5.4 per cent in the third quarter, although this was slower than the 6.5 per cent increase in the previous quarter (Exhibit 2.10). The average occupancy rate of gazetted hotels in the third quarter eased by 1.2 percentage-points from a year ago to reach 87 per cent, as a 6.9 per cent increase in room supply outstripped the improvement in gross lettings.

Exhibit 2.10: Gross Lettings (Room Nights)



On the other hand, the volume of food & beverage sales fell by 0.4 per cent in the third quarter, moderating from the 1.3 per cent decline in the previous quarter (Exhibit 2.11). The food & beverage sales volume was weighed down by the sustained weakness in restaurant sales, which shrank by 4.5 per cent, comparable to the 4.8 per cent decline in the previous quarter. By contrast, the sales volume in other eating places improved by 2.7 per cent, extending the 4.1 per cent increase in the preceding quarter.

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



FINANCE & INSURANCE

The finance & insurance sector contracted by 0.7 per cent in the third quarter, after growing by 0.7 per cent in the preceding quarter.

The pullback in activity could be attributed mainly to weakness in the offshore lending, fund management and security dealing segments. Asian Currency Unit (ACU) non-bank lending fell by 6.0 per cent in the third quarter, extending the 5.5 per cent decline in the previous quarter. This largely reflected tepid credit conditions in East Asia, alongside an easing in demand for trade finance (Exhibit 2.12).

Meanwhile, the performance of sentiment-sensitive activities was mixed. While the forex market registered strong average daily turnover growth of around 14 per cent in the third quarter, this was outweighed by lacklustre outcomes among fund managers and security brokerages. In particular, the fund management segment was confronted with volatile financial conditions and sustained outflows from Asia ex-Japan equity funds, which had negatively affected their net fees and commissions performance. Despite the global equity rally in early July, investor interest on the local bourse dipped in the quarter, with market turnover value declining by around 17 per cent. Renewed uncertainty over Asia's longer-term growth prospects, post-Brexit developments in Europe, and the impact of the eventual US rate hikes had led market participants to turn cautious.

Exhibit 2.12: Growth of ACU Loans & Advances to Non-Bank Customers by Region in 3Q 2016

BUSINESS SERVICES

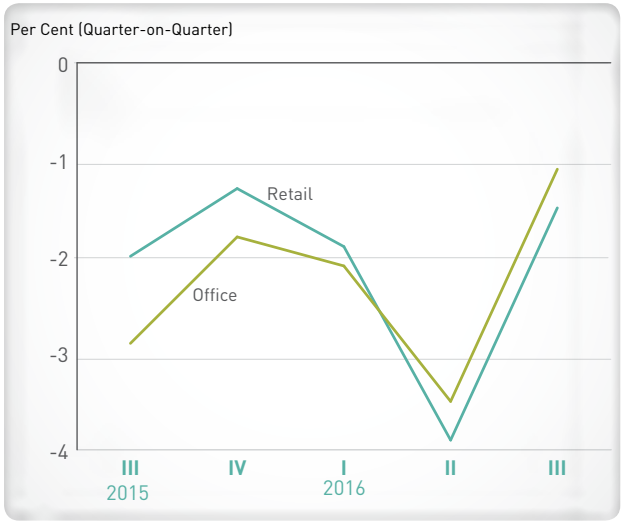
The business services sector expanded slightly by 0.2 per cent in the third quarter, slower than the 0.7 per cent growth registered in the previous quarter.

While the professional services segment provided support to growth, the real estate segment continued to languish, following sustained weakness seen in the prices of private residential units. In particular, private residential property prices weakened by 1.5 per cent on a quarter-on-quarter basis in the third quarter, the twelfth consecutive quarter of decline. On the other hand, sales transactions of private residential units improved as the private residential property market adjusted to lower prices. Specifically, private home sales surged by 11 per cent year-on-year, similar to the increase seen 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 segment, rental growth continued to face downward pressures, declining by 1.5 per cent on a quarter-on-quarter basis, extending the 3.9 per cent contraction recorded in the previous quarter (Exhibit 2.14). This came as retailers continued to face challenging operating conditions, contributed by labour cost pressures and lacklustre consumer demand. At the same time, occupancy rates remained broadly unchanged at around 91 per cent.

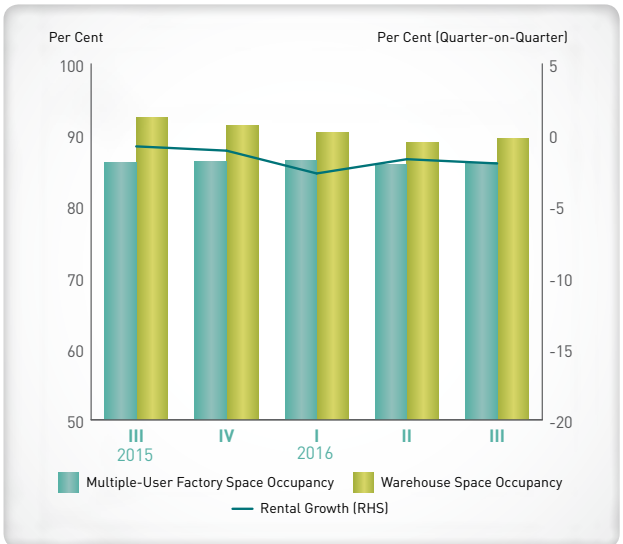
Exhibit 2.14: Changes in Rentals of Private Sector Office and Retail Spaces

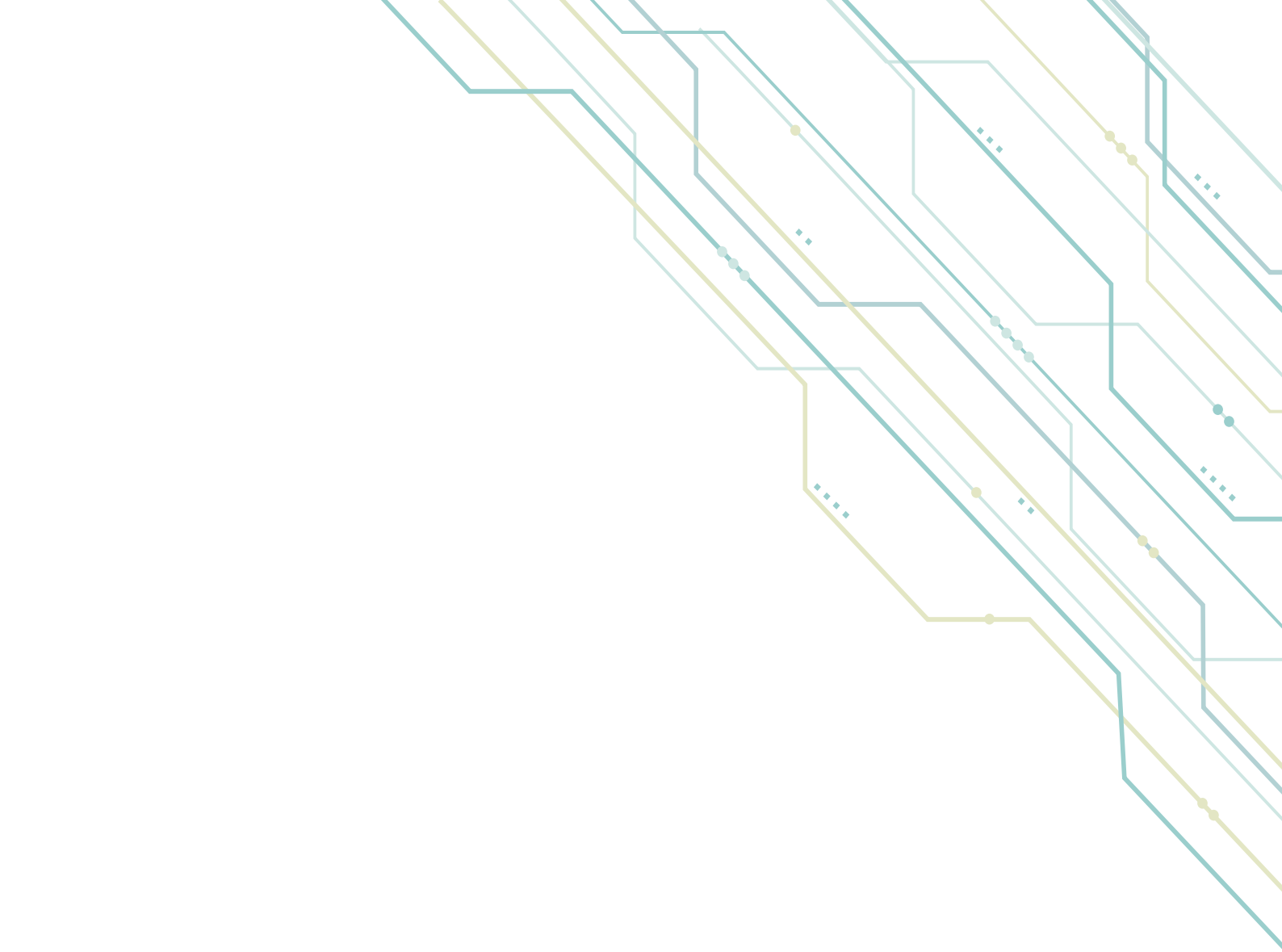


Likewise, the private office space segment deteriorated on the back of weaker demand and an increase in supply, with rentals declining by 1.1 per cent on a quarter-on-quarter basis, extending the 3.5 per cent fall in the previous quarter. In tandem with subdued rental growth, occupancy rates weakened slightly, reaching 89 per cent in the third quarter, as compared to the 90 per cent in the previous quarter.

In the private industrial space market, overall rentals fell by 2.0 per cent on a quarter-on-quarter basis, extending the 1.7 per cent decline in the previous quarter. The occupancy rate in the private sector multiple-user factory space segment came in at 86 per cent, similar to the occupancy rate recorded in the previous quarter (Exhibit 2.15). By contrast, the occupancy rate for private sector warehouse space improved slightly to 90 per cent in the third quarter, as compared to the 89 per cent in the previous quarter.

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





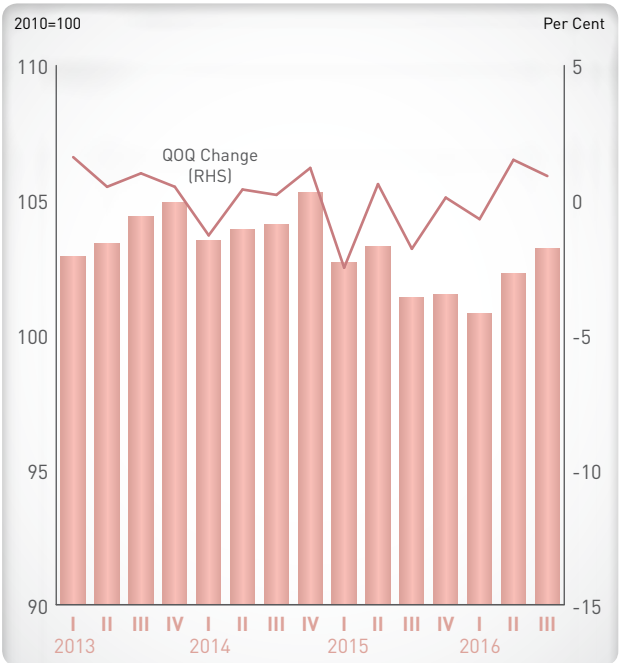
CHAPTER 3
Economic Outlook

CHAPTER 3
ECONOMIC OUTLOOK

LEADING INDICATORS

The composite leading index (CLI) rose by 0.9 per cent on a quarter-on-quarter basis in the third quarter of 2016, lower than the 1.5 per cent increase in the previous quarter (Exhibit 3.1).

Exhibit 3.1: Composite Leading Index Levels and Growth Rates



Of the nine components within the CLI, five of them increased compared to the preceding quarter, namely stock of finished goods, money supply, wholesale trade, stock price and non-oil sea cargo handled.

Meanwhile, the other four components – US Purchasing Managers' Index, domestic liquidity, new companies formed and non-oil retained imports – declined compared to a quarter ago.

CONCLUSION

Economic Outlook for 2016

Global economic conditions have remained sluggish, with full-year growth for 2016 likely to come in marginally weaker than in 2015. In line with the sluggish external environment, the Singapore economy grew at a slower pace of 1.7 per cent in the first three quarters of 2016, compared to 2.1 per cent over the same period a year ago. Growth was weighed down primarily by the weak performance of the business services and wholesale & retail trade sectors.

For the rest of the year, Singapore's GDP growth is expected to remain modest. Sectors such as electronics, information & communications and "other services industries" are likely to continue to support growth, while the wholesale trade and finance & insurance sectors could continue to face external headwinds.

Taking these factors into consideration, the GDP growth forecast for 2016 is narrowed to "1.0 to 1.5 per cent", from "1.0 to 2.0 per cent".

Economic Outlook for 2017

Global growth is projected to pick up slightly in 2017. In particular, growth in the advanced and developing economies like the US, Japan, NIEs and ASEAN is expected to improve, even as growth in the Eurozone and China moderates.

The US economy is expected to grow at a faster pace in 2017, supported by domestic demand and an improved outlook for its manufacturing and services sectors. On the other hand, growth in the Eurozone is projected to ease, as labour market conditions in the region continue to be sluggish with unemployment rates remaining high. Uncertainties from Brexit may also weigh on consumer and investor confidence. In Asia, China's economic growth is expected to moderate further, as the economy continues to rebalance from investments to consumption and the boost from earlier policy stimulus tapers off. Meanwhile, the key ASEAN economies are expected to see a modest uptick in growth in 2017, supported by resilient domestic demand.

However, while global growth is expected to improve slightly, the elasticity of trade to global growth is likely to remain weak due to factors such as the slowdown in investment growth in economies like the US and China, as well as insourcing trends in China. This suggests that external demand for Singapore and regional countries may not see a significant uplift next year.

Moreover, downside risks in the global economy remain. First, Brexit has led to uncertainties in both the UK and Eurozone economies, especially since the timing and nature of UK's exit from the European Union remain unresolved. These uncertainties may weigh on consumer and business confidence, as well as spark bouts of volatility in global financial markets. If prolonged, they could dampen investments and consumption, and cause a sharper-than-expected slowdown in growth in the UK and Eurozone economies. Second, amidst rising corporate credit levels in China, there is a risk that debt defaults could spike as the economy continues to restructure. This could be exacerbated by a sharper-than-expected correction in the real estate market, resulting in a surge in defaults on property-related loans. Should debt defaults spike, leading to a significant tightening of financial conditions, the Chinese economy could slow down more sharply than expected. Third, political risks and uncertainties have risen, and could in turn lead to greater economic uncertainties. In particular, an increasing backlash against globalisation could further dampen global trade which is already weak, while economic uncertainties could negatively affect business and consumer confidence.

Against this backdrop, the growth outlook for the Singapore economy remains modest in 2017. The manufacturing sector is expected to see an improvement in performance on the back of sustained global demand for semiconductors and semiconductor equipment, although the marine & offshore engineering segment and firms supporting the global oil & gas industry are expected to continue to face weak demand conditions amidst low oil prices. Tourism-related sectors are likely to benefit from a boost in travel demand as the global economic outlook improves. At the same time, sectors such as information & communications and "other services industries" are likely to continue to support growth. On the other hand, externally-oriented services sectors such as finance & insurance and wholesale trade are expected to remain sluggish.

Taking into account the above factors, and barring the full materialisation of downside risks, the Singapore economy is expected to grow at a modest pace of "1.0 to 3.0 per cent" in 2017.

FEATURE ARTICLE

FEATURE ARTICLE

IMPACT EVALUATION OF IMDA'S iSPRINT SCHEME

INTRODUCTION

The iSPRINT scheme administered by IMDA helps local SMEs defray the costs of automating their business functions through information technology.

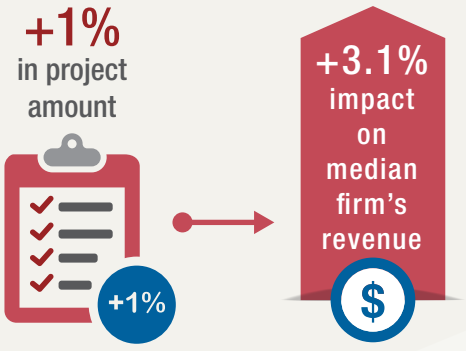
It covers both pre-approved packaged solutions that are ready to use and customised solutions that are tailored to firms' needs.

Examples of solutions covered under iSPRINT

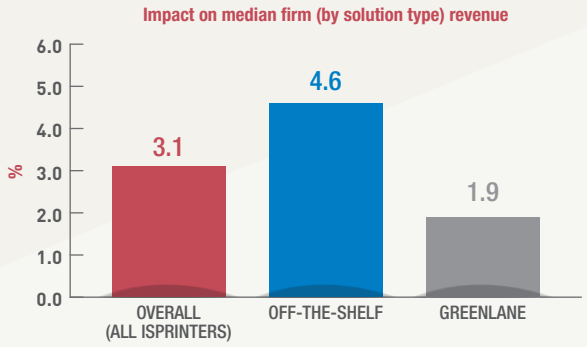
OFF-THE-SHELF SOLUTIONS	GREENLANE SOLUTIONS	CUSTOMISED SOLUTIONS
ACCOUNTING	FREIGHT/ FLEET MANAGEMENT	CUSTOMISED WAREHOUSE MANAGEMENT
POINT-OF-SALES	HEALTHCARE MANAGEMENT	INTEGRATED ENTERPRISE RESOURCE PLANNING

FINDINGS

Finding 1: On average, for every 1% increase in the project amount, the impact on firms' revenue was 0.03%. For the median firm based on revenue size, this translates to a 3.1% increase in its revenue after adopting solutions under iSPRINT.



Findings 2: On average, for every 1% increase in the project amount, firms' revenue increased by 0.05% for off-the-shelf solutions and 0.02% for greenlane solutions. For the median firm by revenue for each solution type, this translates to a revenue impact of 4.6% and 1.9% respectively.



POLICY TAKEAWAY

The iSPRINT scheme has been effective in helping firms raise their revenue through the automation of their business functions, particularly for the firms that implemented off-the-shelf and greenlane solutions. Going forward, IMDA will continue to support our SMEs through the enhanced iSPRINT scheme.

EXECUTIVE SUMMARY

- The iSPRINT is a financial assistance scheme administered by IMDA that aims to help local small- and medium-sized enterprises (SMEs)[1] defray the costs of automating their business functions through information technology. Under the scheme, IMDA provides funding support to local SMEs for the first-time automation of each business function. This study evaluates the impact of the scheme on the revenue performance of firms that participated in the scheme.

- Our findings show that the iSPRINT scheme has a positive impact on the revenue of firms that adopted solutions under the scheme. For example, for the median firm based on revenue size[2], its revenue was found to be 3.1 per cent higher after adopting iSPRINT solutions. By solution type, off-the-shelf solutions and sector-focused solutions were found to have increased the revenue of the median firm for that solution type by 4.6 per cent and 1.9 per cent respectively.

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) or the Government of Singapore.[3]

INTRODUCTION

The iSPRINT is a financial assistance scheme administered by the Infocomm Media Development Authority (IMDA) that aims to help local small- and medium-sized enterprises (SMEs) defray the costs of automating their business functions through information technology. Under the scheme, IMDA provides funding support to local SMEs for the first-time automation of each business function. The funding support covers both pre-approved packaged solutions that are ready to use and customised solutions that are tailored to the firms' needs. For packaged solutions, which comprise off-the-shelf and sector-focused (or greenlane) solutions[4], the iSPRINT scheme defrays up to 70 per cent of the qualifying project cost.[5] For customised solutions, the grant quantum is determined on a case-by-case basis.

From the launch of the iSPRINT scheme in March 2010 to end-2013,[6] a total of 4,153 firms had implemented 4,439 solutions under the iSPRINT scheme. Of the solutions taken up, the majority were off-the-shelf types (Exhibit 1).

[1] Local SME is defined to have at least 30 per cent local shareholding, and not more than S$100 million in group annual sales turnover or not more than 200 employees under the group.

[2] The median firm here refers to the median firm by revenue out of all firms that took up solutions under iSPRINT. For the median firm analysis for the different solution types, the median firm for a particular solution type refers to the median firm by revenue out of the firms that took up that particular solution.

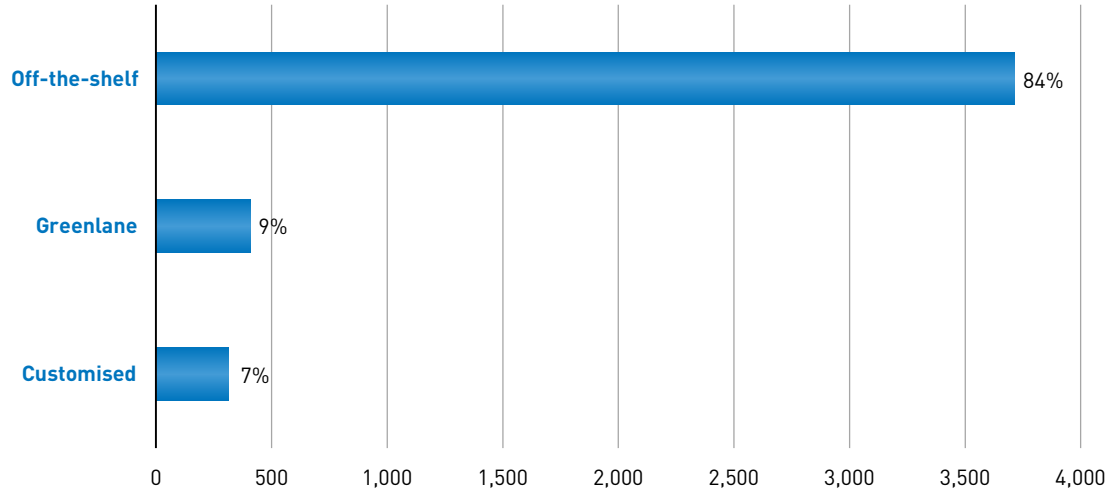
[3] We would like to thank Ms Yong Yik Wei, Mr Kenneth Yeow and Dr Andy Feng for their useful suggestions and comments. We are also grateful to IMDA for their inputs to this study. All remaining errors belong to the authors.

[4] The difference between off-the-shelf and greenlane solutions is that off-the-shelf solutions are more generic solutions, whereas greenlane solutions are sector-type solutions which have been converted from pilot to proven solutions for mass market deployment. Examples of off-the-shelf solutions are accounting, point-of-sales and customer relationship management, while examples of greenlane solutions are fleet management, healthcare management and retail management.

[5] SMEs can make multiple applications, but funding per SME per corporate lifetime is capped at S$20,000.

[6] The ICT for Productivity and Growth (IPG) programme has been incorporated into iSPRINT to become Enhanced iSPRINT starting from August 2014. However, the Enhanced iSPRINT scheme is not included in this study as firm-level data from 2014 onwards is not available at the time of study.

Exhibit 1: Number of Projects Benefitting from iSPRINT Scheme, by Solution Type



Note: The percentage represents the share of each solution type out of the total number of projects supported under the iSPRINT scheme.

This study seeks to evaluate the impact of the iSPRINT scheme on firms' revenue performance. Apart from quantifying the overall impact of the iSPRINT scheme, the study also examines whether the effectiveness of the scheme varies across different solution types.

LITERATURE REVIEW

In the literature, a key issue when evaluating the impact of firm-level assistance programmes is the self-selection of firms into programmes. Unlike in a randomised control trial (RCT) set-up, participation in such programmes is often not random, with firms' participation being dependent on firm characteristics, including those that are unobservable in the data such as the presence of good managers, among others. A naïve comparison of the outcomes of firms that participated in a programme with those that did not would then lead to biased results, as the estimated impact could be measuring differences in the unobserved characteristics of the two groups of firms instead of the causal impact of the programme (i.e., selection bias).

Using various econometric methods to overcome selection bias,[7] studies have found mixed results in terms of the impact of firm-level assistance programmes on SMEs. For example, based on two overseas studies – one in the United Kingdom (UK) and the other in New Zealand – that evaluated the impact of grants and advisory services provided to SMEs on their sales, the UK study[8] found no impact whereas the New Zealand study[9] found an impact of up to 20 per cent. In Singapore, a MTI study[10] in 2015 found that SPRING's Capability Development Grant scheme had a positive impact on the revenue of firms that participated in the scheme.

DATA AND EMPIRICAL METHODOLOGY

This study uses an anonymised dataset that tracks individual firms annually from 2007 to 2013. The dataset contains firm-level characteristics, such as the age of the firm, the sector in which the firm operates in, the total remuneration paid to the firm's employees, and the cost of new assets acquired by the firm during the year. The dataset also includes data pertaining to IMDA's iSPRINT scheme, such as the type of solution implemented by the firm, the year in which the solution was implemented, the grant amount disbursed and the project cost.

[7] *See Angrist and Pischke (2009) for a formal discussion of the selection problem and econometric methods to overcome it.*

[8] *See Mole et al (2008) for details.*

[9] *See Morris & Stevens (2009) for details.*

[10] *See Chua et al (2015) for details.*

Based on the data, a comparison of the firms that implemented iSPRINT solutions with those that did not shows that the former's characteristics were statistically different from the latter's. By regressing firm characteristics on the iSPRINT status of the firms (i.e., whether they implemented iSPRINT solutions and if so, the type of iSPRINT solution implemented), we find that firms that implemented iSPRINT solutions had higher revenue, value-added (VA), gross profits[11] and total remuneration on average as compared to firms that did not (Exhibit 2). By solution type, firms that adopted customised solutions had the highest averages for these characteristics, followed by those that adopted greenlane and off-the-shelf solutions respectively. In terms of firm's age, firms that adopted off-the-shelf solutions were on average younger than the firms that did not implement iSPRINT solutions. The converse was true for firms that adopted customised and greenlane solutions. Given that iSPRINT firms are inherently different from non-iSPRINT firms, this analysis suggests that using the latter as a control group to evaluate the outcome of the iSPRINT scheme would lead to biased results.[12]

Exhibit 2: Characteristics of iSPRINT Firms Compared to Non-iSPRINT Firms

Dependent variable	Average by group			
	Non-iSPRINT firms	iSPRINT firms		
		Off-the-shelf	Greenlane	Customised
Revenue (S$ 'mil)	7.1	7.6**	10.1***	12.1***
Value-added (S$ 'mil)[2]	2.1	(insignificant)	3.5***	4.5***
Gross profits (S$ 'mil)	1.0	(insignificant)	1.9***	2.4***
Remuneration (S$ 'mil)	0.9	1.0***	1.3***	1.8***
Age (in years)	9.1	7.2***	10.7***	12.0***

*, ** and *** indicate significance at the 90%, 95%, and 99% levels, respectively

Notes:

1. We controlled for industry which the firm is in in the regressions.

2. Value-added refers to the sum of gross profits and total remuneration.

To overcome this selection bias, we restrict our sample to the 4,153 firms that had implemented solutions under the iSPRINT scheme between 2010 and 2013. We then exploit differences in the timing of when these firms took up the solutions to evaluate the impact of the iSPRINT scheme on their revenue. This empirical strategy essentially uses the firms that adopted solutions under the iSPRINT scheme at a later time as the control group for those that did so earlier. By comparing changes in the revenue of the firms after they had implemented the solutions, with the changes experienced by firms in the control group in the same period, we are able to isolate the causal impact of the iSPRINT scheme.

In order to ensure that other firm- and industry-level differences that could affect firms' revenue are controlled for in our analysis, we also include firm fixed-effects and industry-level linear time trends in our regression. The former would help to remove the effect of time-invariant firm-level characteristics (including unobservable characteristics) on the revenue of firms, while the latter would account for variations in revenue trends that might have arisen due to industry-wide trends across time.

The regression specification used to tease out the causal impact of the iSPRINT scheme on firms' revenue is thus as follows:

$$Y_{ijt} = \beta_0 + \beta_1 iSPRINT_{it} + \gamma_t + \gamma_t * \alpha_j + \delta_i + X_{it} + \varepsilon_{ijt} \quad (1)$$

Where:

Y_{ijt} is the log revenue of firm i, in industry j, at time t;

$iSPRINT_{it}$ is the log dollar amount, taking on the value of the project cost from the year that firm i took up its first solution. If the firm took up two solutions, the variable will take on the value of the sum of the two project costs from the year that it took up the second solution, etc;

[11] Gross profits refers to revenue less the cost of goods sold.

[12] We tried using different propensity score matching methods on the observable data to derive a control group of firms from among those that did not implement iSPRINT solutions. However, the results did not pass parallel trends tests, suggesting that there were unobservable factors that were driving the behaviour of firms.

γ_t is a vector of year dummies that captures effects that are common to all firms in the specific year;

$\gamma_t * \alpha_j$ is a vector of year dummies interacted with industry dummies to capture industry-wide trends across time;

δ_i denotes the firm time-invariant fixed-effects;

X_{it} denotes the other firm characteristics, including firm's age, total remuneration, cost of new assets acquired during the year, etc; and

ε_{ijt} is the error term that is assumed to be uncorrelated with the independent variables.

The coefficient of interest is β_1. It measures the average change in the revenue of firms in percentage terms for every one per cent increase in the project amount. We use the cost of the iSPRINT project as the treatment variable rather than the grant amount, as it is more reflective of the quality of the solution that the firm has taken up.

To further investigate if the impact of the iSPRINT scheme differs across solution types, we run a similar regression specification as equation (1), except that the treatment variable $iSPRINT_{it}$ is replaced with individual treatment variables that denote the specific solution type that the firm adopted:

$$Y_{ijt} = \beta_0 + \beta_1 OTS_{it} + \beta_2 GREEN_{it} + \beta_3 CUS_{it} + \gamma_t + \gamma_t * \alpha_j + \delta_i + X_{it} + \varepsilon_{ijt} \quad (2)$$

Where:

OTS_{it} is a treatment variable that takes on the value of the project cost from the year that firm i took up an off-the-shelf solution. If the firm took up two off-the shelf solutions, the variable will take on the value of the sum of the two project costs from the year that it took up the second solution, etc. If the firm took up another type of solution, the variable will take on a value of 0;

$GREEN_{it}$ and CUS_{it} are treatment variables that are similarly defined as OTS_{it}, except that they are for firms that took up a greenlane solution and a customised solution respectively; and

All other variables are as defined in equation (1).

RESULTS AND DISCUSSION

Our findings suggest that participation in the iSPRINT scheme has a statistically significant positive impact on the revenue of firms (Exhibit 3). We find that for every one per cent increase in the project amount, the impact on firms' revenue was 0.03 per cent on average. For the median firm based on revenue size, this translates to a 3.1 per cent increase in its revenue following the adoption of solutions under the iSPRINT scheme.

Exhibit 3: Regression Results

Dependent variable: Log(revenue)	
$iSPRINT_{it}$ (β_1)	0.031***
Year effects	Yes
Industry*year interaction	Yes
Firm-fixed effects	Yes
R-squared	0.40
Number of observations	17,452

*, ** and *** indicate significance at the 90%, 95%, and 99% level, respectively

In terms of the impact by solution type, we find that off-the-shelf and greenlane solutions have a positive impact on firms' revenue, although the magnitude of the impact varied (Exhibit 4). Specifically, for every one per cent increase in the project amount, firms' revenue increased by 0.05 per cent on average for off-the-shelf solutions and 0.02 per cent on average for greenlane solutions. For the median firm by revenue for each solution type[13], this translates to a revenue impact of 4.6 per cent and 1.9 per cent for off-the-shelf and greenlane solutions respectively.

Exhibit 4: Impact of Different iSPRINT Solution Types on Firms' Revenue

Dependent variable: Log(revenue)	
Off-the-shelf (β_1)	0.046***
Greenlane (β_2)	0.019*
Customised (β_3)^	0.002
Year effects	Yes
Industry*year interaction	Yes
Firm-fixed effects	Yes
R-squared	0.40
Number of observations	17,452

*, ** and *** indicate significance at the 90%, 95%, and 99% level, respectively

Note: ^Customised solutions did not show statistical significance even at the 90% significance level. Possible reasons for this finding are the potentially longer time taken for customised solutions to become fully operational, as well as the smaller number of projects involving customised solutions during the period of analysis.

CONCLUSION

Our study finds that the iSPRINT scheme has been effective in helping local SMEs raise their revenue through the automation of their business functions, particularly for the firms that implemented off-the-shelf and greenlane solutions. Going forward, IMDA will continue to support our SMEs through the enhanced iSPRINT scheme.

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[13] For the median firm analysis for the different solution types, the median firm for a particular solution type refers to the median firm by revenue out of the firms that took up that particular solution.

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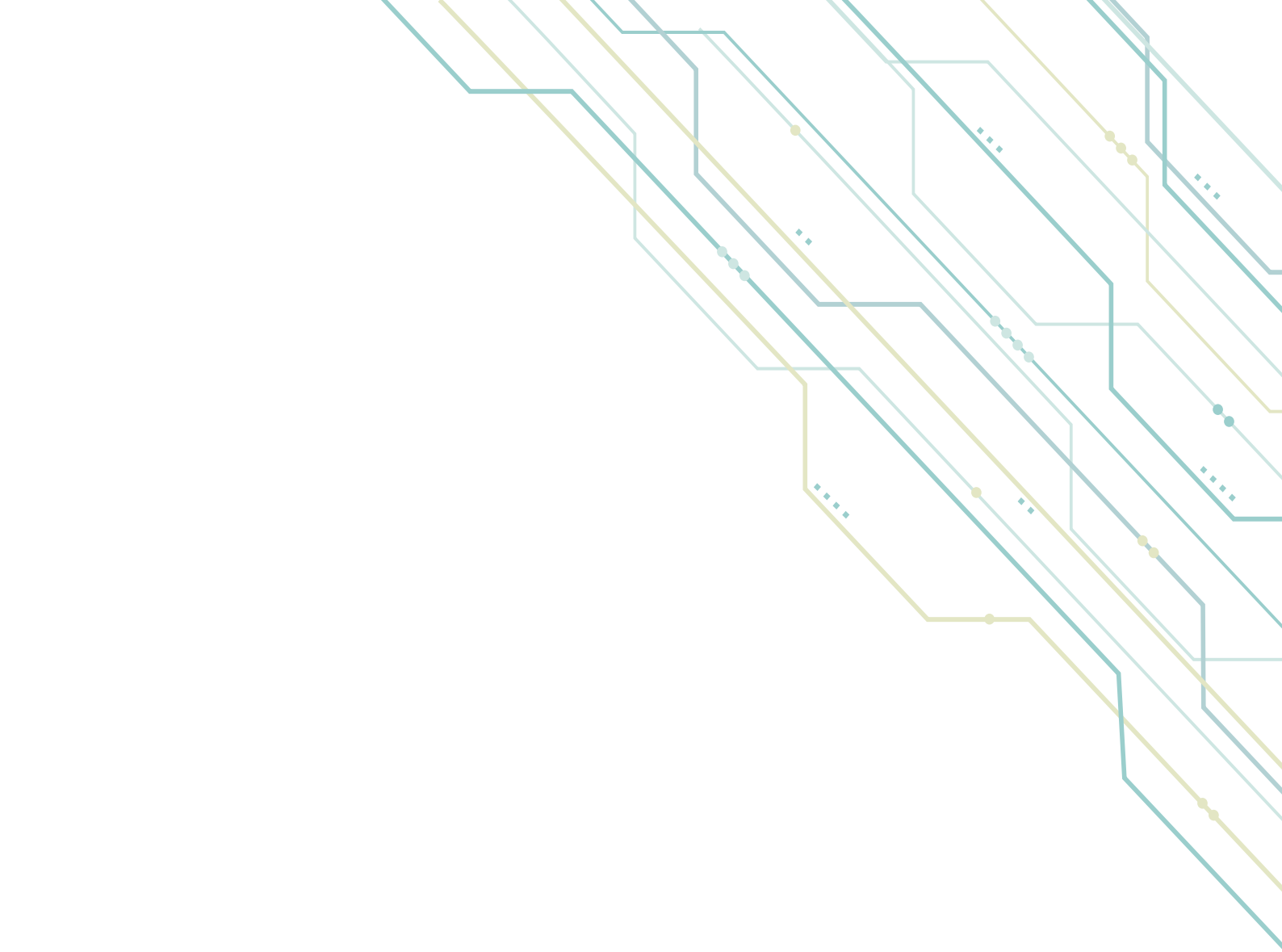

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