

Manufacturing: Surge, slump and recovery

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Manufacturing, while having declined as a share of overall economic growth, remains a much observed indicator of the direction of global growth. Manufacturing is intrinsically linked to investment activity and international trade, historically providing an early signal of where the global economy is heading. After the long slump in global manufacturing since early 2018, accompanied by sharply falling global trade volumes and sluggish investment, recent signs suggest stabilisation and a potential recovery in 2020. The chances for improving global manufacturing seem decent indeed, even if the recovery is likely to be modest compared to the boom in 2017. While this seems supported by a number of cyclical and secular factors, independent of the ongoing trade war, the strength and durability of the outlook for manufacturing, trade and investment remain highly dependent on a reduction in the uncertainty over the global trading system. Further resolution of US-China trade negotiations could help with this, even though news flow remains volatile at the time of writing.

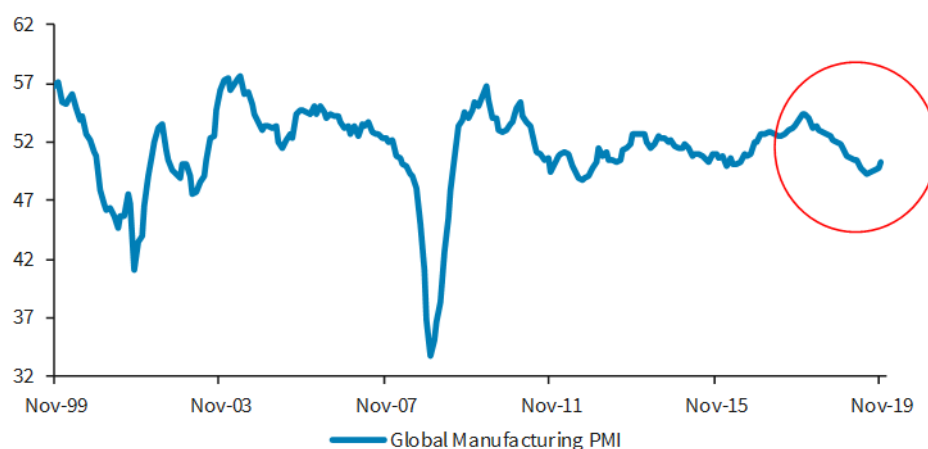
An elevated starting point: explaining the surge to end-2017

The perceived severity of the downfall also depends on its starting point. This concept played a non-negligible role in the manufacturing downturn that started in the beginning of 2018. By the end of 2017, global manufacturing confidence as measured by PMIs had reached a high of 54.4, the highest level since the sharp post-GFC rebound of 2010-11 and higher than the pre-GFC period average (52.0 in 1998-2007), when the swings in sentiment tended to be much larger. The pattern is the same when using 'hard' industrial production data (IP) rather than 'soft' survey data.

To the extent that the drivers of the manufacturing surge that started from a previous low-point (49.9 in Feb-2016) were part of a common business cycle, e.g. credit and inventory, and were, thus, bound to turn around at some point, markets and economists made the mistake in late 2017 to believe that the cycle could extend through 2018 and beyond. That said, common business cycle considerations have had generally limited explanatory power since the GFC, which seems also reflected in the much reduced variance in the global PMI swings since. At the same time, the post-GFC period has seen aggressive policy actions,

FIGURE 1

Global manufacturing sentiment has likely turned around



Source: IHS Markit, Haver Analytics, Barclays Research

including large Chinese fiscal and credit impulses, as well as extraordinary monetary policies in advanced economies, which might have helped to reduce business cycle volatility via active policymaking and business cycle guidance.

China's credit impulse

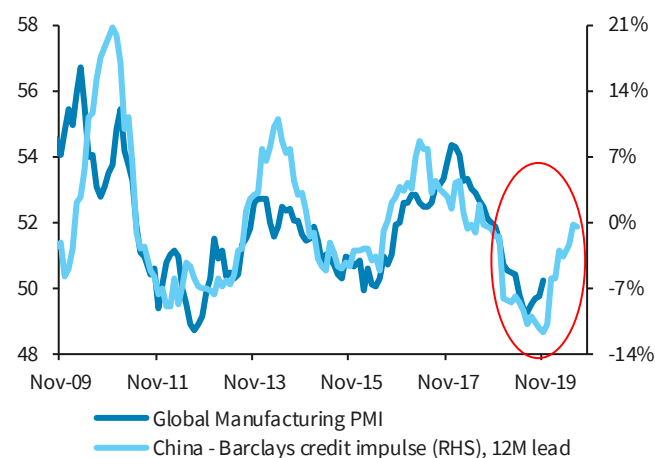
Perhaps the most important policy that helped global manufacturing to rebound was China's credit impulse. While headline data prints were still deteriorating, China had already started to allow for a renewed acceleration in credit. Starting in June 2015, credit growth increased rapidly and the credit impulse (based on Barclays' alternative credit measure - *China: Another turn in the credit cycle*, 13 July 2017) had turned positive (0.2% y/y) by August 2015. Global manufacturing PMIs followed the same pattern with a 9 to 12-month lag - just as it had done in China's previous credit cycles. By the same token, when the credit impulse peaked at 8.8% y/y in April 2016 and turned negative again one year after (-0.6% y/y in April 2017) global manufacturing mirrored the lag. Hence, monitoring China's credit impulse should, in principle, have foretold the global manufacturing decline. Hence, the renewed turn of the credit impulse upwards since November 2018 (-11.8%) – albeit at lower levels and a different composition – bodes well for the recent stabilisation in global manufacturing to extend further.

ECB's monetary stimulus

Much later than the Fed and only as a response to serious deterioration in the euro area outlook, the ECB started to implement nonstandard monetary policy measures beginning in mid-2014: starting with its first TLTRO and an initial rate cut into negative territory (-10bp), followed by further deepening of negative rates and the introduction of quantitative easing (QE). As a consequence, between June 2014 and March 2015, EUR depreciated by c.24% against USD, and c.14% in real effective terms.

Our own research¹ suggests that in the following years this ultra-accommodative monetary easing shifted the euro area's real growth rate roughly 130bp higher than it otherwise would have been.

FIGURE 2
China's credit impulse turned again in 2019



Source: IHS Markit, Haver Analytics, Barclays Research

FIGURE 3
EA money growth hints at further stabilization



Source: Eurostat, Haver Analytics, Barclays Research

¹ *Thinking Macro: QE works, even in Europe*, 1 June 2016

Given the lags, European growth – which is more manufacturing-heavy than other developed economies – was thus boosted in 2016-17 by the ECB having finally followed other central banks in extraordinary monetary easing. Indeed, European manufacturing PMIs peaked at above-60 by the end of 2017 with the December print (60.6) being the highest level since the start of the series in 1997.

Confidence effects from Trump

Another secular driver in the US was the election of President Trump, which had a significant impact on business sentiment, in particular for medium and smaller enterprises. As a result, there was a notable uptick in investment activity in 2017 and a related rise in manufacturing, even before tax cuts were announced.

In late 2017, the US passed the Tax Cuts and Jobs Act (the Act) which included a large reduction in corporate tax liabilities and a modest reduction in personal tax liabilities - estimated to widen the deficit by \$1.4-1.5trn over ten years² - and was followed shortly thereafter by the Bipartisan Budget Act of 2018 (BBA), adding about \$320bn of federal spending over two years. This likely helped US manufacturing to hold up longer through 2018, after European manufacturing has already started to fall sharply. However, with a lag, US manufacturing PMIs joined the global downward trend.

The 'trade war' effect

Manufacturing is closely interrelated with investment and trade. Investment goods make up a large share of international trade and, in turn, investment and manufacturing activity depend on the outlook for global trade. Hence, the 'trade war' should have had significant impact on the performance of the global manufacturing sector.

Direct effect from higher tariffs

While global manufacturing clearly peaked ahead (i.e. end-2017) of the start of the US-China trade war, the growth of global trade volumes decelerated following the US initiation of a series of tariffs increases – starting with steel and aluminium in early March 2018 – eventually outright declining y/y by end-2018. The path was far from linear, as front loading imports of relevant goods ahead of a tariff implementation date lead to a temporary boost in trade volumes, but overall trade slowed. Our detailed analysis of trade in products affected by tariffs broadly confirmed patterns of trade destruction and trade diversion

FIGURE 4
Post-election optimism and tax cuts drove US investment...



Source: FRB, NFIB, Haver Analytics, Barclays Research

FIGURE 5
...with the US industrial sector outperforming until H2 19



Source: IHS Markit, Haver Analytics, Barclays Research

² Even after allowing for the possibility that the bill results in a higher level of GDP over the ten-year budget horizon, the Joint Committee on Taxation estimates the deficit would widen by \$1.1trn.

textbook theory would predict. In the bilateral trade between the US and China, US imports from China fell over 13% y/y in the first nine months of 2019, while Chinese imports from the US declined even more dramatically, more than 26%, over the same period. The reduction in trade between the US and China has not been offset by an increase in demand from the rest of the world. The US and China have not just imported less from each other, but import growth from the rest of the world has also slowed. Thus, in aggregate, the trade diversion effect, which in GDP-weighted terms most benefitted Vietnam, Taiwan, Malaysia, Slovakia, Chile and Mongolia, did not offset the losses from higher tariffs.

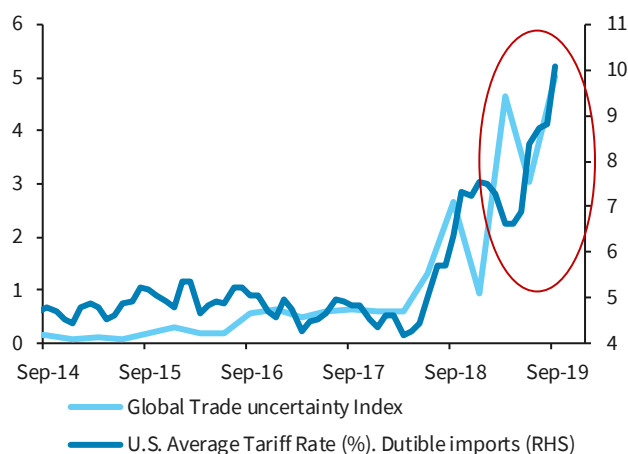
Effect from (trade) policy uncertainty

Perhaps the bigger effect on investment, trade and manufacturing likely came from the general uncertainty about trade policy and the future of the global trading system (and the global value chains relying on it). Measures of global trade uncertainty rose alongside the surge in US-China tariffs. While spikes in trade uncertainty related mostly to US-China trade tensions, increases in trade uncertainty have been also felt in key US trading partners such as Mexico, Canada, the European Union and Japan, and contributed to a rise in overall uncertainty.

This rise in uncertainty came at a cost. Academic studies highlight how increases in uncertainty foreshadow significant output declines: the IMF estimated in mid-2019 that US-China tariffs since early 2018 could reduce global GDP by 0.5% in 2020³. Others see the effects as being even larger, estimating the increase in trade uncertainty observed in Q1 19 alone could be enough to reduce global growth by up to 0.75 percentage points in 2019⁴. As referenced above, these effects, calculated for GDP growth more broadly, can be expected to be felt much more intensely in the manufacturing sector, where global value chains prevail and trade plays a crucial role.

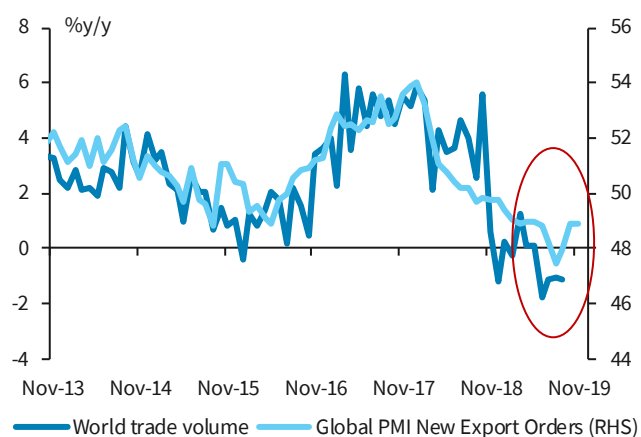
Importantly, the implications could be longer term, as some research finds that investment-to-GDP ratios are on average 0.8pp lower for five quarters following a one-standard-deviation increase in the level of trade uncertainty⁵. This also means that until confidence in the world trading system to deliver stable trade policy is restored, the uncertainty costs of the trade war are likely to linger⁶.

FIGURE 6
The US-led trade wars spurred global uncertainty...



Source: EPU, USITC, Haver Analytics, Barclays Research

FIGURE 7
... and global trade collapsed in 2018 as a result



Source: CPB, IHS Markit, Haver Analytics, Barclays Research

³ Lagarde, C (2019), *How to Help, Not Hinder Global Growth*, June 2019, IMF

⁴ Ahir, Bloom, Furceri, 2019

⁵ Ebeke, C, and J Siminitz (2018), "Trade Uncertainty and Investment in the Euro Area", IMF Working Paper

⁶ Handley, K, and N Limão (2017), "Policy Uncertainty, Trade, and Welfare: Theory and Evidence for China and the United States", *American Economic Review* 107 (9): 2731-83.

Potential for recovery

Cyclical and secular drivers turn more positive again

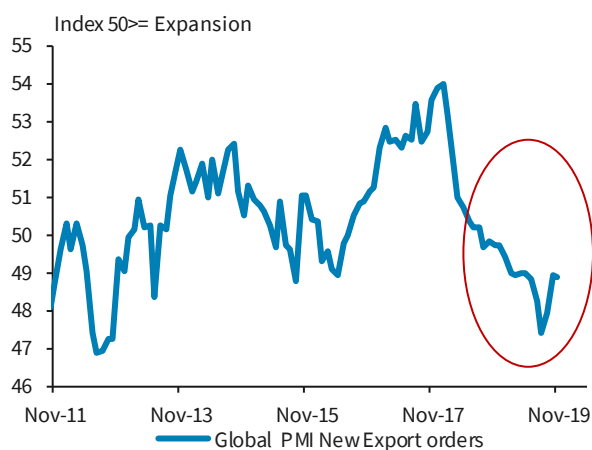
Several of the factors behind the global manufacturing surge in 2017 and the subsequent demise have turned again more supportive. First, China's credit impulse has turned since November 2018 and most recently turned positive again. It has fallen deeper than ever before and is also unlikely to turn as positive as it has in the past. In addition, the composition analysis showed the turn in credit impulse was mainly contributed by slower contraction in shadow credit and pick-up in government bonds and loan financing (although the latter two decelerated in recent months) that at best partially benefitted manufacturing. However, the recent stabilisation in global manufacturing PMIs one year after the bottom of China's credit impulse suggests that the historical relationship still holds, even at much weaker levels.

Second, the Fed and ECB-led monetary policy easing in 2019 across regions should not be underestimated. In spite of the increasing concerns around the longer-term negative side effects of negative interest rates and low, flat yield curves, the policy stimulus has led to an easing of financial conditions, which should be conducive to supporting activity in the real sector. As a corollary, the uptick in M1 growth has historically been closely associated with rising PMIs.

Finally, the semiconductor and auto sector – a core element of manufacturing and trade – show signs of having bottomed out. Although the auto sector is unlikely to return to past rates of expansion, given the structural headwinds (including the shift to electric cars and attitude towards individual car ownership), the semiconductor cycle, even if not imminent, could experience a renewed boost from future replacement cycle as part of the transition to 5G (Figures 13 and 14).

FIGURE 8

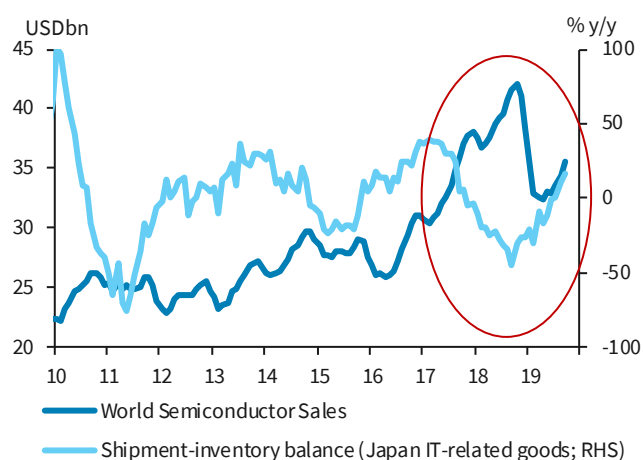
Export orders edge higher...



Source: IHS Markit, Haver Analytics, Barclays Research

FIGURE 9

... as the momentum in semiconductor sales improve



Source: SIA, Haver Analytics, Barclays Research

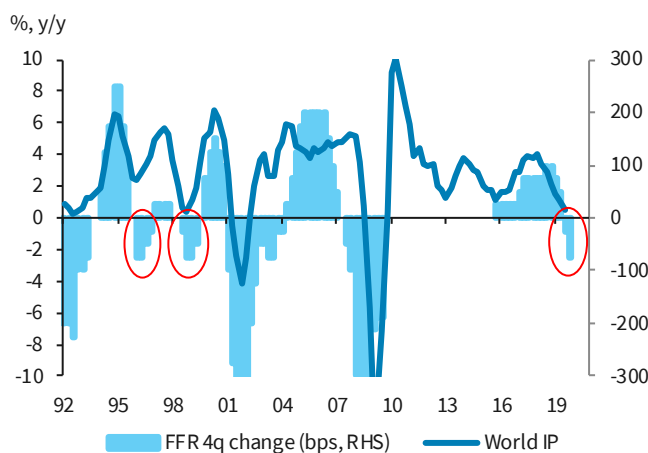
Will trade uncertainty recede and by how much?

Given the apparent significant adverse effects of uncertainty on investment and thereby trade and manufacturing, a reduction in uncertainty should have the opposite effect. Although the uncertainty about US trade policy, including the transition from NAFTA to USMCA and the threat of eventual tariffs on EU car imports, affects several regions, the negotiations between the US and China are firmly in focus. Any clarity on a halt to further tariff escalation, or even a reversal of already implemented tariffs, should lead to reduced uncertainty and sooth investors' concerns.

The news flow and official pronouncements around the US-China trade talks continues to take on a positive tone, in our view. While details of the negotiations remain somewhat murky, it seems clear that a "phase one" agreement could include (1) commitments by the Chinese to purchase US agricultural products in exchange for a lifting of US tariffs on its imports from China, (2) enhanced intellectual property protections for US firms, (3) restrictions on the forced transfer of technologies from US firms to Chinese counterparts in exchange for market access, (4) commitments not to use the exchange rate as a tool for competitive devaluations, and (5) enhanced market access for US firms into China. We continue to believe that a "phase one" agreement is more likely than not, but we note the two sides have reached this point several times in the past, only to have negotiations break down at an advanced stage.

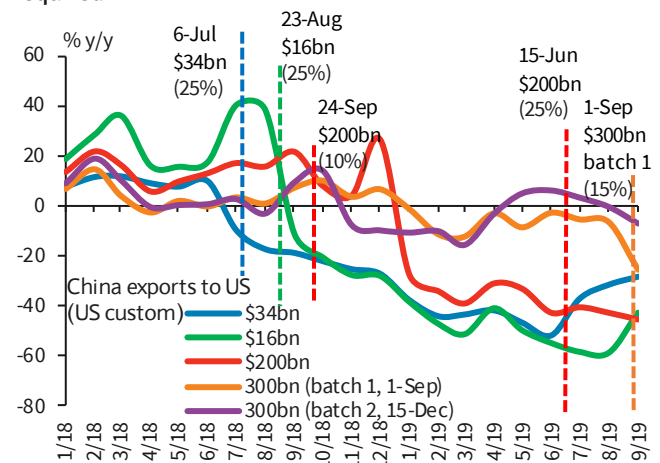
The key question in our mind is what effect any "phase one" agreement will have on trade volumes and global growth. Here we take a mixed view. On one hand, we doubt the agreement will provide a catalyst for markedly better growth outcomes. After all, commitments by China to purchase agricultural products will likely return trade volumes in these goods to previous levels. For example, as shown in Figure 5, US exports of oilseeds and grains, which make up the bulk of agricultural exports to China, averaged about \$15bn per year between 2014-2017 and has fallen markedly since trade tensions escalated. White House economic advisor Larry Kudlow has said that the "phase one" discussions include around \$40-50bn in commitments by the Chinese to purchase US agricultural goods. While not specified, we anticipate this would be a multi-year commitment and, consequently, is unlikely to cause US agricultural exports to China to meaningfully exceed previous levels.

FIGURE 10
Historically the Fed's insurance cuts were followed by industrial re-acceleration...



Source: NBEPA, Haver Analytics, Barclays Research

FIGURE 11
But more permanent solution to the US-China trade war is required

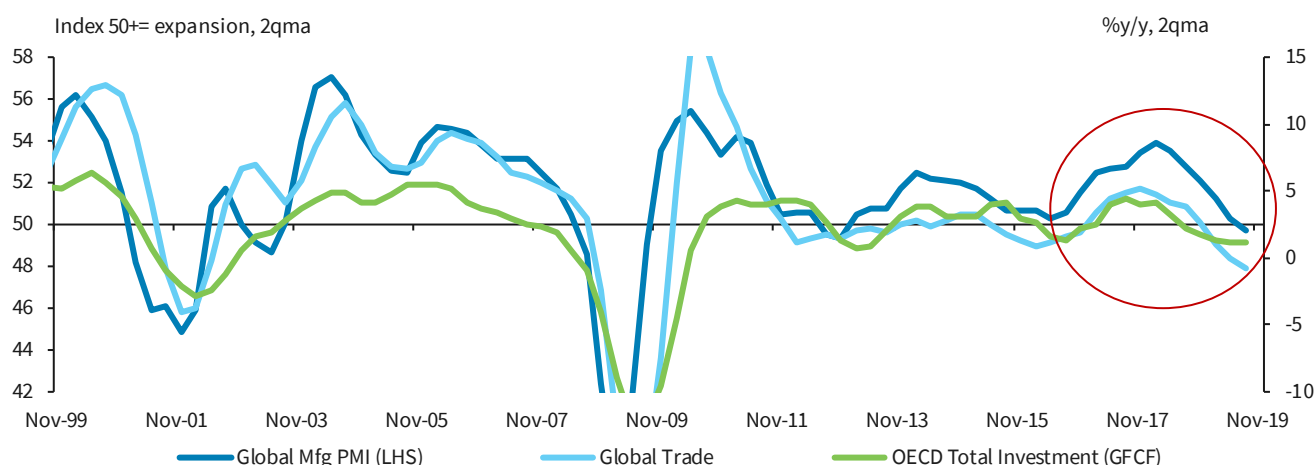


Source: USITC, USTR, Barclays Research

In addition, we note that any tariff relief will take tariff rates back toward their pre-2018 rates. In other words, any “phase one” deal is a rational outcome of the Prisoner’s Dilemma applied to international trade, as we highlighted in *US-China trade tensions: When giants collide*. Since the application of tariffs and trade restrictions by one country on another bring a similar response from that trading partner, “trade wars” tend to result in high trade barriers, low output, and no clear competitive advantage. Once both sides realize this, the logical answer is to agree to return to the starting point which, in this case, was low tariffs and high economic integration. In our view, one major component of the “phase one” agreement is a recognition that tariffs and reduced trade volumes were threatening growth and employment outcomes in both countries and both countries, and, in effect, an agreement to move back to their respective starting positions. This being said, we do not want to fully discount what we see as the most important aspect of any “phase one” agreement, which is a signal that we may have passed “peak tariffs” with respect to US-China trade. Trade policy uncertainty has been repeatedly highlighted by business in surveys and other sources as injecting caution into business decisions and reducing the incentives of firms to commit to multi-year capital spending plans. As a result, the risk that escalating trade tensions between two of the world’s largest economies would lead to a hard landing in one or both countries created adverse spill-overs to growth in other regions, particularly Europe – Germany in particular – and many emerging economies. US export volumes have not only declined to China, for example, but they have also declined to every region (Figure 6). A “phase one” agreement that signals an end to tit-for-tat tariff escalation and reduces trade policy uncertainty could lead to a short-term pickup in business spending as some delayed investment is released.

We are less optimistic, however, that a “phase one” agreement will lead to a “phase two” agreement. The US has security concerns about China’s industrial policy, particularly in the area of dual-use technology and China’s emergence a major player in these industries, that are likely to persist while China sees policies such as the Belt and Road Initiative and Made in China 2025 as necessary to avoid the “middle income trap.” These conflicting goals are likely to be much more difficult to resolve and could mean the relationship between the US and China remains confrontational over time. While this is not a foregone conclusion, we believe trade tension over the longer run is likely to get worse before it gets better. A “phase one” agreement may simply signal that the playing field shifts from tariffs to the US entity list, export restrictions, and decisions by the Committee on Foreign Investment in the US to

FIGURE 12
More robust recovery requires a turnaround in investment



Source: CPB, IHS Markit, Haver Analytics, Barclays Research

restrict Chinese direct investment into US companies. Yet as it pertains to the outlook for global growth in 2020, we do not foresee “decoupling” of technological integration between the US and China as a major downside risk.

Conclusion

The slump in global manufacturing since early 2018 occurred on the back of a very strong surge in 2017. The benefit of hindsight informs us that 2017 was boosted by a coincidence of various (independent) factors, which were unlikely to last but created undue optimism about the manufacturing outlook for 2018 and beyond. Thus, even without the trade war that started in early 2018, manufacturing would have experienced a slowdown. This is evidenced by the peak in data in December 2017, before the trade war began. However, the trade war seriously exacerbated the downturn, not only through the direct effect of tariffs on trade flows, but with the much wider effect the elevated uncertainty had on investment behaviour (on which trade and manufacturing performance strongly depend). Other idiosyncratic factors added to the negative headwinds in important manufacturing sectors such as autos and semiconductors (e.g. the serious regulatory measures that followed the diesel scandal).

By the same token, this suggests upside potential for the manufacturing cycle at the current juncture. Even if the trade uncertainty is not fully removed, the fading of idiosyncratic factors (e.g. car sales; semi-conductors), the return of cyclical tailwinds (China credit cycle, inventory cycle) and renewed policy support all point to a recovery in 2020, likely pushing manufacturing PMIs back up to their mid-50s. If trade issues were to be resolved, possibly beyond a mere ceasefire, the boost could be more measurable, as pent-up investment demand could come to the fore. On the downside, disappointment in the trade talks could leave manufacturing moving sideways, leaving PMIs hovering around 50, consistent with global industrial activity stagnation.

FIGURE 13

Secular forces: semiconductors**Boom and bust of the semiconductor cycle**

The semiconductor supercycle started in 2016, driven by a combination of structural (eg. rapid increase in demand for cloud computing, storage and data centers) and cyclical factors (eg. robust sales of smartphones, crypto-currency data mining boom). The surge in semiconductor demand prompted major chipmakers to increase supplies and expand capital investment aggressively, while customers' fear of shortages pushed chip prices sharply higher. This semiconductor boom benefited tech-reliant Asian economies such as Korea, Taiwan and Singapore (see [Semiconductors - still in the 'supercycle'](#), 7 June 2017).

These positive dynamics peaked in 2018. With smartphone replacement demand stagnating (due to a lack of new features and market saturation), the cyclical benefits the semiconductor industry had enjoyed since 2016 began fading. Moreover, the structural support from US IT companies also saw signs of weakening thanks to bloated inventories accumulated during the boom period.

More ominously, the earlier aggressive expansion of investment among major chipmakers had sharply boosted supply, leading to a glut as the structural and cyclical tailwinds faded and the Sino-US trade dispute escalated. The supply-demand imbalance, unsurprisingly, led to a sharp price correction. With unit prices declining, manufacturers curtailed capex to limit output growth, further exacerbating the sluggish trend in global manufacturing.

Heading into 2020, there are tentative signs that the worst may be over for semiconductors, and that the chip cycle may see some modest upward momentum in 2020. The negative factors such as oversupply, lacklustre smartphone sales and inventory overhang all show signs of improvement for 2020. Chipmakers have become more disciplined about controlling output, helping to put a floor under prices: For example, Korea's Samsung Electronics and SK Hynix mentioned they plan to become more conservative in investment in 2020. Both of them are adjusting output by optimising production lines (ie, converting production lines to products other than DRAM) (see "Samsung Electronics and SK Hynix to Reduce Investment in Semiconductors in 2020," Business Korea 11 Nov 2019).

Smartphone sales could rebound, while inventory adjustment may soon be completed: Our equity analysts project sales of 200m 5G devices in 2020 (2019: 10m), with half of demand coming from China (see [Smartphone Model with 5G Update](#), Barclays Research, 14 Nov 2019). They also noted chip demand for data centres has resumed after the inventory correction earlier this year (see [Technology: November 2019 Asia Trip Takeaways](#), Barclays Research, 22 Nov 2019). Korea's inventory-to-shipment ratio for semiconductors also improved to the healthy range of 0.71x and 0.82x in September and October (long-term average: 1.00x).

Leading indicators also showing signs of bottoming: North American semiconductor equipment billings seem to have bottomed out, registering the first positive growth of 3.9% y/y in October 2019. That followed 11 straight months of y/y decline. Equipment billings totalled USD2.11bn in October, the highest since August 2018. Contract prices for DRAM are expected to decline by only 5% q/q in Q4, a huge improvement from the 20-25% declines seen in the first three quarters ("Decline in Q4 DRAM Contract Prices Lessens as Buying Momentum Recovers," DRAMeXchange, 11 Nov 2019).

Despite the above pockets of optimism, we believe the pace/magnitude of the recovery still hinges on the US-China trade talks (specifically, whether a positive outcome can remove the uncertainty for tech products) as well as the take-up rate for 5G handsets. For now, our base case remains a modest recovery in the tech cycle going into 2020.

FIGURE 14

Secular forces: automotive**Automotive sector: a challenging transition**

Global automotive production was already showing signs of a mid-cycle stabilization when the emission cheating scandal shook the industry, paving the way for major production disruptions and a costly transition to clean(er) automotive technology. The “Dieselgate” scandal erupted in September 2015 with the US government accusing VW of cheating in emission tests in an attempt to hide actual levels of pollution produced by its diesel engines. The scope of the scandal was soon extended to other major auto manufacturers and global auto market as various forms of emission testing cheating was unveiled as a widespread practice. The backlash from consumers and regulators was fierce with demand for internal combustion engine (ICE) powered cars declining globally amid further emission controls tightening.

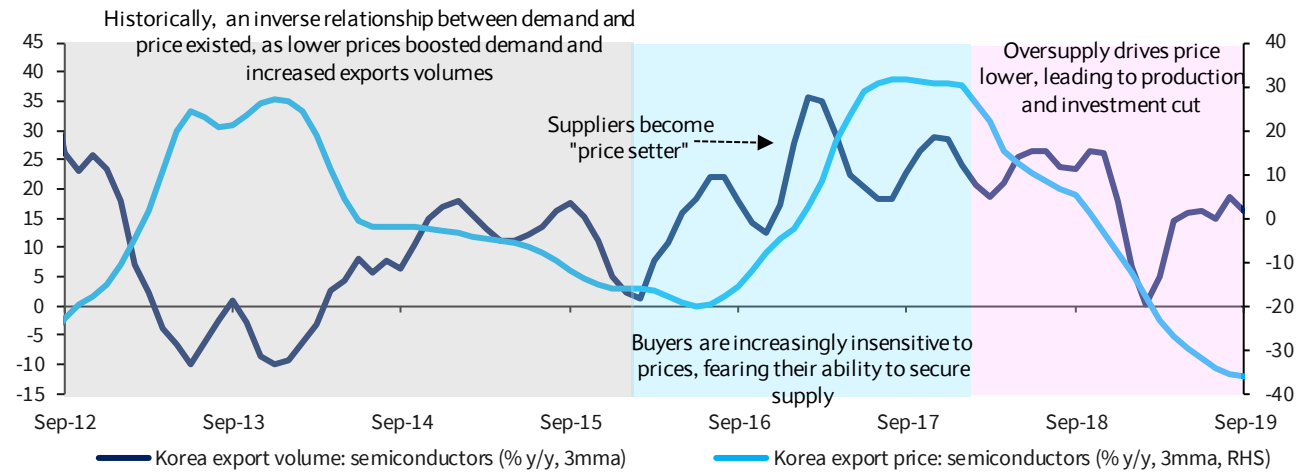
Production disruptions driven by increased regulatory scrutiny in the aftermath of the Dieselgate were particularly evident in Europe where already stagnating auto sales effectively stalled in H2 18 due to the introduction of a new EU emission testing regime (WLTP) and associated licencing and registration disruptions. German economy was hit particularly hard as GDP growth dipped shortly into negative territory (-0.1% q/q in Q3 18) due to the auto production slump. The European car market has been struggling to rebound for more than a year as tepid signs of demand improvement arrived only in Q3 19. However, the respite in auto sales is unlikely to break the medium-term trend of gradual decline as the industry muddles through the technological adjustment. We therefore expect auto sales in Europe to contract by 2.1% y/y in 2020.

The Dieselgate spillovers were seemingly limited in the US where the auto market has been showing signs of saturation ever since new car sales hit the record-highs in 2015. Despite the favourable economic backdrop and accommodative financial conditions, the auto sector has lagged broader acceleration in domestic demand. With conventional cars gradually falling out of favour, the growth in SUV's and light trucks couldn't offset the broader demand weakness. We expect the weakness in the US car market to continue into 2020 with sales contraction likely to accelerate to -5.0% y/y (vs est. -2.2% y/y in 2019). Trade policy uncertainty would still be a major risk factor particularly if the US-China and the US-EU trade negotiations fail to deliver longer-term de-escalation and car tariff threats are back on the table.

In China, where the dynamics of auto demand has been largely driven by the availability of consumer credit, prevailing tax regime and government incentives, the shift to tighter environmental standards contributed to auto sales slowdown and introduced significant market volatility. The surge in China auto sales in 2013-16 was supported by benign global trade environment and broad-based government subsidies. However, driven largely by environmental concerns, in the recent years the government policy has shifted in favour of alternative-powered vehicles (i.e. EVs and Hybrids) leaving the conventional ICE auto market exposed to the headwinds of China's slowing economy amid escalated US-China trade tensions of 2018-19. The contraction in China auto market has recently started showing signs of deceleration with auto demand getting a recent boost from dealers building-up inventories ahead of the introduction of new environmental standards (China-6). As the regulatory-driven pick-up in demand will likely prove short-lived, we expect China auto sector to stagnate in 2020 amid lack of meaningful growth drivers.

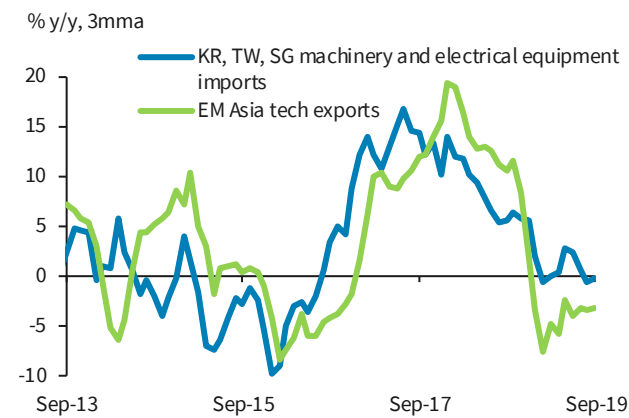
The environmental impact concerns and anticipated technological changes has been driving the broad-based contraction of diesel car sales in the recent years, particularly in Europe. In turn, the adoption of alternative-powered vehicles, boosted by government subsidies, faces significant capacity. Given the dominance of ICE cars (market share of 95%) and relatively small size of the EV/Hybrid market, the decline in “old tech” would likely determine the medium-term trend in the auto industry. Consistent with this view, we expect global auto sales contraction to ease in 2020 (-2.0% y/y vs -4.1% y/y in 2020) however the auto sector would likely remain the laggard of global industrial recovery unless global macro backdrop turns consistently more constructive. In turn, as the urgency for technological transition in the auto sector grows, significant capital investment is required to further develop the underlying technology and update production lines. We therefore see the auto sector as a driver of global business investment in 2020-22 which should partly offset the drag from declining sales of conventional cars. Moreover, at the time of intense regulatory pressure on auto makers to increase the share of non-ICE car sales, the acceptance risk should remain on the radar as financial incentives would determine whether consumers find the relatively more expensive new technology palatable in the medium term.

FIGURE 15

The boom and bust of semiconductor cycle

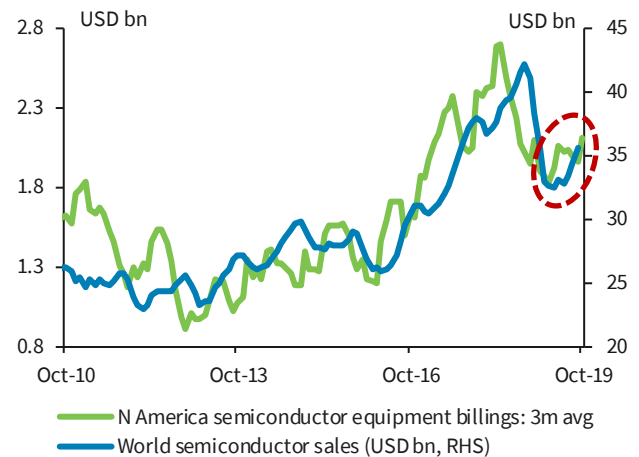
Source: Haver Analytics, Barclays Research

FIGURE 16

Chipmakers increased investment to ride on the boom

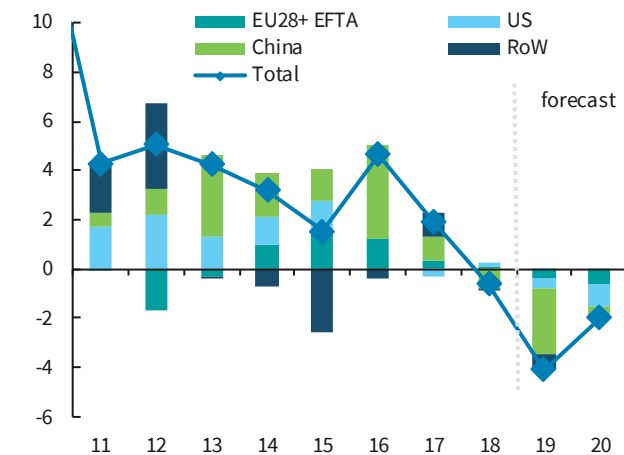
Source: Haver Analytics, Barclays Research

FIGURE 17

Signs of semiconductor cycle bottoming out

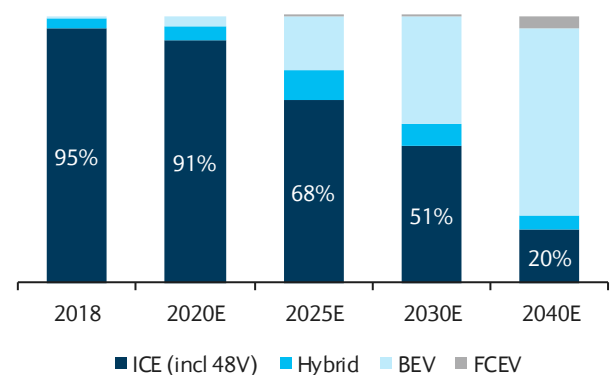
Source: Haver Analytics, Barclays Research

FIGURE 18

Automotive sector has started to stabilize

Source: OICA, Haver Analytics, Barclays Research

FIGURE 19

Growth will depend on the penetration of electric vehicles (EV)

Source: Barclays Research

Analyst Certification

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