UBS Global I/O

Autos/Industrial Semiconductors

The start of a multi-quarter recovery

Equities

Global
Semiconductors

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We continue to forecast 25% auto semis growth y-o-y in 2021.

With investor shifting from resilience to the timing and pace of recovery for the auto semis sector, in this note we revisit our leading indicator analysis, revise our auto semis revenue model and address questions around hydrogen vehicles. While still positive on the sector, given valuation we turn more selective on stocks we like. We see a number of catalysts from here: 1) Semis y-o-y growth is likely already at trough in Q2/Q3 given the rapid slow-down with a sharp return to growth in '21E; 2) Auto production can't get much worse than Q2 and is improving; 3) Government stimulus plans in autos mostly carry a strong bias towards EV which is a strong tailwind for auto semis content.

Strong auto semis growth in 2021E ahead and thoughts on hydrogen

We update our autos semis revenue model reflecting our latest production estimates - we now forecast -13% auto semis revenues in 2020E (was -15%) before recovering +25% in 2021E (was +26%). The structural long-term content drivers for the sector of the shift to EV and rise of advanced safety features (ADAS) are both undiminished by COVID-19 and if anything the shift towards EV appears to be accelerating. We also note that recent clean energy investments plans are driving interest in hydrogen as an alternative fuel source. We understand the shift towards hydrogen would carry a similar content uplift (c2x semi content) vs a combustion engine car as a battery electric.

State of play - sector leading indicators trending positively

Post Q2: 1) y-o-y semis rev growth to trough in Q2'20 at -8% y-o-y then recovering in H2. We also note that on a 2-year CAGR basis (given '19 was a challenging year) this '19-20 downcycle is seeing a similar pace of slow-down as seen in '08-09. 2) Inventory within semis is elevated (18 days above normal) and at auto OEMs/Tier 1s is c26 days above normal. We were reassured to see absolute inventories under control and down q-o-q. Industrial OEMs are "only" 5 days above average with also absolute inventory down. 3) We believe semis over-shipped demand in Q2 but should normalise in Q3.

Valuation / stock preferenes

The sector trades on 21x '21E P/E, not cheap compared to 1y forward average of 18x but with earnings momentum accelerating and we are still early in the recovery. We prefer Infineon, Renesas, Rohm and STMicro (all Buy). Least preferred Melexis (Sell).

Q3 MARKS TROUGH BUT HOW STRONG WILL 2021 BE?

return

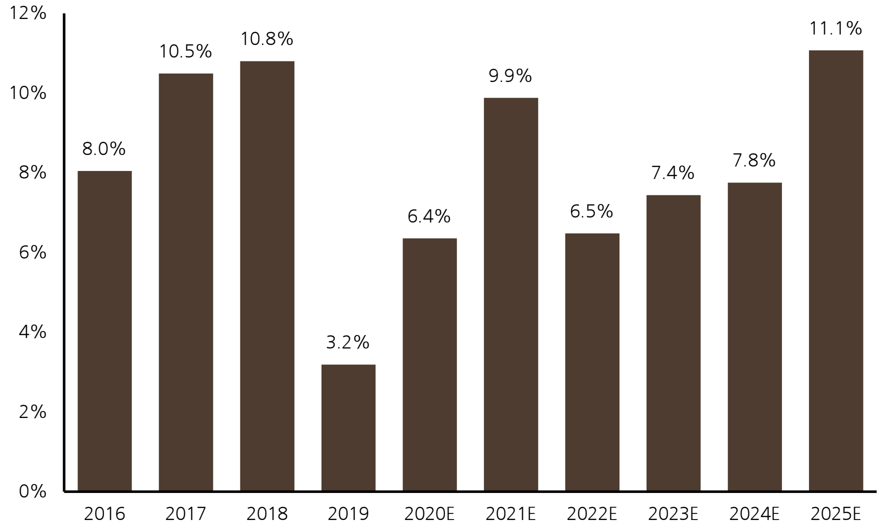
With the pace of correction being seen through the sector due to the COVID-19 outbreak we had already largely reflected the changes in our company forecasts through earnings season (or in some cases before). The key question for us in revising the model however has been to understand the potential pace of recovery in content growth that we might see as we progress into 2021E. We see four main drivers of our forecasts into 2021E that give us confidence growth will reaccelerate strongly:

1. **Autos production recovery:** Clearly the absolute autos units are one of the most important drivers. We assume an auto recovery of +15% y-o-y in 2021E to 82m units; this is still well below the last peak of 95m units and even 2019's 89m units.

2. **Change in inventory levels:** We saw through 2019 a major headwind to auto semis sales as inventory was worked down through the channel. We currently see an increase in inventory days on hand due to market lockdowns and, therefore, we believe it is quite possible 2021E could then benefit from some rebuild of inventory through the supply chain.

3. **Underlying content growth:** While the market has been highly disrupted through 2019/2020 the underlying dynamics of new model launches to drive rising EV penetration and greater adoption of ADAS features with new model launches are largely unchanged. This means that whilst the headline content growth that we show in our model in 2019/2020 has been below trend (we believe trend is c8%), this has largely been a consequence of the inventory changes rather than anything structural in the industry. If anything some of the commentary we see on current auto sales suggest that the sales recovery is biased towards high-end models which would be helpful for content.

Figure 1: UBS auto semis model - content growth assumptions



Source: UBS estimates

We include below our auto semis revenue model along with the key assumptions we are making regarding rising EV mix.

Figure 2: UBS Auto semis revenue model (US$m)

	GARTNER HISTORICS					UBS ESTIMATES						
Semi sales (US$bn)	**2015**	**2016**	**2017**	**2018**	**2019**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**% CAGR ('19-'24)**
ADAS	1.7	3.0	4.1	5.1	5.9	5.7	8.3	9.6	11.5	13.8	18.0	19%
Aftermarket	2.2	2.2	2.3	2.5	2.5	1.9	2.3	2.5	2.6	2.6	2.7	1%
Body	4.6	5.5	6.6	7.4	6.9	5.7	6.6	7.2	7.7	8.2	8.7	4%
Chassis	4.6	4.5	5.1	5.4	5.1	4.2	5.0	5.4	5.7	5.8	5.9	3%
Infotainment	7.2	7.7	8.4	9.0	8.4	6.9	8.3	9.0	9.7	10.0	10.4	4%
Powertrain	5.4	6.8	7.4	8.0	8.2	7.8	10.0	11.3	12.8	14.6	16.8	12%
Safety	4.4	4.3	4.6	4.7	4.1	3.6	4.1	4.3	4.4	4.5	4.5	2%
Total	**30.1**	**34.1**	**38.5**	**42.2**	**41.0**	**35.8**	**44.6**	**49.3**	**54.4**	**59.6**	**67.2**	**7.8%**
% y-o-y		**13.3%**	**13.1%**	**9.5%**	**-2.8%**	**-12.6%**	**24.5%**	**10.6%**	**10.2%**	**9.6%**	**12.7%**	
Autos production(m)	**88.8**	**93.1**	**95.3**	**94.2**	**88.7**	**72.9**	**82.6**	**85.8**	**88.0**	**89.5**	**90.8**	
% y-o-y		**4.9%**	**2.3%**	**-1.2%**	**-5.8%**	**-17.8%**	**13.3%**	**3.9%**	**2.6%**	**1.7%**	**1.5%**	
$ content / car	**2015**	**2016**	**2017**	**2018**	**2019**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**	**% CAGR ('19-'24)**
ADAS	19	32	44	54	66	79	101	112	130	154	198	19%
Aftermarket	24	24	24	27	28	26	28	29	29	30	30	1%
Body	52	59	69	78	78	78	80	84	88	92	96	3%
Chassis	51	48	53	58	57	58	60	63	65	65	65	3%
Infotainment	81	83	88	96	95	95	100	105	110	112	115	3%
Powertrain	61	74	78	85	93	107	121	132	146	163	185	12%
Safety	50	46	48	50	46	49	50	50	50	50	50	2%
$ Content per car	**339**	**366**	**404**	**448**	**462**	**492**	**540**	**575**	**618**	**666**	**739**	**7.6%**
% y-o-y		**8.0%**	**10.5%**	**10.8%**	**3.2%**	**6.4%**	**9.9%**	**6.5%**	**7.4%**	**7.8%**	**11.1%**	

Source: UBS estimates, Gartner historics

Figure 3: UBS auto semis revenue model - powertrain / EV estimates

Powertrain mix	**2015**	**2016**	**2017**	**2018**	**2019**	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**	**2025E**
Gasoline			83%	81%	78%	74%	69%	66%	62%	57%	49%
Diesel			12%	12%	11%	9%	8%	6%	5%	4%	3%
48V/mild hybrid (gas)			1%	3%	6%	9%	12%	15%	17%	20%	24%
HEV			2%	3%	3%	4%	4%	5%	6%	6%	7%
PHEV			1%	1%	1%	2%	2%	2%	1%	1%	1%
BEV			1%	1%	2%	3%	4%	6%	9%	12%	15%
FCV			0%	0%	0%	0%	0%	0%	0%	0%	0%
Content mix ($/car)			**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Gasoline			65	65	67	68	70	69	68	67	65
Diesel			75	79	75	80	80	80	80	80	80
48V/mild hybrid (gas)			100	100	100	100	100	100	100	100	100
HEV			225	225	225	225	225	225	225	225	225
PHEV			400	400	400	400	400	400	400	400	400
BEV			550	550	550	550	550	550	550	550	550
FCV			550	550	550	550	550	550	550	550	550
Semis market ($m)			**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**
Gasoline			5,386	5,335	5,172	4,376	5,098	5,178	5,142	5,055	4,831
Diesel			879	855	712	521	509	445	368	288	211
48V/mild hybrid (gas)			91	300	513	681	995	1,268	1,503	1,823	2,180
HEV			448	539	617	614	825	983	1,127	1,267	1,409
PHEV			195	314	288	475	729	605	392	399	545
BEV			402	680	810	1,109	1,855	2,824	4,232	5,676	7,523
FCV			2	3	5	9	17	32	50	74	110
Total powertrain			**7,403**	**8,027**	**8,116**	**7,784**	**10,028**	**11,334**	**12,815**	**14,582**	**16,809**

Source: UBS estimates

Coronavirus tracker

Most companies have brought the production back at full capacity, nevertheless there are ongoing problems with infections at production sites across the globe, what can cause some of the disruption to car plants. We summarised the major announcements over the past several weeks **(newest on top)**:

• **GM's** Fort Wayne assembly plant will be increasing regular production of light-duty full-size pickups by ab. 1,000 units a month bgn Sept 1 announced July 29

• **GM's** St Petersburg plant to start being acquired by Hyundai

• **Tesla** picks Texas site for a second US vehicle assembly plant on July 22

• **BMW's** Munich plant upgraded to switch onto a full electric future on July 22

• **FCA** expressed hopes to restore full productions at its Mexican and Thai plants on July 18

• **BMW** announced battery cells will be produced in Northern Sweden from 2024, currently plant under construction on July 16

• **Suzuki** resumes two-shift production at Hungarian plant with two weeks delay and expects output to be lower 20% than initially planned on 13 July

• **Toyota** starts production on new engine at Alabama plant on July 12

• **Daimler** starts talks to sell French Smart plant announced on July 3

• **VW** decided not to open production plant in Turkey on July 1

• **GM** asked by Union to close Texas SUV plant due to coronavirus outbreak but the co refused to do so on June 30

• **VW** all 16 plants back to production from June 17

• **FCA** may scrap Edge SUV, putting Canada plant at risk on June 16

• **PSA** said future of Sunderland plants will depend on future Brexit negotiations and vans to be built at Vauxhall plant

• **Toyota-PSA** Czech TPCA plant starts running at full capacity on June 2

• **Suzuki** starts manufacturing at its Gujarat plant from 25 May and defers production at Maruti plant announced May 26

• **Nissan** plans to close Barcelona plant from December announced on May 22

• **BMW** delays opening of the Hungarian plant announced May 15

• **Daimler** halted Alabama plant temp due to Mexico parts delay on May 15

Our view: Although not all the plants work at full capacity due, primarily, to supply chain bottlenecks but also due to coronavirus outbreaks at production plants across the globe. However, supply side shortage should somewhat be eased by the weaker demand, thus putting lesser pressure on inventory build-up and pricing pressures. Nonetheless, some fiscal stimuli would be welcome to synchronise supply and demand at Auto OEMs and for numbers to improve in H2. However, we expect material double-digit decline rates in Europe and the US in the next few months.

China recovery continues: Sales +15% y/y in July

According to CAAM, wholesales in China increased by +14.9% y/y to 2.08m vehicles in July. The forecast from the auto industry body CAAM is based on sales data it had collected from key companies, without giving further details. As a consequence, the association expects YTD sales in China to reach -13% y/y, or 12m units. We note that final sales figures usually are slightly revised from preliminary data.

Our View: The Chinese auto market remains in recovery mode and sequentially returns to positive growth y/y in July, after June was in negative territory due to the high base in the same month last year. Back in June 2019, strong pricing discounts were implemented by dealers to push China-5 vehicles into the market before the 1st of July, when the China-6 regulation was implemented. Therefore, the strong growth figure of +15% y/y wholesales in July this year is broadly in-line with expectations, given the soft base from the pre-buying effect. Nevertheless, we think the positive trend in wholesales should continue in the next few months, and we expect Q3 sales to grow by ~10% y/y on easy comps, followed by ~6% growth in Q4, leading to -5% growth in FY2020 (UBSe). China remains the market with the best post-lockdown momentum, also driven by first time buyers who now prefer a private car over public transport or shared mobility.

Could hydrogen be a disruptor to Autos in the era of ongoing decarbonisation?

In short – yes but with long-dated effects and with some current effect on capex spend to Autos. We summarise some of the key findings on the disruptive effects of hydrogen from our chemicals team, please click on links below to see more.

Chemicals Sector: Hydrogen: a new dawn or a 2000-like false dawn? Andrew Stott

Chemicals Sector: Hydrogen – what are investors saying? Andrew Stott

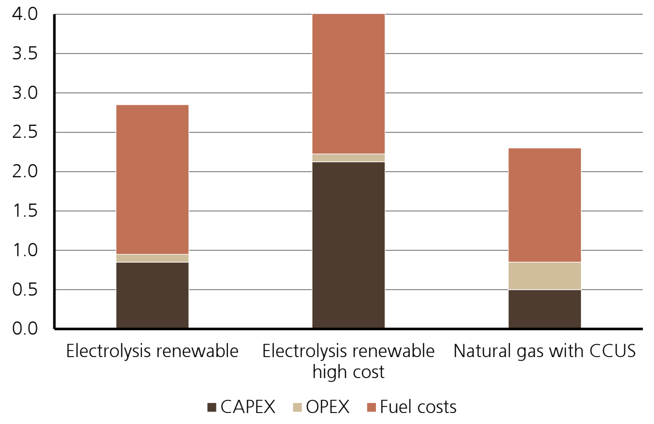
Hydrogen has gathered pace as a theme among investors in recent weeks, spurred on by the EU Green Deal, a plethora of company announcements (see below for Air Products as the most significant) and, as of 15 July, comments from US Presidential Democrat candidate, Joe Biden, that he would like to see hydrogen development as part of a broader US new energy initiative (Bloomberg article).

The most common question is ***how does green hydrogen compete with existing energy applications given the lower energy efficiency*** and the issue that as hydrogen displaces demand for fossil fuels then does this not just keep lowering the price of competing energy benchmarks?

UBS thoughts: Well there is no doubt that scalability, to reduce green hydrogen's production costs, has to be extensive in order for hydrogen to compete. The chart below shows that the cost of hydrogen from electrolysis is well above the prices of current energy options, when adjusted for a hydrogen-equivalent basis. As such, subsidies (and perhaps increased taxation for fossil fuel producers) will have to be integral to the economics. Indeed the EU is already proposing a contract for difference on a per tonne basis between a pre-set carbon price and the spot price within the ETS as a subsidy level for green hydrogen producers in Europe. In addition, research grants and low cost loans are also part of the strategy within the EU at least.

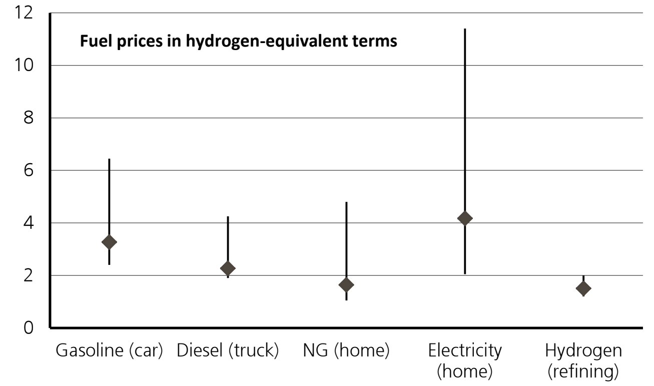
Our European utilities team argued in a recent UBS Utilities report that, "based on the recent NEL/Nikola purchase agreement for electrolysers, the levelised cost of hydrogen (LCOH) for Nikola Motors at $2.7 per kg is already in line with recent Hydrogen Council forecasts for 2030. Hydrogen costs could halve if renewable power is available at $20/MWh, something which is already achievable in some of the lowest cost projects worldwide".

Figure 4: Hydrogen costs ($/Kg) for electricity-based and gas-based on 'blue' (carbon capture and storage - CCUS)



Source: IEA, UBS research. Using renewable electricity price of $US40/MWh at 4000 full load hours. Higher capex costs can add c50% to the above electrolysis calculations

Figure 5: Fuel prices ($/kg average and range) paid in IEA countries + China, incl. taxes and tariffs. Also hydrogen prices for refining applications



Source: IEA: NG = Nat Gas. Fuel Cell drive train assumed to be 96% more efficient than ICE. Heat pump assumed to be 3.6x more efficient than hydrogen-heating

Below shows our summary of practical challenges facing hydrogen with some of the potential solutions. This is not extensive but a reflection of the main debates we are having with investors.

Figure 6: Key challenges for hydrogen adoption and potential solutions

	Challenge	Potential Solution
Production	Electrolysis is expensive ($860/kW currently) and has lower energy efficiency, with a conversion ratio of 1.3:1 for renewable energy to hydrogen. In addition by its nature production of green hydrogen is rarely 24/7	1) Falling cost of renewable power may change the economics rapidly over coming years with daytime prices low or even negative; 2) Convert hydrogen to methane by piping in biogas to combine with the hydrogen in the Sabatier process that then is 100% methane (see the example from utilities company SoCalGas in California); 3) Use microbes to convert hydrogen and CO2 into renewable liquid fuels (see companies such as Cool Planet and Red Rock)
Storage	Lower energy density (e.g. even liquified hydrogen has 4x times lower energy density than gasoline) creates a sizeable cost.	Utilise the industrial hubs where hydrogen is already based on fossil fuels eg NW Europe, Gulf Coast of the US, SE China. Use/expand the caverns, pipes and tanks currently available in nat gas networks though this will require conversion to methane
Distribution	Costs of transporting hydrogen are 1.5-5x higher than for natural gas, due to its lower density and its corrosive impact on pipes	Harness natural gas pipeline infrastructures which would involve changing current regulations. For example, in Germany there is currently a maximum of 2% of hydrogen allowed to be injected into nat gas pipeline (and it is still not permitted at all in the UK)
Safety	Misperceptions are commonplace on this. Hydrogen is highly flammable but is already used in vast quantities commercially and successfully with safe handling. It can ignite quicker but also actually dissipates more rapidly than, say, gasoline.	Ensuring storage and transmission protocols are followed

Source: UBS research

Decarbonising energy market is the key driver

Increasingly, though, the trend towards decarbonisation of the overall energy market should allow an expansion of the role of hydrogen outside of chemicals and oil refining. The "Hydrogen Council" was established at the end of 2017 and includes a whole host of energy, OEM, auto supplier and chemicals' companies.

ESG
Environmental
Social
Governance

The main rationale for analysing the hydrogen opportunity is the increasing availability of cheap (renewable) electricity and the ongoing need to reduce carbon emissions. The specific aim of the Hydrogen Council is:

- To decarbonise 100% of hydrogen fuel used in transport by 2030.

However it is also more broadly aimed at promoting the use of hydrogen in a range of end-markets:

1. Power generation.
2. Autos, commercials trucks, buses, trains and tramways and synfuel in aerospace and shipping applications.
3. Industrial energy.
4. Heating and power for commercial buildings.

The main aim is to offer up hydrogen as one of four main levers to improving the energy market's efficiency and emissions. The potential to create a carbon neutral production process is also real and currently based off biomass (waste) from which bio-methane can be produced (via biogas, which consists of methane and CO2). This is already reality in Offenbach where a public hydrogen station is operating in partnership with Hyundai.

We believe offers a similar content story to battery electric vehicles

In order to make a hydrogen vehicle - generally the battery would be replaced by a hydrogen fuel cell that converts hydrogen and oxygen into water and the release of electricity. At this stage there is very little discussion on the implications of fuel cell vehicles form the semiconductor suppliers but our understanding at this stage is that the opportunities would be similar to that found in a battery electric vehicle. We understand that a fuel cell is likely to output direct current electricity which would need to be converted into alternating current to power an electric motor - just like what happens with the electricity out of a battery in a full battery electric vehicle. We need a much better understanding of the system architecture to compare fully but there may be some areas that are disrupted such as battery management systems (depending on how much battery capacity is still required) and onboard charging systems but the most valuable content in the main inverter is likely to still exist and we would expect there to be other new semis use cases in monitoring and managing the fuel cell itself that might replace any lost content. So our base case at this point is that the content would likely be similar in a hydrogen fuel cell vehicle compared to a battery electric vehicle (as shown above in our bottom-up estimates).

Q3 y-o-y trend continues to improve

The pace of deceleration that has been seen in the autos industry in reaction to the COVID-19 outbreak is unparalleled. The containment measures have led to most auto production in the US and Europe ceasing after some significant impact to production in Asia in Q1 that is still taking time to recover. Despite a rapid pace of slow-down Q2 was more resilient than initially expected prior to lock-downs, however for the sector to recover the end demand markets should recover. We also believe customer confidence will also be more relevant for the sector to recover. Meanwhile, we expect those players that did a good job in difficult 2019 and are now better-positioned to benefit from technological changes within the industry. Markets expect the sector to return to growth mode in Q4 20. Below we briefly assess some of the key leading indicators we look at and we feel are valuable leading indicators for the sector.

Figure 7: UBS leading indicators for Autos / Industrial semis

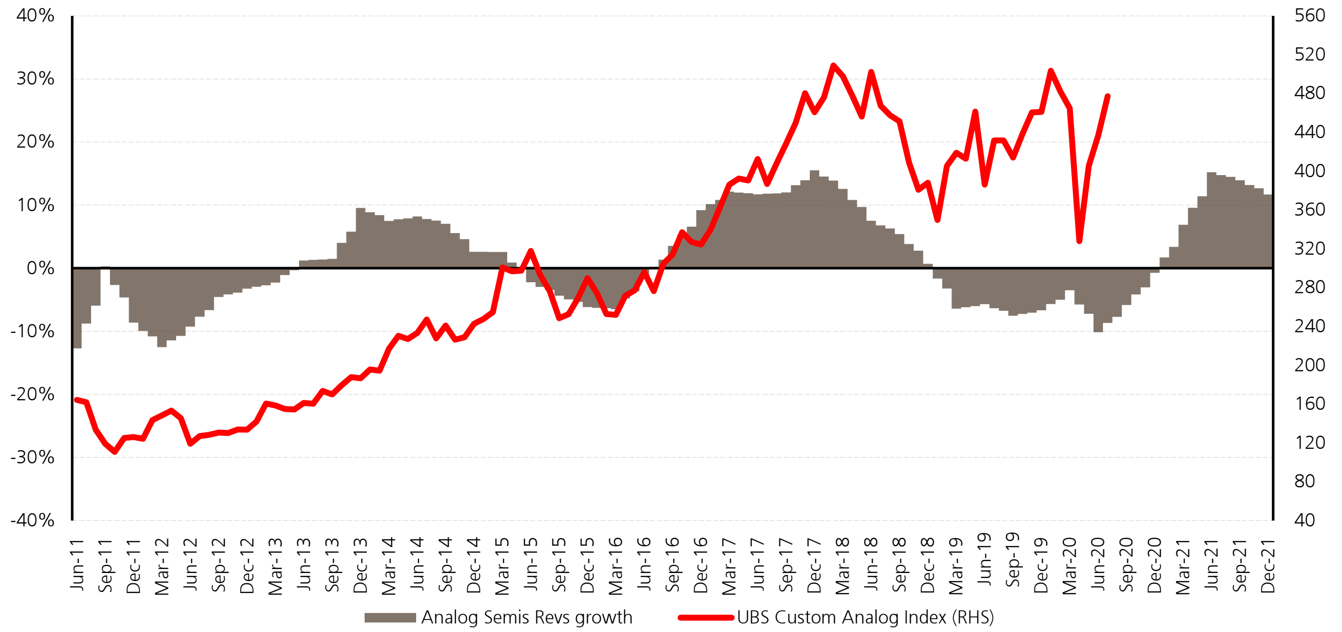
Indicator	Q1'19	Q2'19	Q3'19	Q4'19	Q1'20	Q2'20	Q3'20E	Q4'20E	Commentary
1) Semis Revs gr. y/y %	-6%	-6%	-8%	-7%	-3%	-8%	-3%	2%	Positive – Recovery ongoing and likely to accelerate to double-digit growth in 2021E.
2) Semis vs OEM Revs gap	-1%	-3%	-9%	-4%	9%	32%	9%	7%	Positive - Semis are expected to be more resilient vs downstream OEMs in 2020E
3) Inventory days - Semis	121	120	111	113	118	130			Negative - Inventory days returned to highs of the previous year's peak
4) Inventory days - OEMs	69	67	65	61	71	84			Negative - Inventory days peaked at OEMs but the auto/industrials sectors show good control on absolute inventory terms
5) Autos production y-o-y*	-6%	-8%	-4%	-4%	-22%	-45%	-11%	-9%	Positive - Auto production recovering in Q3/Q4 and to return to growth in 2021E.

Source: UBS estimates, *IHS

1) y-o-y growth in negative territory likely to return to positive in '21E

Possibly the most positive signal for the stocks is that we expect Q2 and Q3 to mark the trough before we head into a period of accelerating y-o-y growth rates that will likely last through the middle of 2021E. This is consistent with the guidance that the Semi companies set forth post Q2 amidst ongoing market opening and returning back to work at full capacity. Accordingly, markets have followed suit and consensus is largely aligned with the Q3 guidance at present. We believe that markets still weigh in some risks for potential disruptions caused by the coronavirus, nevertheless we expect that to be rather at local/regional scale rather than globally. That said, markets expect Semis to return to growth into early 2021E although this is largely understandable given the easier y-o-y comparisons.

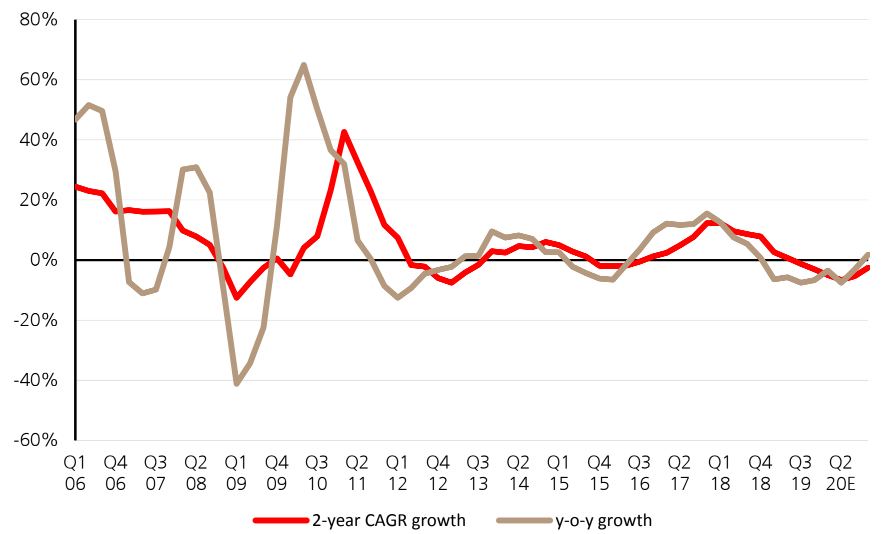
Figure 8: Analog semis revenue growth (3-mths rolling) vs. stock performance



Source: UBS, Company data, Datastream

If we look at the current downcycle on a 2-year CAGR basis to try and account for the fact that we entered the COVID-19 downturn on the back of an ongoing cyclical downturn we can see that the magnitude of decline is actually similar to that faced in the global financial crisis. We do expect we will see a more measured recovery in this context as we trend into 2021/2022E but still should see a strong reacceleration in growth given none of the underlying growth driers have been diminished as we highlighted earlier.

Figure 9: y-o-y growth in autos / industrial semis vs 2-year CAGR

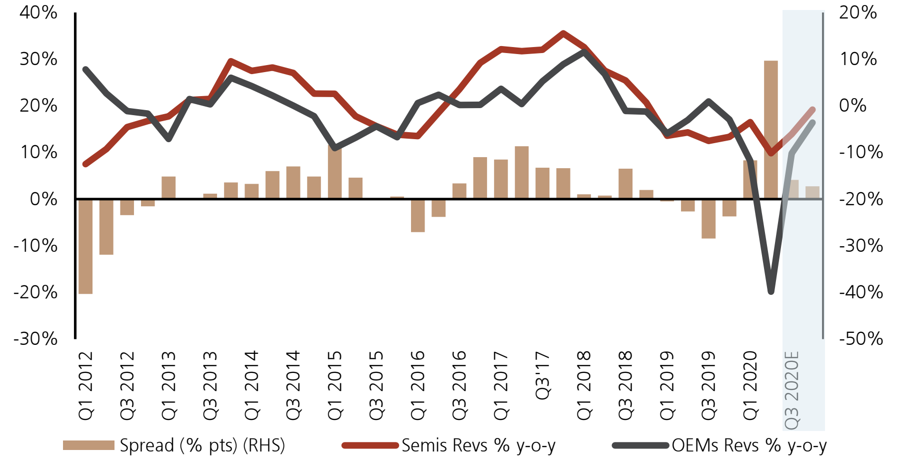


Source: UBS estimates, Company data

The question is already shifting towards how strong the recovery for the sector might be in 2021E - something that we will address more directly in the next section when we look at the bottom-up OEM forecasts for those that we track.

2) Semis vs. OEM gap analysis - some inventory build in 2020 post destocking in 2019: Given the pace at which demand slowed down towards the end of Q1 for most OEMs both automotive and industrial and with the lockdown continuing into Q2 in most of Europe and the US - we are seeing some inventory build-up through the supply chain. This is not unexpected and is primarily a result of how the demand and supply shock to many OEM businesses and production sites has occurred. The positive in our view is that having spent most of 2019 destocking through the supply chain - there is scope for OEMs to accept (and potentially even desire) some level of inventory build of components during the lockdown in order to prepare for a potentially sharp recovery in demand.

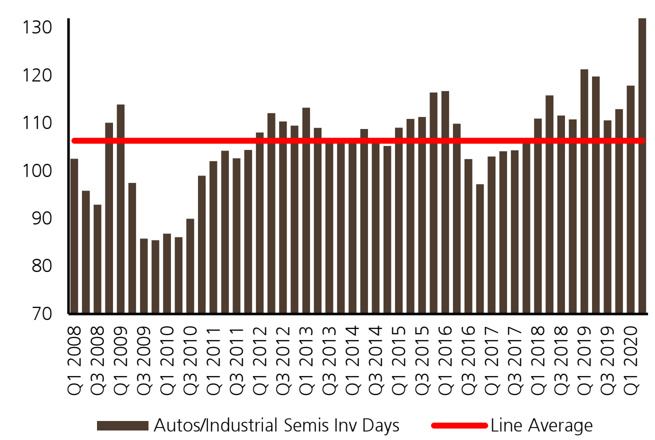
Figure 10: Semis revenue growth vs. OEM revenue growth



Source: UBS estimates, Company data

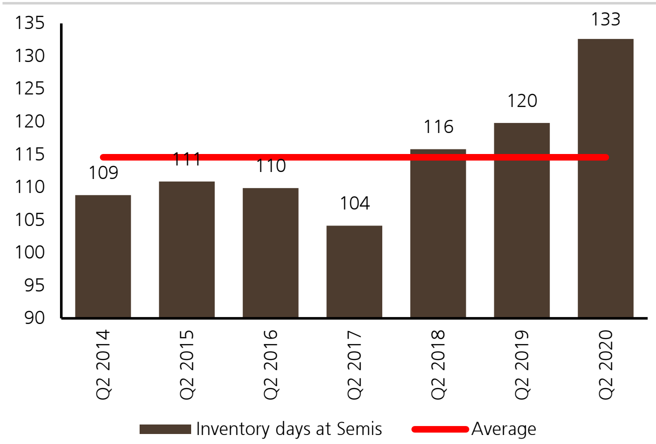
3) Semis inventory - normalisation will take longer: Through the end of 2018 and into 2019 we were in the midst of an inventory correction through the semis autos / industrial supply chain. Q2 did show negative effects of market lockdowns and a record high inventory build-up (+c18 days of inv on hand vs seasonally average from 7-Yrs). Thus, underutilisation charges should weigh in on gross margins and cause some deterioration in the near term, despite the expected top-line improvement (particularly in Q4 20). Clearly the correction due to COVID-19 is going to delay when we see a recovery (we now assume H1'21).

Figure 11: Autos / industrial semis inventory days



Source: Company data, UBSe

Figure 12: Q2 autos / industrial inventory days

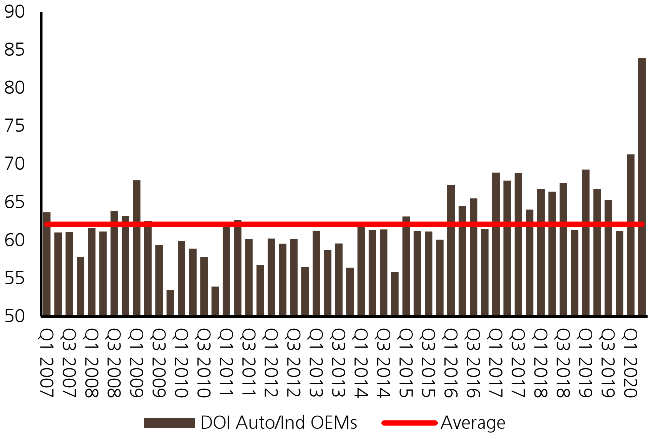


Source: Company data, UBSe

4) OEM Inventory – both auto and industrial ramp up: The demand shock and cessation of sales have not only affected auto inventories but also Industrial OEMs that used to be resilient in the recent months despite weakening of the demand. Given many OEMs and Tier 1's would have seen limited sales in the last in Q1/Q2 along with a rapid halt to production but raw material deliveries have not, particularly for Industrial OEMs - what caused an inventory build-up. However, Inventory is now keenly focused on (see Fig. 18), although the situation looks contained at Auto OEMs, the situation looks newer at Industrial OEMs. From the Semis perspective - most of 2019 saw inventory destocking and in absolute terms - inventory levels peaked (partially due to seasonality), although this still has to be closely followed and contained as there is plenty of uncertainties in 2020.

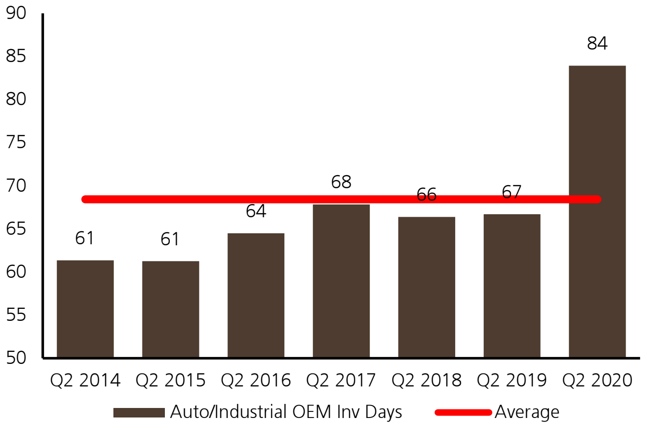
1. **Overall autos / industrial inventory days:** On a combined basis - the inventory level appears elevated given a global slow-down in economic activities. We calculate inventory days of 84, up 17 day vs. Q2'19 although slightly above the normal of 68 days for Q2.

Figure 13: Autos / industrial inventory days



Source: UBS, Company data

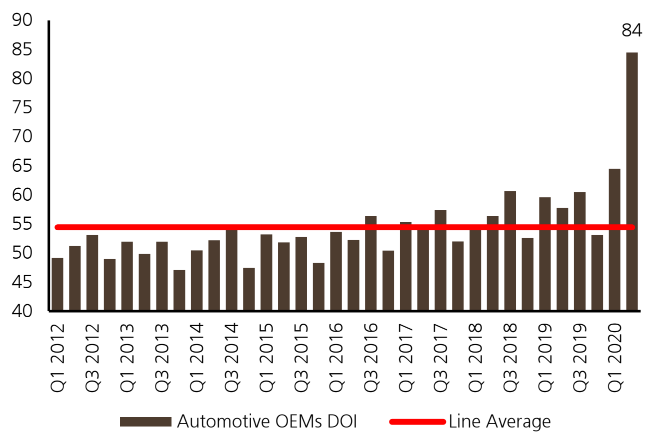
Figure 14: Q2 trend - autos / industrial inventory days



Source: UBS, Company data

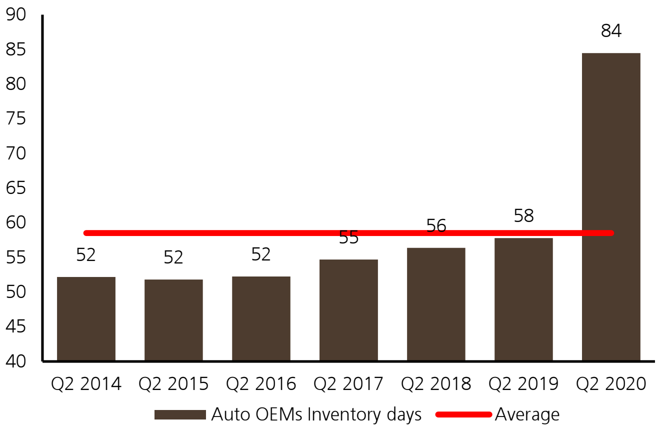
2. **Automotive inventory days - step up not surprising:** As mentioned the slow-down in sales towards the end of the quarter (and hence impact on COGS) has led to a significant increase in inventory days in Q2 through the autos supply chain.

Figure 15: Auto Tier 1 / OEM inventory days



Source: UBS, Company data

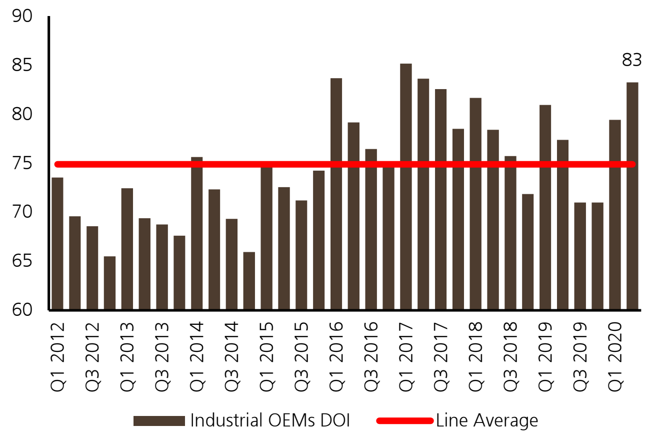
Figure 16: Q2 Auto Tier 1 / OEM inventory days



Source: UBS, Company data

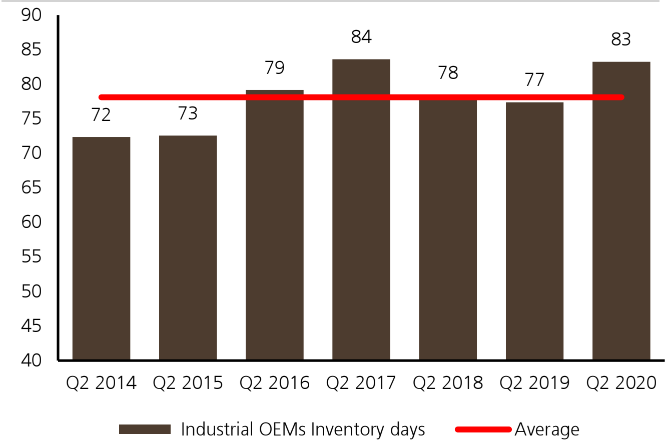
3. **Industrial inventory days high:** If we look at the inventory situation within industrial - slow-down in demand caused by market lockdowns exposed inventory build-up. We currently sit at highs of Q2 2017 with regards to inventory days. We believe the inventory situation at both Autos and Industrial OEMs will quickly correct when OEM demand starts to normalise in Q3.

Figure 17: Industrial OEM inventory days



Source: UBS, Company data

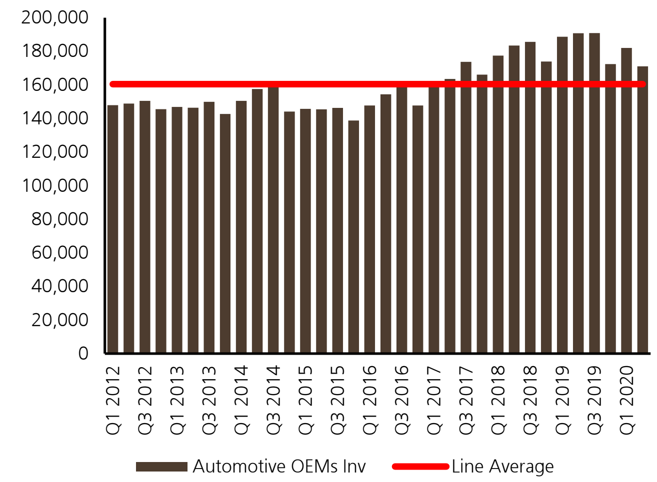
Figure 18: Q2 Industrial OEM inventories



Source: UBS, Company data

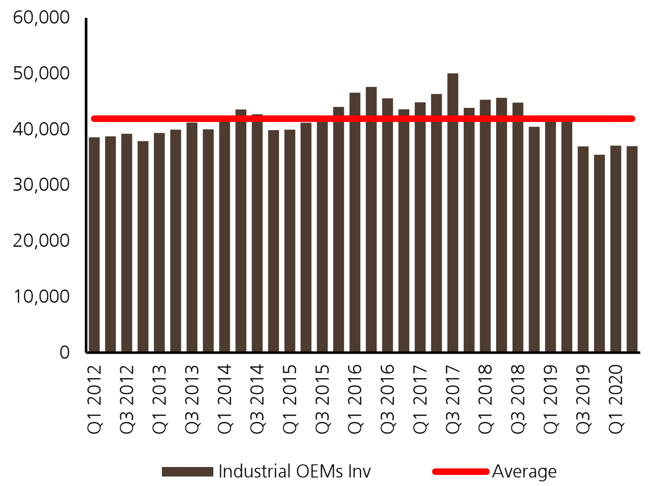
4. **Absolute inventory levels leave less concern:** If we dig into the absolute inventory levels - to remove the impact of the sharp reduction in COGS towards the end of the quarter - this illustrates that COGS are tracking largely in-line with normal levels. Within automotive - we had seen inventory rise a lot in 2017/18 which was then starting to normalise and currently inventory build-up has eased somewhat. In industrial the inventory level has fallen somewhat but some of this is due to disposals but overall the situation is well managed in our view.

Figure 19: Absolute automotive inventory level (US$m)



Source: UBS, Company data

Figure 20: Absolute industrial inventory level (US$m)



Source: UBS, Company data

We include below a summary of some of inventory comments made by OEMs both in the automotive and industrial end markets post Q2. They highlight the emphasis being placed on managing inventory near-term to preserve cash and management expects some recovery as we head into year-end (particularly in Q4 20).

Figure 21: Comments on inventory from Automotive OEMs/suppliers

Companies	Comments
Aptiv	1/ Our operations resumed later in May, about 2 weeks after Europe, and we saw a favorable platform mix as OEMs prioritized higher-contented vehicles as they began rebuilding **inventory**. 2/ And while China production levels have increased, **inventories** remain elevated and customers are adjusting schedules accordingly. 3/ (...) that a portion of the strength in Q2 and early Q3 production is about rebuilding **inventory** levels, that -- all that's factored into our outlook, our early outlook for 2021 vehicle production.
BMW	1/ As previously announced, we significantly reduced **inventory** in the second quarter to bolster our free cash flow. 2/ This includes, for example, the systematic management of our vehicle **inventory**. We will see further efficiency gains in the second half of the year as we intensify and extend our performance program.
Continental	Q2 turned out to be much stronger than anticipated, with indications that our customers have been building some **inventory** to serve market demand. At the same time, the reduced volatility in the call-off situation suggests these **inventories** are prudently managed, which is why we expect vehicle production growth in China to slow sequentially in Q3.
Daimler	1/ The major lever here is the working capital with a pronounced reduction of **inventories** by more than 60,000 vehicles in the division. 2/ **Inventory** reduction of around 7,000 units contributed significantly to this development, and to a lesser part, a reduction of trade receivables. 3/ As we commented before, we see a favorable trend in terms of sales, which means we need to get ready for it and add a bit in terms of production but also in terms of **inventory** within the third quarter. But it should be a moderate increase in terms of **inventory**, not necessarily the same slope and pattern as we saw in previous years.
Ford	1/ We began the quarter with closed auctions, growing **inventory** and falling prices. 2/ And if you look at our return to work, we did so not only safely, but production and our wholesale vehicle sales came with that and **inventory** management, really strong performance by the teams.
GM	1/ Retail sales have recovered from April lows to around 20% below 2019 levels at the end of the second quarter and trending better in July, even amidst a backdrop of limited **inventories**. We expect **inventory** levels to steadily recover from current levels, and we remain cautiously optimistic about the continued recovery in U.S. SAAR. 2/ While retail sales performance was down 24% year-over-year, retail market share of full-size pickups improved from 35% to 36.1% despite lean **inventories**. Our **inventory** levels remained lean at 480,000 units as of July 25 compared to 810,000 units at the end of Q2 of last year and 418,000 units at our low point in early June. 3/ And as we go forward, to your point, we will calibrate the right level of **inventory** to have based on what the SAAR environment is like. As you know, it's a needle that you've got to thread, watching what the competition is doing, our own **inventory** levels and the appropriate trade-off between market share as well as profitability.
PSA	1/ And this has enabled us to strictly control our **inventories**, as you will see later on in the presentation. 2/ On next slide, we see that **inventories** of both the group and our dealers have been strongly reduced, so the level of **inventories** is 24% lower than the same period last year. (…) Last but not least, the decrease in dealer **inventory** is significantly higher than the market decrease forecasted in H2, which gives room for invoicing in the second part of the year.
Renault	**Inventories** decreased by 13% versus June '19.
Volkswagen	This meant that we could significantly reduce **inventories** to avoid **overstocking**. The brands also -- are also pushing to below ideal **stock** levels for year-end, and our national sales companies are optimizing lead times. This should ensure that we should see a further decrease in absolute inventory level by year-end.

Source: Company conference call transcripts and Q2 20 press releases, UBS

Figure 22: Comments on inventory from industrial OEMs / Distributors

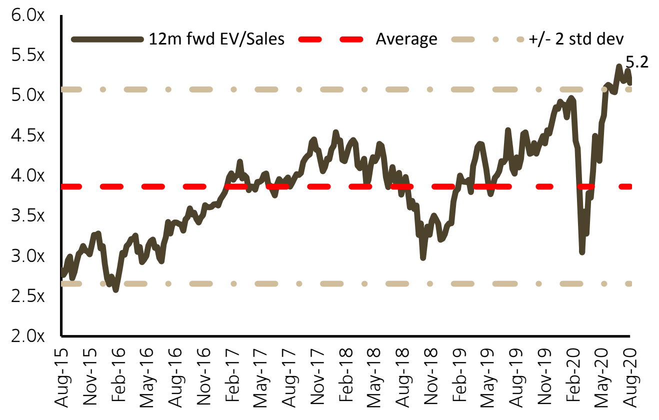
Companies	Comments
ABB	On the **inventory**, we are seeing overall a good performance in our **inventory**. We are releasing cash from **inventory** but this is coming mainly from lower volume. And then if we look at **inventory** days outstanding, we do not have such a good performance. I want to be clear on that as well. So that's an area where we need to work through Q3 more. So the good cash-in net working capital is more coming from lower volume of business than actually the **inventory** days or the receivable days going down.
Arrow Electronics	1/ The percentage of customers saying they had too little **inventory** increased compared to last year, and the percentage of customers saying they had too much **inventory** decreased compared to last year but also remained higher than normal. 2/ But the -- I want to be clear that what we've seen in bookings, backlog, the **inventory** increases has really been broad based with Asia Pac leading the way. 3/ Typically, in an economic decline, the high engineering products are the ones that customers stop buying first, so they're trying to control their **inventory** because that's where the vast majority of the dollars are. 4/ So we believe we will get enough **inventory** based off of whatever the market does. (…) So yes, we think the **inventory** is about where it should be right now.
Emerson Electric	1/ Lastly, the drop in net sales resulted in an increase in ending **inventory** and lower payables. 2/ As you mentioned, there can be challenges in some areas like dispose our **inventory** and including the distribution linkages of our customers. 3/ And so **inventory** will continue to be flowing into the channel, which normally we would not be seeing.
GE	1/ **Inventory**, similar story. It was a slight positive, but given the volume decline, we still need to manage inventory better, a big opportunity for lean. 2/ On **inventories**, we worked hard, but we need to do more.
Honeywell Intl	We have work to do on **inventory** now. And so those would be the main things that I would highlight: CapEx, repositioning cash, that pay cycle dynamic is going to play out in 4Q and we've got to work on our **inventory** management.
Legrand	1/ Number one, we have a little bit more **inventory** than at the end of the year. The level of **inventory-to-sales** is about 14.8%. It was, I think, 12.9% at the end of 2019. It was 14.4% at the end of the first semester 2019. So slightly less **inventory** than at the end of H1 2019, but more **inventory** than at the end of full year 2019. And this was a strategy. (…) So to make a long story short, the working capital requirements is well under control with a little bit more **inventory**.
Schneider Electric	1/ We delivered free cash flow of EUR 1 billion, record-high in H1, benefiting from disciplined working capital management, but doing that while building a significant stock, a significant **inventory**, to make sure we serve our customers through the disruption of supply chain. 2/ So we are focused today on business continuity, on quality and delivery focus. We've allowed mid of the year to build an **inventory**, which is much higher than usual to benefit to our customers. 3/ We'd expect to continue to see positive productivity in H2 despite continued COVID cost due to stock consumption from **inventory** build-up in H1.

Source: Company conference call transcripts and Q2/H1 20 press releases, UBS

VALUATION

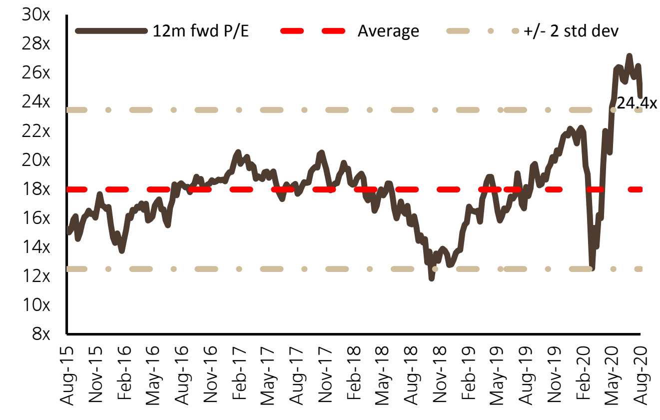
return ↑

Figure 19: Autos/Industrial semis Forward EV/Sales



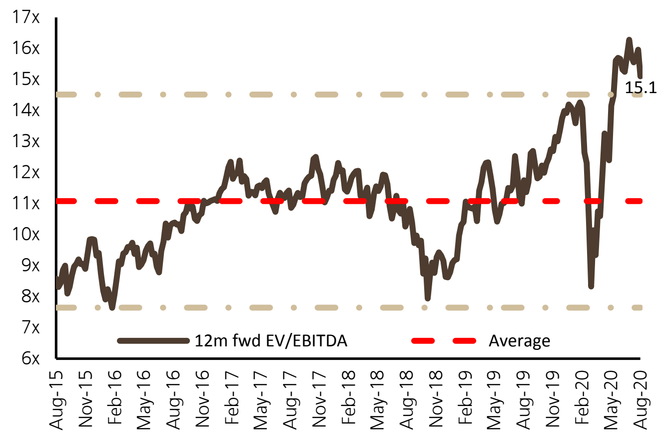
Source: UBS, DataStream

Figure 20: Autos/Industrial semis Forward P/E



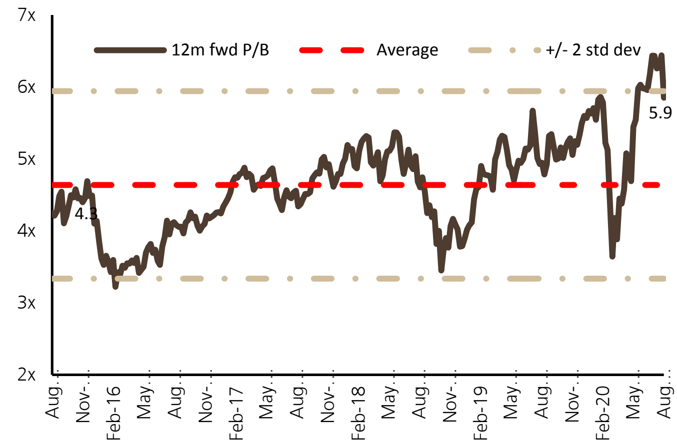
Source: UBS, DataStream

Figure 21: Autos/Industrial semis Forward EV/EBITDA



Source: UBS, DataStream

Figure 22: Autos/Industrial semis Forward P/BV



Source: UBS, DataStream

Figure 23: Analog Semis Global Valuation Multiples (Priced on 24 august 2020)

Company	Rating	Price (lc)	Price Target (lc)	Market Cap ($m)	EV/Sales 2020E	EV/Sales 2021E	EV/EBIT 2020E	EV/EBIT 2021E	Price/Earnings 2020E	Price/Earnings 2021E	FCF Yield 2020E	FCF Yield 2021E
Analog Devices	Not Covered	116.02	-	42,831	8.5	7.7	21.2	18.4	23.9	20.7	4.5%	4.5%
Infineon	Buy	22.17	25.50	32,575	3.4	2.9	23.3	16.2	29.5	19.2	1.9%	3.9%
Maxim Integrated	Not Covered	68.51	-	18,271	7.9	7.5	23.8	21.5	29.1	26.5	4.2%	4.4%
Microchip Technology	Not Covered	107.93	-	27,247	6.9	6.3	18.5	16.4	18.6	16.7	5.6%	6.1%
Melexis	Sell	66.70	54.00	3,174	5.7	4.9	47.8	27.8	55.3	33.1	1.4%	4.4%
NXP	Not Covered	121.50	-	33,926	5.0	4.3	21.6	15.7	25.3	17.8	4.5%	5.1%
ON Semi	Not Covered	20.91	-	8,590	2.2	2.0	24.1	14.8	31.3	16.0	3.6%	5.0%
Renesas Electronics	Buy	676	880	11,009	2.5	2.3	38.4	28.1	32.3	24.8	11.4%	10.0%
Rohm	Buy	7,040	8,600	6,544	1.0	0.9	15.0	9.2	34.2	22.2	5.6%	4.5%
STMicroelectronics	Buy	24.32	27.00	25,498	2.6	2.3	26.1	14.7	31.8	18.4	1.9%	3.7%
TE Connectivity	Not Covered	93.54	-	30,872	2.8	2.6	20.0	16.4	22.4	18.5	4.7%	5.4%
Texas Instruments	Neutral	140.33	131.00	130,647	9.7	7.8	24.3	17.9	28.6	21.8	3.4%	4.5%
Analog Semis				*Mean*	4.9	4.3	25.3	18.1	30.2	21.3	4.4%	5.1%
				Median	4.2	3.6	23.5	16.4	29.3	20.0	4.3%	4.5%

Source: UBS estimates, IBES consensus used for non-covered stocks

Figure 24: Recent commentary from major Analog Semis

Company	Date	Current Qtr	Next Qtr guide (mid-point guidance)	Comments				
				Inventories	Autos trend H2/FY	Industrials trend H2/FY	Orders book-to-bill	General comments
Texas Instruments	21-Jul	-3% q/q, -12% y/y	+5% q/q, -10% y/y	TI inv dollars were up $133m from 1st qtr, and days were 166 (i.e. +21 days seq. and +23 days y/y), about as exp. Distribution-owned inv decl. again in 2nd qtr by ab. $150m, the 7th consec. qtr of planned red. as we cont. the transition to have fewer distr. and bring more cust. direct.	(…) the weakness was primarily from the auto mkt. Auto was -40% seq. and over -40% comp. to a year ago. (…) excl. auto, TI was +8% seq. and -3% vs a year ago.	Next, the Industrial market was up ab. 2% seq. and also up 2% from a year ago. There are end mkt that are weak and others that are understandably strong, like medical.	NA	For the third quarter, we expect TI revenue in the range of $3.26 billion to $3.54 billion and earnings per share to be in the range of $1.14 to $1.34.
STMicro	23-Jul	-6% q/q, -4% y/y	+17% q/q, -4% y/y	(…) inventory at the end of the second quarter was in the range of 129 days of investment (i.e.+15 days seq. and +3.5 days y/y)	Well, about automotive, well, clearly, automotive for ST, what was running well is ADAS with the partnership we have with Mobileye, okay, which really show, let's say, a very good dynamic in Q2 and will continue in Q3.	The dynamics (…) remains mixed. Some appliances like home and lighting are still weak. But d. the qtr, we started to see some +-ve signs in key appliance areas for ST, such as ren. energy and factory automation.	Well, in Q2, our, let's say, book-to-bill ratio has been well b. 1 because impacted by the correction in auto	Looking at Q3 20. At the midpoint of our guidance, we exp. net revenues in the 3rd qtr to be ab. $2.45bn, representing seq. gr. of ab. 17.4%. Gross margin is expected to be about 36% at the midpoint, and includes about 200 basis points of unsaturation charges.
NXP	27-Jul	-12% q/q, -18% y/y	+10% q/q, -12% y/y	This certainly includes stringent discipline of our distr. channel inv to maintain our target channel inventory at 2.4 months of supply. Inv days stood at 115 days (i.e. +c8 days seq. and +c19 days y/y)	Automotive is expected to be down in the low 20% range versus Q3 '19 and up about 20% versus Q2 '20.	Industrial and IoT is expected to be up in the mid-teens range versus Q3 '19 and is expected to be up in the mid-teens range versus Q2 '20.	NA	Our rev guidance range for Q3 is again wider than normal. However, we believe the setup is gradually more positive heading into the 2nd half of the year.
Infineon	4-Aug	+9% q/q, +5% y/y	+3% q/q, +7% y/y	DOI stood at 126 days (i.e., + 5 days seq. and +2 days y/y). On the contrary, inventories in the distribution channel are now almost 2 weeks lower than at the end of the March quarter.	Automotive continues to do that despite of the relatively low, I would say, total Automotive production simply because of our gained share in Automotive.	While the portfolio in Ind for us had been not so strong and has been kind of revamped in the last yrs, the major focus of the Jpn organization is around cars and is doing quite well here.	Our book-to-bill ratio stood at 0.7 for the June quarter	Now to our outlook for the fourth, final quarter of our 2020 fiscal year. We anticipate revenues of between EUR 2.3 billion and EUR 2.6 billion based on an assumed U.S. dollar exchange rate of $1.15 to the euro.
Microchip	4-Aug	-1% q/q, -1% y/y	-4% q/q, -6% y/y	We had 117 DOI at the end of the June qtr, which was down 5 days from the prior qtr's lev. and right in the mid. of our publ.-stated inv tgt of 115 to 120 days. Inv at our distr. in the June qtr were 30 days comp. to 29 days at the end of Mar. We believe distr. inv lev. for MCHP are still low comp. to the hist. range we have experienced over the past 10 yrs, which is b. 27 and 47 days.	Auto car sales and prod. in China recovered nicely to grow seq. and y/y, benefiting our China auto business. Our auto business everywhere else had a very poor qtr as Apr and May were adv. impacted by widespread auto factory shutdowns.	(…) Ind. and cons. mkt, which were gen. weak, we did see pockets of strength rel. to COVID-19. In cons., the strengths that are rel. to gaming, home impr. and hobbyist projects for people shelter at home.	Book-to-bill was like 1.17% in the March quarter. And so we entered with very strong backlog,	For Sept qtr, we expect our non-GAAP gross margin to be between 61.2% and 62.2% of sales. We expect non-GAAP op. expenses to be between 23.2% and 24.2% of sales. We expect non-GAAP operating profit percentage to be between 37% and 39% of sales. We expect our non-GAAP earnings per share to be between $1.30 per share to $1.52 per share.
ON Semi	10-Aug	-5% q/q, -9% y/y	+4% q/q, -8% y/y	At the end of the 2nd qtr, days of inv on hand (DOIH) were 140 days, up by 9 days as comp. to 131 days in the 1st qtr of '20. The incr. in DOIH was driven primarily by our exp. of recovery in demand in the H2 of the d. yr. In addition, we want to ensure that we have sign. DOIH to support our cust. in case of any supply disruption.	We're looking at something in the minus 20% for in the Automotive sales decline year-on-year in 2020.	Demand for Industrial automation continues to grow at a rapid pace. We've secured major design wins for our image sensors for Industrial applications, and we expect revenue from these wins to be recognized in late 2020.	NA	Based on product booking trends, backlog levels and estimated turns levels, we anticipate that all ON Semiconductor revenue will be in the range of $1.2bn to $1.33bn in the third quarter of 2020. Our third quarter revenue has been impacted more early by geopolitical issues related to a particular customer.

Source: Company results, call transcripts; Note: Implied from the midpoint guidance.

Valuation Method and Risk Statement

The upside risks to the semiconductor sector include stronger end demand from OEMs and tightness of supply due to the financial distress of competitors. Downside risks include macro-economic factors, over-capacity in times of peaking demand and poor yields. The semiconductor sector is high cyclical and vulnerable to sudden shifts in customer sentiment while many companies also have high cost bases meaning they can go loss-making in the downturn.

Infineon is a top 10 global semiconductor company with exposure to auto, industrial and chipcard semiconductors and hence, in spite of its broad portfolio, the company is exposed to fluctuations of the semiconductor cycle. The company is also exposed to overall autos production volumes and the mix towards hybrid and electric vehicles (which have higher semiconductor content). There are also risks of disruptions with new forthcoming technologies such as silicon carbide. Infineon also has ongoing litigation related to the Qimonda bankruptcy that could be a negative. The company is also exposed to fluctuations in the USD:EUR exchange rate with a strong USD positive for the business. We value Infineon using a DCF methodology with a WACC of 9% and a terminal growth rate of 2%.

Melexis: There are a number of company specific risks facing Melexis including 1) Customer concentration with its largest customer being 16% of sales, 2) Significant dependence on a single product family with magnetic sensor accounting for 56% of Group revenues, 3) Risk of disruption if OEMs were to change to a different magnetic sensor technology. More generally the business is exposed to fluctuations in both the semiconductor inventory cycle and underlying demand for automotive vehicles in particular. The company is also exposed to the pricing and competitive risk in key markets given it operates in attractive growth markets. We value Melexis using a DCF based on a WACC of 9% and g of 2%.

Texas Instruments: Our valuation is based on an EV/FCF multiple methodology.
Texas Instruments faces a variety of risks, including rapidly changing technology, intense competition, high required capital investments, pricing pressure, and cyclical end-market demand. Other risks include company's ability to grow revenue to increase utilization of its newly acquired capacity and ability to successfully integrate National Semiconductor operations.

STMicro: Risk factors include GDP growth rates, continuing weakening of US$/EURO exchange rate, technology product life cycles, capacity growth, demand and supply and utilisation rates which contribute to general semiconductor growth. STMicro's biggest medium term risk is centred on being able to deliver new image sensing products into smartphones. Our valuation for STMicro is based on a DCF methodology with a WACC of 9% and a terminal growth rate of 2%.

Renesas: Our price target is based on EV/EBITDA. Potential risks include: 1) a rapid slowdown in the US economy; 2) intensification of competition in the MCU market due to continued new entrants; and 3) a need for further restructuring in the absence of prospects for growth in system LSI sales.

Rohm: Our PT is based on PER. Risk factors include a sales slowdown due to weakness in semiconductor demand alongside a slowdown in the macro economy, a loss of share or price declines as a result of stiffer competition, profit erosion from the strong yen, and deterioration in competitiveness. Also production declines for autos, smartphones, game equipment and PCs.

Required Disclosures

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UBS Investment Research: Global Equity Rating Definitions

12-Month Rating	**Definition**	**Coverage**[1]	**IB Services**[2]
Buy	FSR is > 6% above the MRA.	49%	32%
Neutral	FSR is between -6% and 6% of the MRA.	39%	30%
Sell	FSR is > 6% below the MRA.	13%	20%
Short-Term Rating	**Definition**	**Coverage**[3]	**IB Services**[4]
Buy	Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%
Sell	Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%

Source: UBS. Rating allocations are as of 30 June 2020.
1:Percentage of companies under coverage globally within the 12-month rating category.
2:Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.
3:Percentage of companies under coverage globally within the Short-Term rating category.
4:Percentage of companies within the Short-Term rating category for which investment banking (IB) services were provided within the past 12 months.

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Company Name	Reuters	12-month rating	Short-term rating	Price	Price date
Infineon Technologies AG[18]	IFXGn.DE	Buy	N/A	€22.80	24 Aug 2020
Melexis NV	MLXS.BR	Sell	N/A	€67.35	24 Aug 2020
Renesas Electronics	6723.T	Buy	N/A	¥687	24 Aug 2020
Rohm	6963.T	Buy	N/A	¥7,020	24 Aug 2020
STMicroelectronics[5, 16, 18]	STM.PA	Buy	N/A	€25.12	24 Aug 2020

Source: UBS. All prices as of local market close.
Ratings in this table are the most current published ratings prior to this report. They may be more recent than the stock pricing date

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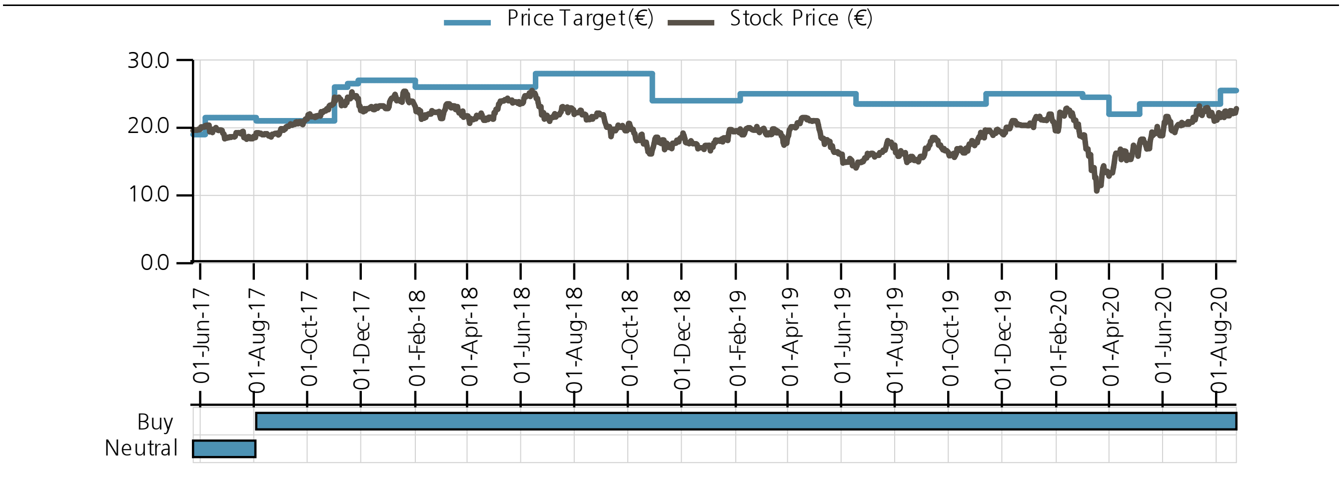
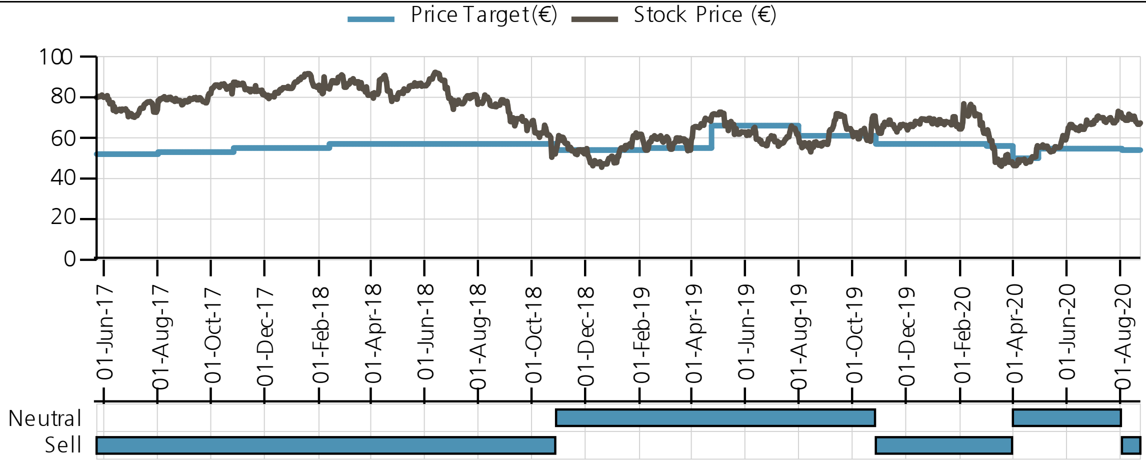
Infineon Technologies AG (€)



Date	Stock Price (€)	Price Target (€)	Rating
2017-05-24	19.56	19.0	Neutral
2017-06-07	20.31	21.5	Neutral
2017-08-04	19.23	21.0	Buy
2017-11-01	24.49	26.0	Buy
2017-11-16	24.51	26.5	Buy
2017-11-28	24.33	27.0	Buy
2018-02-01	23.13	26.0	Buy
2018-06-18	24.84	28.0	Buy
2018-10-29	16.76	24.0	Buy
2019-02-06	19.8	25.0	Buy
2019-06-18	14.07	23.5	Buy
2019-11-13	19.62	25.0	Buy
2020-03-02	18.62	24.5	Buy
2020-04-01	12.87	22.0	Buy
2020-05-06	17.63	23.5	Buy
2020-08-06	21.52	25.5	Buy

Source: UBS; as of 24 Aug 2020

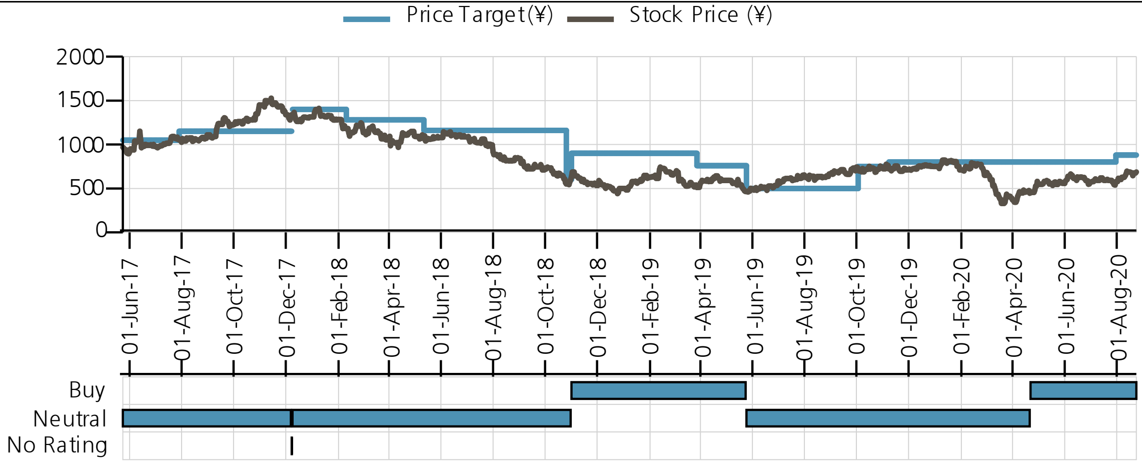
Melexis NV (€)



Date	Stock Price (€)	Price Target (€)	Rating
2017-05-24	79.9	52.0	Sell
2017-08-02	78.39	53.0	Sell
2017-10-27	87.37	55.0	Sell
2018-02-13	84.05	57.0	Sell
2018-10-29	54.15	54.0	Neutral
2019-02-07	54.75	55.0	Neutral
2019-04-24	70.45	66.0	Neutral
2019-08-01	60.6	61.0	Neutral
2019-10-28	66.95	57.0	Sell
2020-03-02	62.05	56.0	Sell
2020-04-01	47.0	50.0	Neutral
2020-04-30	55.55	54.7	Neutral
2020-08-03	70.2	54.0	Sell

Source: UBS; as of 24 Aug 2020

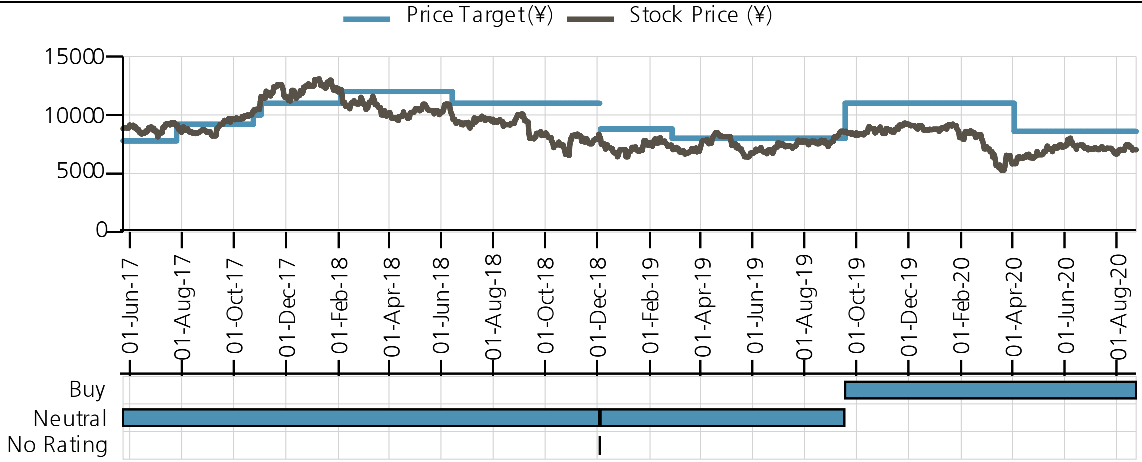
Renesas Electronics (¥)



Date	Stock Price (¥)	Price Target (¥)	Rating
2017-05-24	968.0	1050.0	Neutral
2017-07-29	1056.0	1150.0	Neutral
2017-12-08	1339.0	-	No Rating
2017-12-09	1339.0	1400.0	Neutral
2018-02-10	1180.0	1280.0	Neutral
2018-05-12	1098.0	1160.0	Neutral
2018-10-26	549.0	600.0	Neutral
2018-11-01	634.0	900.0	Buy
2019-03-28	510.0	760.0	Buy
2019-05-25	464.0	500.0	Neutral
2019-10-03	714.0	750.0	Neutral
2019-11-08	722.0	800.0	Neutral
2020-04-22	450.0	800.0	Buy
2020-07-31	578.0	880.0	Buy

Source: UBS; as of 24 Aug 2020

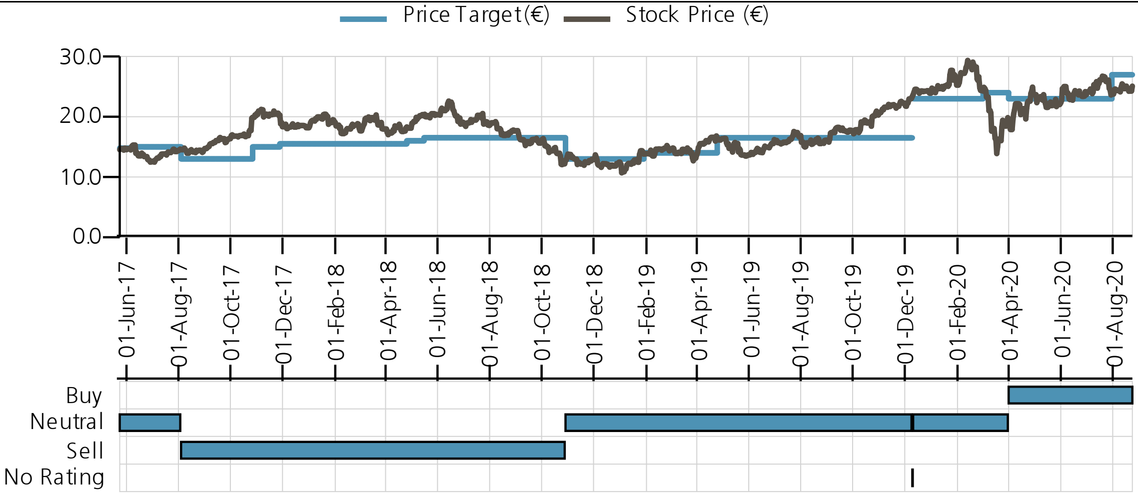
Rohm (¥)



Date	Stock Price (¥)	Price Target (¥)	Rating
2017-05-24	8830.0	7800.0	Neutral
2017-07-26	9050.0	9200.0	Neutral
2017-10-24	10350.0	10000.0	Neutral
2017-11-02	11580.0	11000.0	Neutral
2018-02-03	12150.0	12000.0	Neutral
2018-06-14	9970.0	11000.0	Neutral
2018-12-04	8150.0	-	No Rating
2018-12-05	8030.0	8800.0	Neutral
2019-02-27	7290.0	8000.0	Neutral
2019-09-18	8500.0	11000.0	Buy
2020-04-03	5830.0	8600.0	Buy

Source: UBS; as of 24 Aug 2020

STMicroelectronics (€)



Date	Stock Price (€)	Price Target (€)	Rating
2017-05-24	14.54	14.8	Neutral
2017-06-07	15.05	15.0	Neutral
2017-08-04	14.56	13.0	Sell
2017-10-27	19.92	15.0	Sell
2017-11-28	20.28	15.5	Sell
2018-04-26	18.35	16.0	Sell
2018-05-16	20.16	16.5	Sell
2018-10-29	12.85	13.0	Neutral
2019-01-29	13.84	14.0	Neutral
2019-04-25	16.56	16.5	Neutral
2019-12-10	23.4	-	No Rating
2019-12-11	23.7	23.0	Neutral
2020-03-02	24.32	24.0	Neutral
2020-04-01	18.97	23.0	Buy
2020-07-31	23.81	27.0	Buy

Source: UBS; as of 24 Aug 2020

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