

**BOX ARTICLE 2.1**

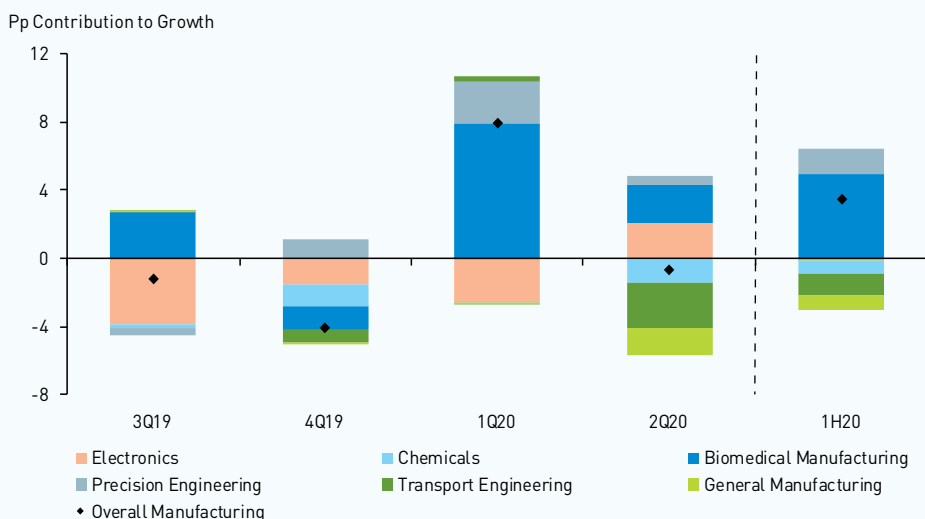
# Performance and Outlook of the Manufacturing Sector in 2020

## Growth of the manufacturing sector in 1H20 was supported by the biomedical manufacturing and precision engineering clusters

Since the COVID-19 outbreak began earlier in the year, the attendant public health measures, such as lockdowns and border closures, to contain the outbreak have led to significant disruptions in economic activity around the world.

Despite these economic disruptions, Singapore’s manufacturing sector grew by 3.5 per cent year-on-year (yoy) in 1H20, supported by output expansions in the biomedical manufacturing and precision engineering clusters [Exhibit 1]. Specifically, these two clusters contributed 5.0 percentage-points (pp) and 1.5pp respectively to the overall growth of the manufacturing sector in 1H20. On the other hand, the transport engineering (-1.2pp), general manufacturing (-0.8pp), chemicals (-0.8pp) and electronics (-0.2pp) clusters contributed negatively to the sector’s growth. This article explores the factors underlying the varying performance of the different clusters within the manufacturing sector in 1H20, as well as the outlook for the sector for the rest of 2020.

*Exhibit 1: Overall manufacturing growth in 1H20 was driven by the biomedical manufacturing and precision engineering clusters*



Source: MTI-ECD staff’s estimates, Economic Development Board

**The largest contributor to the growth of the manufacturing sector in 1H20 was the biomedical manufacturing cluster, which was in turn driven by a surge in the production of pharmaceutical and biological products**

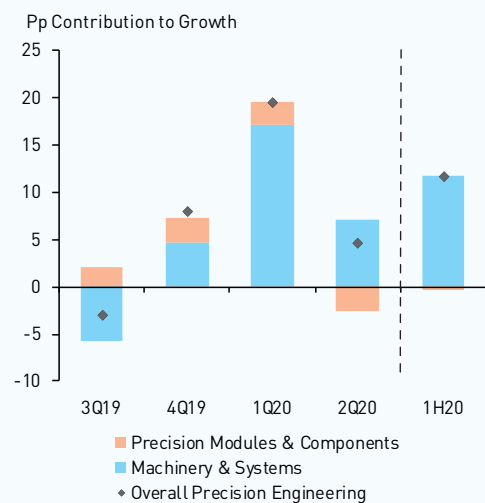
The biomedical manufacturing cluster expanded by 27 per cent yoy in 1H20, extending the 4.1 per cent growth in 2H19. The strong performance of the cluster was due to robust output expansion in the pharmaceuticals segment (36 per cent), as the production of both active pharmaceutical ingredients (APIs) and biological products increased over the period. On the other hand, the performance of the medical technology segment was lacklustre, posting an output decline of 1.4 per cent in 1H20. This was on account of workplace disruptions arising from the Circuit Breaker (CB) measures that were in place for the most part of 2Q20, as well as weak demand for non-COVID-19 related medical devices (e.g., medical implants) as major export markets were mired in their own lockdowns. Nonetheless, an increase in export demand for COVID-19 related medical devices (e.g., respiratory devices) helped to provide some support to the segment during 2Q20.

**Similarly, the precision engineering cluster recorded healthy growth in 1H20, bolstered by external demand for semiconductor manufacturing equipment**

The precision engineering cluster grew by 12 per cent yoy in 1H20, accelerating from the 2.4 per cent expansion in 2H19. The machinery & systems segment was the main engine of growth within the cluster [Exhibit 2], expanding by 17 per cent in 1H20 on the back of strong global demand for semiconductor manufacturing equipment. According to Semiconductor Equipment and Materials International (SEMI), the billings of North America-based semiconductor equipment manufacturers – an indicator commonly used to track global demand for semiconductor manufacturing equipment – surged by 18 per cent in 1H20 [Exhibit 3]. The strong global demand for semiconductor equipment was largely due to continued investments by leading foundries in advanced manufacturing technologies in anticipation of 5G demand. This has, in turn, benefitted Singapore-based semiconductor equipment manufacturers in the machinery & systems segment.

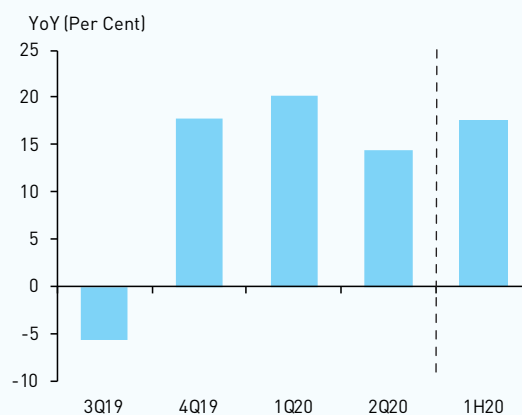
By contrast, the performance of the precision modules & components segment was lacklustre, with output contracting by 0.9 per cent in 1H20. The decline was on account of the CB measures which disrupted the operations of firms locally, as well as the containment measures overseas that led to lower export demand. Furthermore, firms supporting the aerospace and marine & offshore engineering (M&OE) industries were weighed down by weak demand from these industries.

*Exhibit 2: Growth in the precision engineering cluster in 1H20 was supported by the machinery & systems segment*



Source: MTI-ECD staff's estimates, Economic Development Board

*Exhibit 3: Billings of North America-based semiconductor equipment manufacturers rose at a healthy pace in 1H20*



Source: Semiconductor Equipment and Materials International

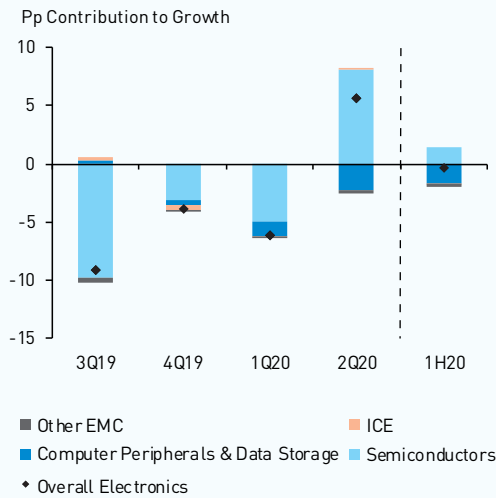
1 For instance, based on its quarterly financial statements, Taiwan Semiconductor Manufacturing Company (TSMC), one of the largest contract chip manufacturers in the world, increased its capital expenditure by 66 per cent yoy in 1H20.

### Meanwhile, output in the electronics cluster was supported by the strong demand for semiconductors in 2Q20

The electronics cluster contracted marginally by 0.4 per cent yoy in 1H20, an improvement from the 6.6 per cent contraction recorded in 2H19. The performance of the cluster was mainly weighed down by the computer peripherals & data storage segment, which shrank by 24 per cent in 1H20 [Exhibit 4]. On the other hand, the semiconductors segment grew by 1.7 per cent in 1H20 on the back of a robust expansion in output in 2Q20 (9.6 per cent).

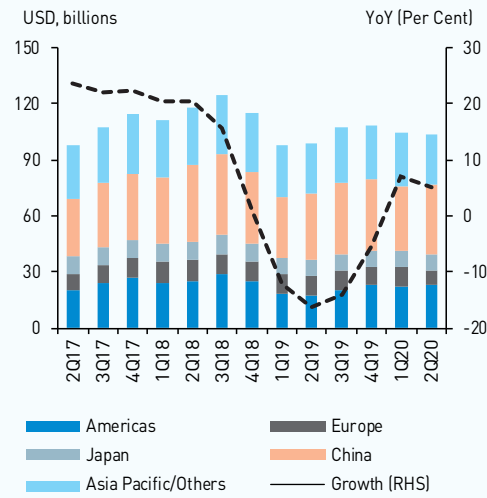
The improved performance of the semiconductors segment in 2Q20 was primarily because of strong demand for semiconductors from the 5G market, data centres and cloud services, driven in turn by the increased adoption of telecommuting and remote learning arrangements, as well as the accelerated digitalisation of businesses globally amidst the pandemic. These factors more than offset the fall in demand for semiconductors for end-applications such as automotive and smartphones. Reflecting the net effect of these demand drivers, global semiconductor sales rose by 5.1 per cent in 2Q20, extending the 6.9 per cent growth in the preceding quarter [Exhibit 5].

Exhibit 4: Growth in the electronics cluster in 1H20 was largely weighed down by a fall in output in the computer peripherals & data storage segment



Source: MTI-ECD staff's estimates, Economic Development Board

Exhibit 5: Global semiconductor sales rebounded in 1H20



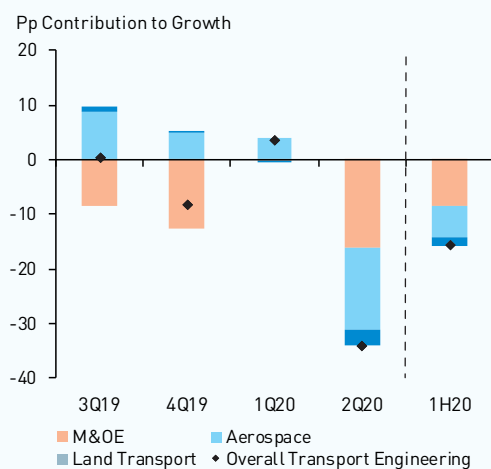
Source: World Semiconductor Trade Statistics

### On the other hand, the transport engineering cluster was negatively affected by manpower disruptions and weak demand

The transport engineering cluster shrank by 16 per cent yoy in 1H20, extending the 4.1 per cent contraction in 2H19. The poor performance of the cluster was primarily due to the marine & offshore engineering (M&OE) and aerospace segments [Exhibit 6].

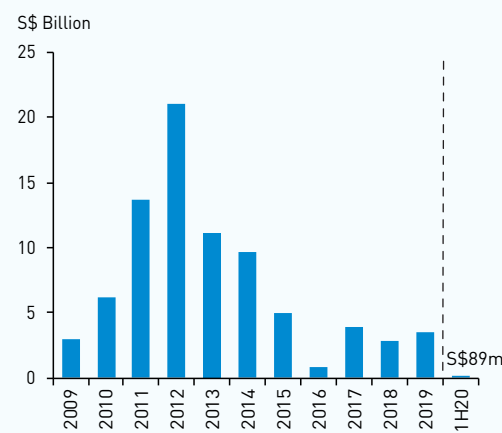
The M&OE segment contracted by 23 per cent in 1H20, the same pace of decline as that seen in 2H19. In particular, output in the segment plunged in 2Q20 (-43 per cent) as movement restrictions on foreign workers living in dormitories curtailed work at the shipyards. In addition, external demand for offshore rigs and oilfield & gasfield equipment weakened as oil prices plunged amidst the COVID-19 pandemic. For instance, new orders secured by the two major local yards in 1H20 amounted to just S\$89 million, 95 per cent lower than the amount of new orders secured over the same period in 2019, and also lower than the S\$1.5 billion secured in 1H09 during the Global Financial Crisis [Exhibit 7].

*Exhibit 6: Growth in the transport engineering cluster in 1H20 was mainly weighed down by output declines in the M&OE and aerospace segments*



Source: MTI-ECD staff's estimates, Economic Development Board

*Exhibit 7: New orders secured by two major local yards plunged in 1H20*



Source: Keppel Offshore & Marine and Sembcorp Marine

At the same time, output in the aerospace segment fell by 11 per cent in 1H20, a sharp reversal from the 16 per cent expansion in 2H19. The decline in output was on account of weak demand for aircraft repair and maintenance work as commercial airlines grounded their aircraft amidst widespread travel restrictions.

**Similarly, the general manufacturing and chemicals clusters contracted in 1H20, thus weighing on overall manufacturing growth**

The general manufacturing cluster contracted by 11 per cent yoy in 1H20, reversing the 0.4 per cent expansion in 2H19. Notably, firms in the miscellaneous industries segment supplying construction-related materials were adversely affected by work stoppages in the construction sector arising from the COVID-19 outbreak in foreign worker dormitories. At the same time, the food, beverages & tobacco (FBT) segment experienced weak export demand for beverage products.

Likewise, output in the chemicals cluster shrank by 5.5 per cent yoy in 1H20, extending the 5.7 per cent decline in 2H19. In particular, the petrochemicals segment contracted by 6.2 per cent in 1H20, as a result of plant maintenance shutdowns and also a slowdown in regional demand as lockdowns to curb the spread of COVID-19 were imposed in several countries in the region.

### **In the near term, growth is expected to remain uneven across the manufacturing clusters and segments**

For the rest of the year, overall output in the manufacturing sector is expected to remain relatively resilient, although the growth outlook for the different clusters in the sector varies. In particular, the biomedical manufacturing cluster is expected to continue to see positive output growth in 2H20, albeit at a slower pace as compared to 1H20. Similarly, output in the electronics and precision engineering clusters is projected to increase moderately in 2H20, supported by healthy global demand for semiconductors and semiconductor equipment respectively as the demand drivers seen in 2Q20 are expected to be sustained into 2H20.

On the other hand, the outlook for the transport engineering cluster remains bleak. In particular, the M&OE segment is projected to see a slow recovery as the resumption of work at shipyards is likely to be gradual given the safe management measures that need to be put in place for a safe restart, even as the foreign workers living in dormitories are cleared to return to work. For the aerospace segment, a more gradual-than-expected easing of border restrictions and sluggish demand for global air travel are expected to lead to continued soft demand for aircraft maintenance and repair work. Likewise, the chemicals cluster is likely to be adversely affected by subdued global demand for chemical products used in passenger transportation. Meanwhile, output in the general manufacturing cluster is also projected to remain weak, as export demand faced by the FBT segment is likely to stay sluggish due to the gradual pace of recovery in regional economies, and output in the miscellaneous industries segment is expected to continue to be weighed down by the slow resumption of construction activity domestically.

More broadly, the economic fallout from the COVID-19 pandemic has highlighted the importance of diversifying our economic structure. In the case of the manufacturing sector, even though the pandemic has affected the M&OE and aerospace segments disproportionately, segments such as pharmaceuticals, semiconductors and machinery & systems have helped to provide some support to the sector and by extension, the Singapore economy. Nonetheless, downside risks to the growth of the manufacturing sector remain, including the risk of a major resurgence in COVID-19 infections globally which could weaken external demand significantly, and heightened geopolitical tensions. MTI and the relevant economic agencies will continue to monitor the global situation and developments closely, and provide timely support to our companies if necessary.

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