Q-Series (revised)

Trade Wars—What is the impact on growth, inflation and financial markets? A Top Down View

(*This version corrects the yield numbers in the 1st paragraph of this page*)

Ongoing trade tensions could wipe 100bp of Global GDP growth

Our Economists, Strategists—Macro, Equity and Commodity—and Quant team have worked together to provide a scenario framework to assess the potential implications of the ongoing trade disputes. In our Trade War scenario we see Global GDP growth decelerating by 108bp led by the US (245bp) and China (233bp). Furthermore, we see 10Y and 2Y US yields falling by 30bp and 50bp, respectively, and EUR/USD surprisingly stable. Implications for equity markets could be severe, ranging from the US down 21%, Europe down 25% and Asia (ex-Japan) down 24%. Our quant team built a unique interactive model to assess the impact of different scenarios on stocks, sectors and geographies.

Economic spillover effects are large

The 1st order economic impact is obviously through higher import prices (tariffs) which cascade through the supply chains and raise global inflation by about 17bp in our Escalation scenario and 33bp in our Trade War scenario. The effects for the US and China are, however, much larger (70bp and 90bp respectively in the Trade War scenario) and those price effects drive the initial demand effects (roughly half of the negative growth impact). The largest impact, however, comes from supply chain disruption, non-linearities (job multipliers, confidence effects) and cross-country spillover effects, once a critical threshold of tariff disruption is reached. Those are inherently difficult to model and place large uncertainty bands around our numbers.

Our scenarios show a large impact on rates; significantly less on FX

Our results show large impacts on interest rates in the "Escalation" and "Trade War" scenarios, particularly for US rates. However, for FX, moves in EUR/USD and the broader trade-weighted dollar are small. This is driven by two countervailing forces: rate differentials and risk sentiment. Although risk sentiment benefits the USD and weighs on EUR/USD in both scenarios, rate differentials act in the opposite direction—against the USD and in support of EUR/USD. This is largely a function of a lot being priced in US rates, while hardly anything is priced in European rates. Overall, our results imply a slightly weaker trade-weighted dollar in both the Escalation and Trade War scenarios, and this is consistent with our analysis of end of cycle FX dynamics.

Trade War: we see more than 20% downside for S&P, Stoxx 600 and MSCI AxJ

Equities are not yet discounting a Trade War scenario and we see a 20% plus decline driven by a combination of lower earnings and multiple contraction. Markets have started to discount the risk following recent announcements and we estimate that Asia is already discounting our Escalation scenario. We see US and European equity markets declining 10% and 7% respectively in our Escalation Scenario, suggesting that this is not yet fully priced in.

The quant view: translating economic impact into stock implications

Our Quantitative Research team used their Macrosense tool (Macrosense) to calculate the expected impact of our macroeconomic views on sectors and markets. Given the large move in the oil price together with the reduction in growth it is unsurprising that the biggest move would be the underperformance of the energy sector and oil sensitive markets such as Norway and the UK. The largest outperformer in the Developed World would be Healthcare; in the Asia ex Japan universe Financials would have the best relative performance.

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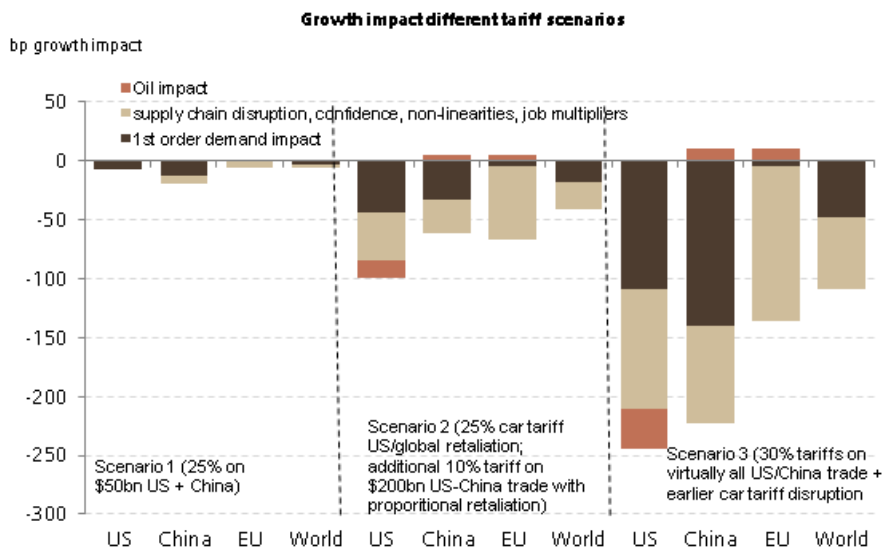
Executive Summary

The announcement this week by the US administration to impose tariffs on an additional $200bn in Chinese imports, under its Section 301 investigation into Intellectual Property, marks a material escalation of trade tensions. It follows already announced 25% tariffs on $50bn worth of imports by both China and the US, and the US government has laid out a path that could involve a further increase in tariffs covering nearly all Chinese goods. Other trade investigations are happening in parallel—notably the Section 232 investigation into auto imports—and we expect car tariffs to be imposed by year end (see our "Signposts" at the end of this executive summary).

Our Economists, Strategists – Macro, Equity and Commodity – and Quant team have worked together to provide a scenario framework to assess the potential implications of the ongoing trade disputes. The main results are as follows.

Figure 1: Growth impact of different trade tariff scenarios



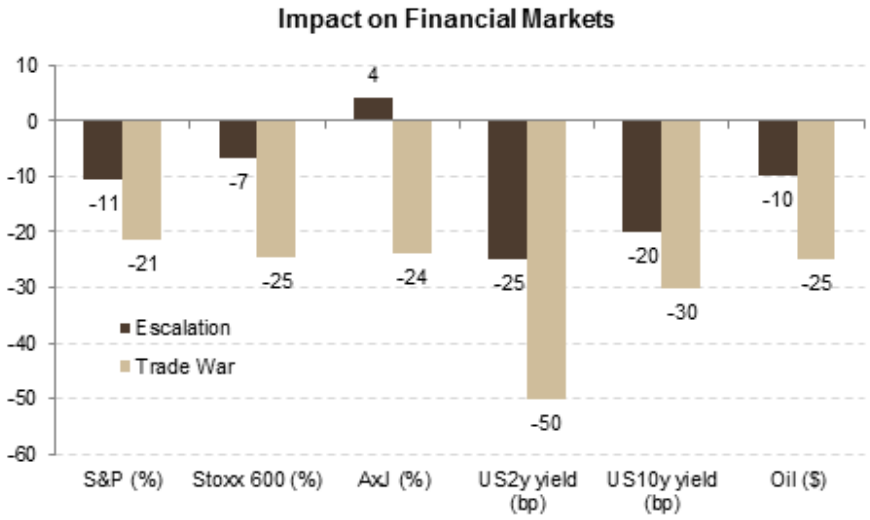
Source: UBS

Economic impact.

In the event the US-China trade tensions escalate into an all-out trade war—which we define as (i) across the board tariffs of 30% on all Chinese imports (ex-smartphones); (ii) a proportional response by China through a combination of tariff and non-tariff barriers; and (iii) a 25% tariff on US car imports, with retaliation by all its car partners—global growth could decline by as much as -100bp vs our baseline (essentially a decline from about 4% to 3% growth, a level we have not touched since the depths of the Eurozone crisis). Growth declines in the US and China are much larger (245bp in the US and 233bp in China) but this is before the effect of any policy response. That the negative impact on US growth is larger than any other country may be counter-intuitive but it is a function of fighting on many different trade fronts and a large drag coming from much lower oil prices (Brent oil is assumed to be roughly $25/bbl lower).

As the note makes clear, this estimate is subject to myriad assumptions, not least of which are the supply-chain effects, non-linearities and spillover effects that will kick at some threshold level of disruption. Those effects are a smaller and more limited levels of trade disruption, e.g. if tariffs are confined to 10% on $200bn for the US/China and we see global car tariffs go up (which we term 'Escalation scenario' in the note), the growth impact would be less than half that in the Trade War scenario, though still sizeable).

Global inflation goes up largely on the effects of import tariffs and on our forecasting horizon for this note (12-18 months) does not get offset by output gap effects. Those initial price effects drive about half of the demand loss within our growth impact estimates. In our Trade War scenario we estimate global inflation goes up by 33bp, but again by a much larger amount in the US and China.



Rates and FX implications

We estimate the impact of the three scenarios on interest rates and FX, given the results of our economists and equity strategists. Our results show large impacts on interest rates in the "Escalation" and "Trade War" scenarios, particularly for US rates. However, for FX, moves in EUR/USD and the broader trade-weighted dollar are relatively small. The FX result is driven by two countervailing forces: rate differentials and risk sentiment. Although risk sentiment benefits the USD and weighs on EUR/USD in both scenarios, rate differentials act in the opposite direction-- against the USD and in support of EUR/USD. This is largely a function of a lot being priced in US rates, while hardly anything is priced in European rates. Overall, our results imply a slightly weaker trade-weighted dollar in both the Escalation and Trade War scenarios, and this is consistent with our analysis of end of cycle FX dynamics, as well as our recent work showing the historical tendency of trade wars to produce a weaker USD.

US equities

In the Escalation scenario, we estimate that the S&P 500 would fall ~10% to 2500 on a 6% earnings hit and a ~0.9x P/E decline as higher macro vol and lower productivity get priced. We see the S&P 500 at 2200 (-21%) in a trade war scenario as earnings fall by 15% and the P/E de-rates by even more. We leveraged the work of UBS Evidence Lab, in which detailed Harmonized Tariff Schedule codes were mapped to NAICS codes, to estimate industry impacts for implemented tariffs. Industrials/cap goods are trading near 5yr lows relative to the S&P 500 on

trade concerns, while retail and apparel have outperformed notably but could be at risk if further China import tariffs are implemented on consumer goods. China's retaliation on the other hand could hurt Semis, Tech Hardware, Autos/Parts and US consumer brands from both an export and China revenue exposure perspective though recent weakness has begun to price in the risk.

Asian equities

Our estimates suggest that an escalation of the trade war is already being priced in to Asia ex Japan equities, consistent with our stock level analysis which shows US exporters down more than 10% and supply-chain also now beginning to price in the risk of a wider trade war. We see 24% further downside though to Asia ex Japan equities in a trade war scenario and would expect earnings to fall 17% in this event, similar to the fall during the 2015-16 industrial production recession.

European equities

European markets already price in some degree of escalation of trade tensions from here. Hence, the Escalation scenario appears partially in the price. This is especially visible in sectors such as Autos, which have de-rated to the same levels as in mid-2016 when yields troughed. Under the Trade War scenario, European stock markets' greater international exposure and higher beta could mean Europe underperforms despite being something of a bystander in much of the US-China dispute.

Translating our macroeconomic views into sector and country impact

Our Quantitative Research team used their (Macrosense tool) to calculate the expected impact of our macroeconomic views on sectors and markets. Given the large move in the oil price together with the reduction in growth it is unsurprising that the biggest move would be the underperformance of the Energy sector and oil sensitive markets such as Norway and the UK. The largest outperformer in the Developed World would be Healthcare; in the Asia ex Japan universe Financials would have the best relative performance.

NEAR-TERM SIGNPOSTS

In order to see where we end up along the trade escalation spectrum, here's what we'll be tracking over the next six months:

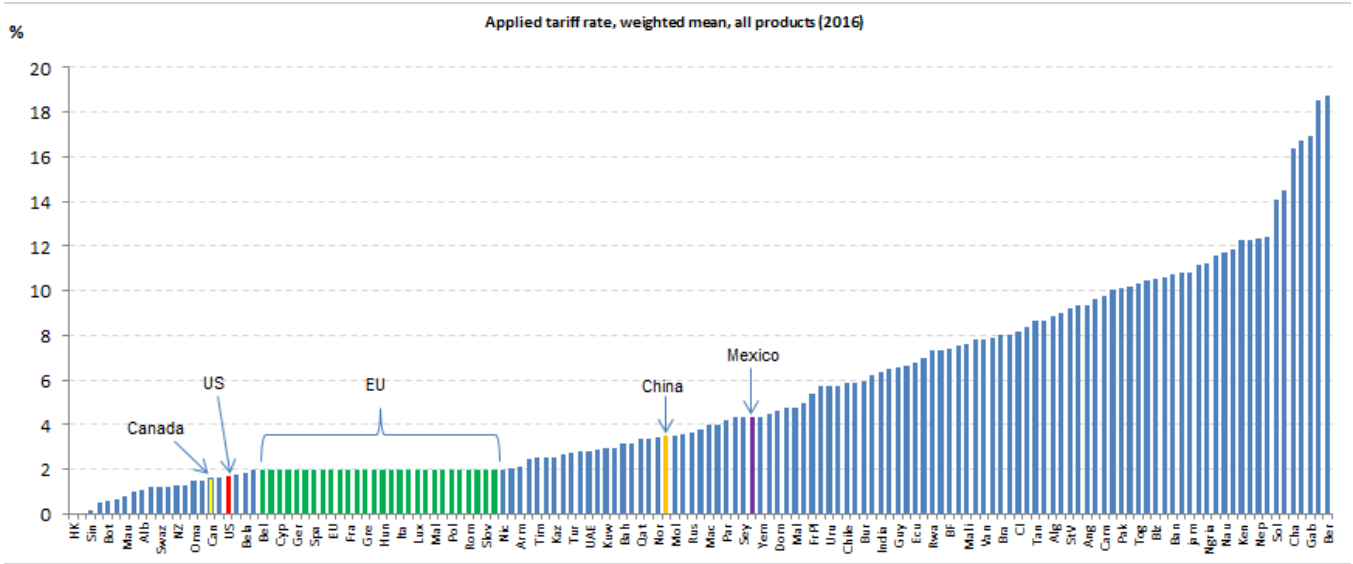
DATA RELEASE / EVENT DATE		WHAT WE EXPECT
JULY 11	**US ANNOUNCES 10% TARIFF ON ADDITIONAL $200BN OF CHINESE IMPORTS**	**YES** This was announced as a supplemental action to the existing 301 IP case, allowing for expedited approval. Public hearings are Aug 20-23. Implementation likely by end September.
JULY 20	**ADDITIONAL $16BN IN GOODS IDENTIFIED BY US AND CHINA FOR 25% TARIFF**	**YES** Public consultation on the preliminary list is nearly complete and President Trump told reporters the announcement would come within 2 weeks. China has already identified its list of items to respond.
BY SEPTEMBER	**US TO IMPLEMENT 10% TARIFF ON ADDITIONAL $200BN IN CHINESE IMPORTS**	**YES** Because the tariffs are implemented as a supplemental action they would require the negotiations with China to resolve the complaint on Chinese IP practices on which the Section 301 investigation was predicated. That seems unlikely.
SEPTEMBER	**CHINA RETALIATES TO NEW US TARIFFS**	**YES (partially)** China may not respond proportionally to the additional 10% tariffs (its imports from the US are too small and it would require non-tariff measures). We do not see it using the currency or its US Treasury holdings as trade retaliation tools (if we are wrong we jump to all-out trade war).
OCTOBER	**US TO DECIDE WHETHER TO RESPOND TO CHINA'S PARTIAL RETALIATION**	**UNCLEAR** Depending on China's response there is a narrow path for the US to de-escalate. If it doesn't then we expect all out trade war (30% tariff on all US + Chinese goods)
BY END Q4	**US ANNOUNCES GLOBAL CAR TARIFFS (SECTION 232**	**YES (But with carve-outs)** Legally the clock is already ticking. The investigation under section 232 was launched May 23, 2018 and needs to be completed by Feb 2019. The investigative period carries no minimum, however, and an announcement could come earlier.
H2- 2019*	**NAFTA RENEGOTIATED**	**YES** Our base case is that NAFTA will be renegotiated, with no major departures from the current treaty (i.e. NAFTA-lite). We expect the parties to ultimately reach agreement on rules of origin, conflict resolution, agriculture, and government procurement, while at the same time expanding the coverage of the treaty to new sectors

Trade Wars – a top down view

Recent trade tensions – how did we get here?

The US' weighted average tariff level is among the lowest in the world. With an average tariff of 1.67% the US ranks 19th, behind developed markets such as Hong Kong, Singapore, Australia, New Zealand, Switzerland and Canada, but ahead of the 28 EU countries (1.96% weighted average applied tariff), Japan 2.55%, Norway 3.41% (rank 69)[1] and China 3.54% (rank 70). For context, the average weighted tariff in 1947, prior to the 1st multilateral tariff negotiation under the General Agreement on Tariffs and Trade (GATT), was 21.8% for all countries combined.[2]

Figure 2: Applied tariff rate (weighted mean across all products) – 147 countries



Source: World Bank [Weighted mean applied tariff is the average of effectively applied rates weighted by the product import shares corresponding to each partner country. Data are classified using the Harmonized System of trade at the six- or eight-digit level. Tariff line data were matched to Standard International Trade Classification (SITC) revision 3 codes to define commodity groups and import weights. To the extent possible, specific rates have been converted to their ad valorem equivalent rates and have been included in the calculation of weighted mean tariffs. Import weights were calculated using the United Nations Statistics Division's Commodity Trade (Comtrade) database. Effectively applied tariff rates at the six- and eight-digit product level are averaged for products in each commodity group. When the effectively applied rate is unavailable, the most favored nation rate is used instead.]

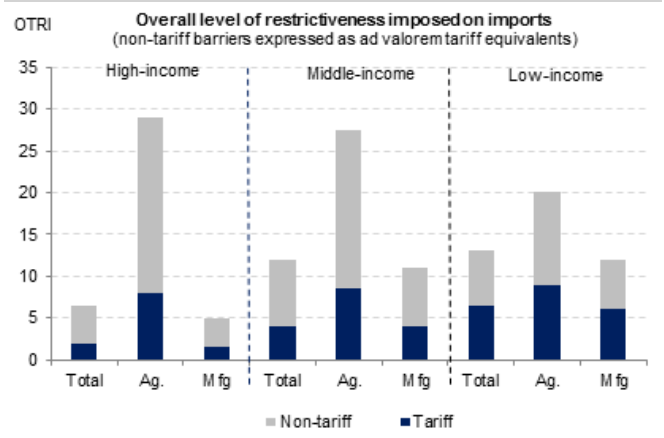
One of the accepted features of the current multilateral trade system—subject to ex post verification by the WTO—is the use of 'trade remedies' in response to perceived unfair trade practices. These include anti-dumping, countervailing duties, subsidies and safeguards (including national security – Article XXI of GATT) (https://www.wto.org/english/thewto_e/whatis_e/tif_e/agrm8_e.htm). Based on the latest WTO annual report, about 25 new trade remedy initiations are launched per month (with about 10 terminated each month). As Figure 3 makes clear, most of the measured trade restrictiveness nowadays comes from non-tariff barriers, not tariffs.

[1] Norway's low ranking may seem surprising as a member of the European Economic Area (EEA). Norway's MFN tariff on non-agricultural products is only 0.5% but its simple average tariff rate applied to agricultural goods was 51.2% (2015 WTO data). See the 2017 National Trade Estimate Report on Foreign Trade Barriers, Office of the United States Trade Representative (p. 329-331).

[2] See "The GATT's Starting Point: Tariff Levels Circa 1947", by C. Bown and D Irwin (NBER Working Paper 21782). The average import-weighted tariff on total imports in the US was 8.2% in 1947, down from 24.4% in 1932 (post Smoot-Hawley).

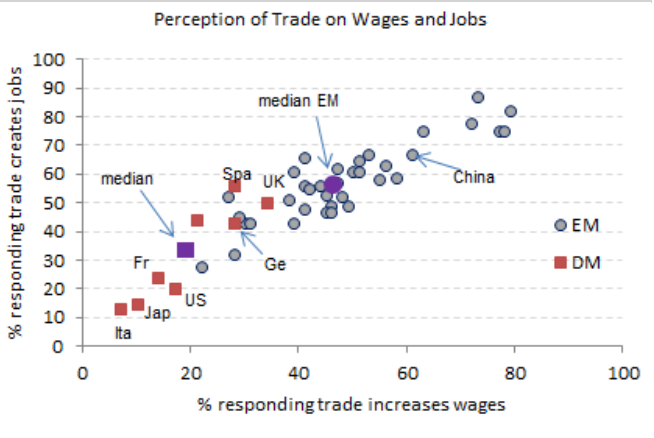
As Figure 4 shows though, the belief that trade is good for wages and jobs varies widely across countries: only 17% of respondents in the US believe that trade increases wages and 20% believe it creates jobs, whereas in China those percentages are, respectively, 61% and 67%. It also varies widely over time. An April '18 PEW Research Centre survey on US public perception of free trade agreements showed that 56% of respondents thought they were 'a good thing', up from 45% in October '16, but down from 59% recorded in early '14.[3]

Figure 3: Most of the global restrictiveness of trade comes from non-tariff measures



Source: UNCTAD

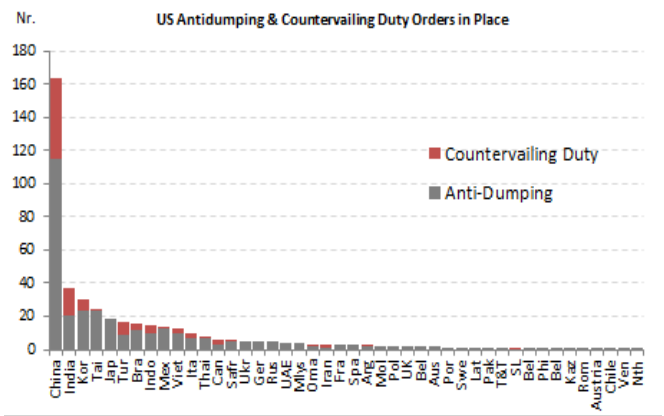
Figure 4: Perceptions of trade openness being beneficial for wages and jobs varies widely across countries



Source: PEW foundation [Note: Percentage of people choosing "trade increases wages" from 4 possible responses; the other choices were "trade decreases wages", "trade does not make a difference", and "I don't know". The same formulation applies to the jobs question. The survey is from 2014.

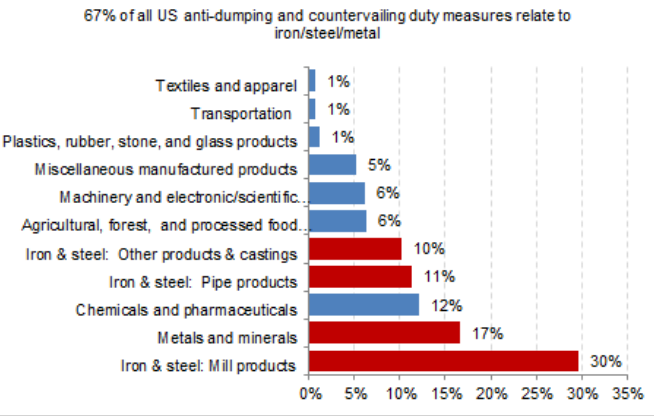
Since the enactment of the 1974 Trade Act, the US has approved more than 2000 special tariffs under anti-dumping and countervailing duty laws. 445 actions are still outstanding (Figure 5) and 85% of them pre-date the current administration. Furthermore, China accounts for 164 of these active suits (37% of total), and 141 of these were filed by preceding administrations.

Figure 5: US outstanding Anti-dumping (AD) and Countervailing duty (CV) orders



Source: US International Trade Commission (data as of June 6, 2018)

Figure 6: US distribution of anti-dumping and countervailing duty measures by sector



Source: US International Trade Commission (data as of June 6, 2018)

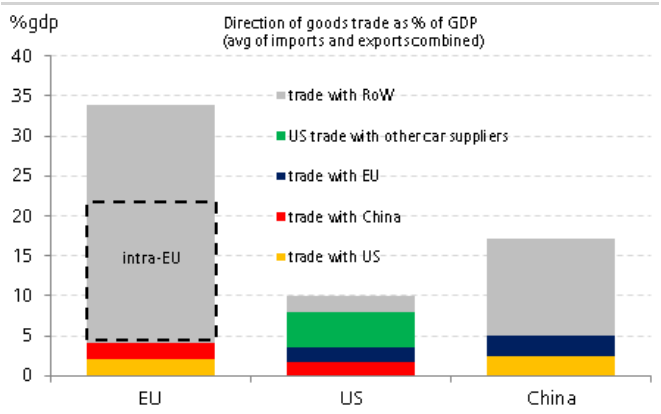
Figure 6 shows that two-thirds of the 445 measures relate to steel/iron/metal products. No wonder China accounts for only 3% of all US steel imports: the

[3] See: http://www.pewresearch.org/fact-tank/2018/05/10/americans-are-generally-positive-about-free-trade-agreements-more-critical-of-tariff-increases/

recent Section 232 investigation, 94% of Chinese steel exports were already covered by special tariffs under anti-dumping and countervailing duty orders.[4]

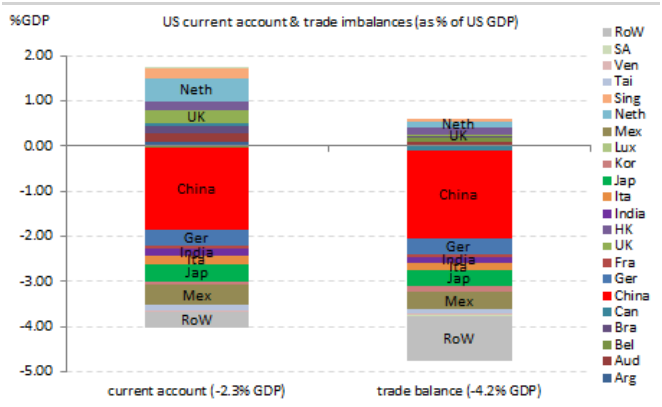
Safeguard measures in US trade policy (or indeed any country's trade policy) are within the authority of the President. In the current situation, the following seem salient: (i) the current Administration's intense focus on bilateral trade deficits, especially with China; (ii) its intent on restoring manufacturing employment and global market share it believes (rightly or not) were lost to unfair competition; (iii) the scale of the actions under consideration (the percentage of US trade potentially affected); and (iv) the legal provisions supporting them. Three provisions are currently being used to enact tariff actions—section 201, 232, and 301. Section 201 of the '74 Trade Act grants temporary relief for domestic companies threatened by foreign competition (used in the case of solar panels/washing machines), but does not require the finding of an unfair trade practice.[5] Section 232 of the 1962 Trade Expansion Act, gives the President authority to impose tariffs in cases that could impair US national security and underpinned the recent decision on steel/aluminium tariffs; it had not been used since 2001. National security is a catch-all excuse that governments have generally been reluctant to use and, in the case of the US, also carries no timeline or explicit criterion for its removal. Section 301 allows the President broad authority to impose tariffs in response to unfair trade practices and those tariffs are not required to diminish over time and disappear after three years, as is the case with Section 201 authority.

Figure 7: China is only 17% of US trade (export and import shares combined)



Source: Haver, BEA ['other car suppliers includeBrazil, Canada, Japan, Korea, Mexico, South Africa, Taiwan and Thailand.]

Figure 8: But close to 40% of its trade and current account deficit



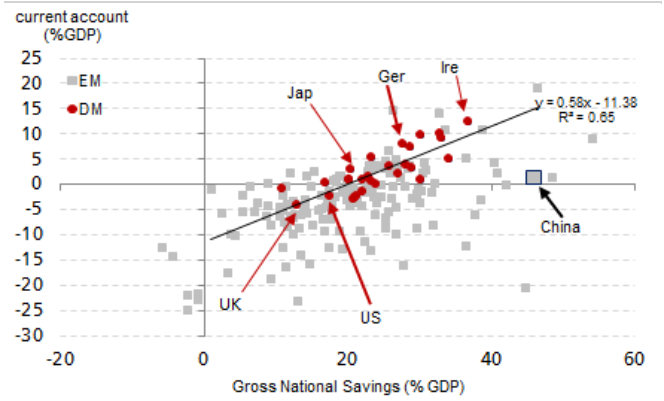
Source: Bureau of Economic Analysis

Since the mid-1980s, the share of outstanding trade remedy measures aimed at China has hovered roughly between 20%-40% of total, and the current share (37% as of June 6) has been broadly stable under this administration. That share is disproportionately high compared to China's share of US trade (China/HK trade is 21% of US imports and 11% of US exports—see Figure 7). But part of the explanation is that China comprises a large share of US trade and current account

[4] See "US Steel is already highly protected from imports", C. P. Bown (March 15, 2018),
[5] Only 74 investigations under Section 201 of the US Trade Act ('the global safeguard') have ever been initiated, and in only 40 of these did the ITC vote to provide authority to the President. In turn, the President chose to impose trade restrictions 19 times, with President Bush's 2001 steel tariffs and quotas as most recent instance. See "Donald Trump's Solar and Washer Tariffs May Have Now Opened the Floodgates of Protectionism" by Chad Brown (Jan 2018), Peterson Institute.

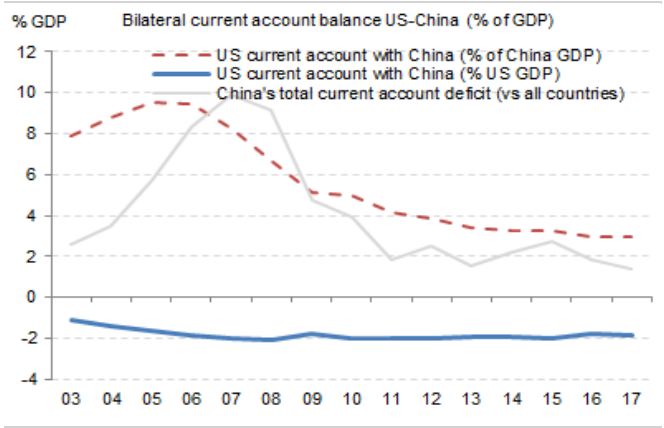
imbalances (Figure 8). And while the deficit has come down as a share of China's GDP and the aggregate GDP of other countries, it has not come down as a share of US GDP (Figure 10).[6]

Figure 9: The overall US current account deficit looks in line with its low savings rate



Source: IMF

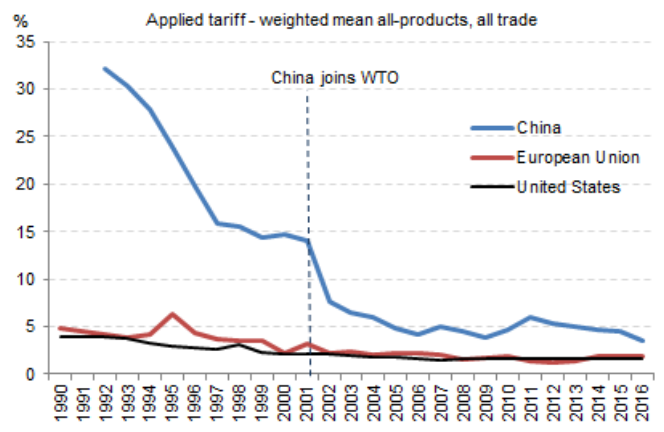
Figure 10: The US bilateral current account deficit has been remarkably stable over the last 15 years



Source: BEA

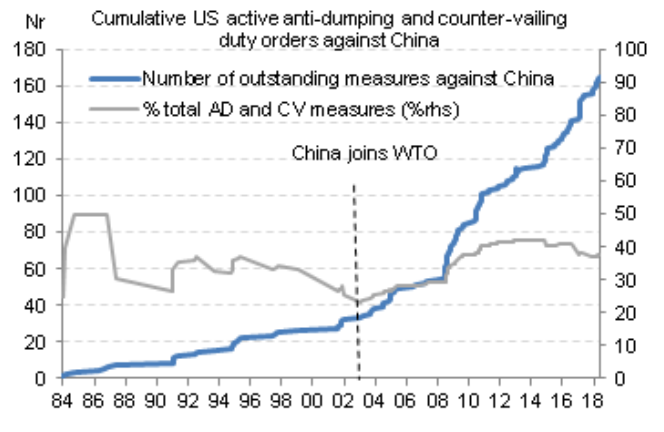
From a savings-investment perspective the overall US current account deficit looks entirely in line with its low savings rate: as Figure 9 shows, the US is right on the DM regression line. In contrast, China is an outlier and for its level of savings would normally be expected to have a higher current account surplus. Instead, China's overall current account surplus dropped from 10% to 1.3% of GDP between '07 and '17. We attribute that to a combination of exchange rate appreciation (our China economics team believes the exchange rate is now overvalued), the substantial capacity reductions that have taken place (China used to flood the export market with its surplus production), and a range of other factors that have pushed up China's production costs (put differently, China's savings rate has actually declined by 6% of GDP over the last decade).

Figure 11: Weighted average tariff China, EU and US



Source: World Bank (the data is the same as that described in the source note under Figure 2]

Figure 12: US cumulative AD and CV measures vs China



Source: USTR

[6] For the avoidance of doubt, we do not subscribe to the view that bilateral current account deficits are economically relevant or necessarily an indication of unfair trade practices, but they are clearly a focal point in the public debate.

The stickiness of the US deficit with China has occurred against a backdrop of declining Chinese tariffs (Figure 11) with large drops in the 1990s as China transitioned towards a more market-oriented economy, and took a further step down upon joining the WTO in 2001.

Yet, with improved market penetration—China's share of US imports increased from 9.2% in '01 to 21.5% in '17—came greater resistance: Figure 12 shows a marked acceleration in the number of trade remedy measures against China around the global financial crisis, possibly as a response to a 5-year period during which China's average share of total US imports was increasing 120bp per year (double the pace of the previous 5 years). Note though that the share of measures aimed at China did not increase within the total, suggesting the step-up in measures aimed at China coincided with a broader increase in US trade activism.

Scenarios for further escalation of protectionism

Although the US administration's is interested in global trade, we focus on China because it is likely at the receiving end of the largest increase in tariffs. The White House statement issued on June 18th[7] threatening tariffs on $400bn in Chinese goods (in 2 steps of $200bn) on top of the already announced $50bn would affect about 15% of all US trade directly (inclusive of an equal size Chinese response), and likely an even larger share indirectly. The first step towards that escalation was taken July 10, with the US Trade Representative announcing a supplemental action to the existing Section 301 case and identifying the first $200bn in goods being targeted.[8] Public hearings are scheduled for August 20-23 and we expect implementation by end September.

Figure 13: Selected trade measures imposed/considered by the US

Tariffs	Likelihood of implementation	Percent and Scope	Justification
Solar Panels and Washing Machine Tariffs	Implemented	20% tariff on washing machines; 30% on solar panels --	Section 201: material damage to domestic industry
Steel and Aluminum Tariffs	Implemented	25% tariffs except for carve outs – $13bln alum; $9bln	Section 232: risk to national security
Tariffs on $50bn worth of Chinese products	Mostly implemented; all forthcoming	25% tariffs; $34bln on July 6; $16bln forthcoming	Section 301: Unfair or unreasonable trade practices, in this case regarding the transfer and protection of intellectual property and technology transfer -- Underlying issue: trade deficit
Two sets of $200bln in Chinese tariffs	1st $200bn - High (in process); 2nd $200bn - Medium	10% tariff; up to $400bln	Retaliation to Chinese retaliation -- likely conducted under section 301
NAFTA Continues With Modifications	Medium to high: Base case scenario to play out over 1-2 years	NAFTA – free trade agreement maintained	Withdrawal very low probability. Base case modest modifications over 1 to 2 years
Finished automobile import tariffs	Medium to high	25% tariff; $176bln initially; reduced to $100bln after carve outs	Section 232: risk to national security
Auto part tariffs	Low	Auto parts are $148bn of US imports	Section 232: risk to national security
Microprocessors	Low to medium-low	Global action – uncertainty over scope and coverage	Section 201: material damage to domestic industry

Source: UBS

[7] https://www.whitehouse.gov/briefings-statements/statement-president-regarding-trade-china-2/
[8] https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/july/statement-us-trade-representative

However, a number of other investigations are under way, that include other countries beside China, most notably the section 232 investigation into car imports (see here and here). We believe those tariffs will follow the playbook of the steel/aluminium tariffs, that is, applied to all countries but with potential carve-outs for those willing to make trade concessions. These possible forthcoming actions are much larger in dollar terms than steel/aluminium, because the US imports $176bn in finished cars (vs about $22bn for steel/aluminium). So a 20% tariff on cars (as per Trump's tweet) would amount to $35.2bn in tariffs—nearly triple those announced so far on China's $50bn in goods under the Section 301 investigation on intellectual property.

Figure 13 lists the tariffs that have so far been announced by the US and their justification. We expect the investigation into US car imports to be completed by late August/early September (recent statements suggest it could be earlier; there is no minimum investigative period; only a 270 day maximum), after which the Administration has 90 days to take action.

As for NAFTA, we assume these negotiations drag on for at least another year and a modestly revised agreement emerges eventually. It has become evident that NAFTA negotiations do not preclude Canada and Mexico from getting pulled into other tariff disputes (such as autos) but NAFTA itself seems to be on a back burner. We've excluded it from the scenarios below.

The three scenarios for which we estimate the economic and market impact are as follows:

- **Scenario 1= implemented tariffs (25% on 2x$50bn)**: we assume that the announced Section 301 tariffs are implemented fully (the initial $34bn was implemented July 6 and an additional $16bn, or 284 items, should be forthcoming in the next few weeks after public consultation is completed), and that China responds with roughly the same amount of tariffs. The annex lists the goods affected for both the US and China.[9] We calculate off of the full $50bn. We also assume that China does not reinstate previous concessions made (these concessions have been withdrawn and included up to $70bn in energy and agricultural purchases) and that the steel/aluminium and solar panels/washing machines restrictions imposed earlier this year remain in place.

- **Scenario 2 = escalation (US-China tariffs + global car tariffs = 2* (25% * 50) + 2*(10%*200) + 25% * $176bn)**: under this scenario we assume, in addition to scenario 1, an escalation under which the US imposes a 10% tariff on an additional $200bn of Chinese goods and China responds proportionally with a combination of tariff and non-tariff barriers (NTBs). Our China team roughly estimates that China would impose 10% tariffs on an additional $55bbn in goods (so 25% on $50bn in scenario 1 + 10% on an additional $55bn, yielding roughly a 17%

[9] Note that the USTR statement has identified $50bn worth of goods based on 2018 trade values. See https://ustr.gov/about-us/policy-offices/press-office/press-releases/2018/june/ustr-issues-tariffs-chinese-products It is not entirely clear how these have been calculated (YTD values or a projection). Using 2017 data the 1102 tariff lines have a value of $46bn ($32bn for the 818 lines implemented July 6 and $14bn for the 284 items still subject to consultation). So there is a $4bn difference between 2017 and 2018 trade values for the items on the list.

tariff on $105bn worth of goods). However, for the purpose of this modelling exercise, we assume that China responds proportionately, which would require some use of non-tariff measures given the small base of imports from the US (in equivalent tariff terms, China would need to impose a 28% tariff on $105bn in goods to match the 13% average tariff imposed in the US on $250bn of Chinese goods (13% = 25% * 50 + 10% * 200)).

Under this scenario we also assume the current investigation on car imports results in a 25% tariff on global car imports worth a total of $176bn. However, a number of questions remain: (i) the level of the tariff (we assume 25% as per the EU statement, but President Trump has tweeted 20%), (ii) the countries that may negotiate carve-outs (we assume zero in the quantification below to give an upper bound), and (iii) the inclusion or not of car parts (we assume not). So the amount could end up being larger or smaller but we modelled 25% on cars only.

- **Scenario 3 = trade war (= global car tariffs + further escalation US-China = 25% * $176bn + 30% * $456bn + 30% on $155bn + NTBs to gross China up to US)**: under this scenario, we assume the US follows through on its retaliation to China's 2nd retaliation (from the perspective of the White House statement, the 1st retaliation was China responding to the initial US tariffs on $50bn and the 2nd would be if China responds to the 10% US tariff on an additional $200bn). For illustrative purposes, we assume a 30% US tariff on all imports from China except smartphones (essentially about $456bn worth of goods) and a 30% China tariff on all imports from the US ($155bn). However, again to achieve proportionality, we suppose China would impose non-tariff barriers (NTBs) such that the total tariffs-cum-NTB effect is equivalent to a 91% tariff on imports from the US.

These scenarios are meant to be illustrative. Our China team believes it is unlikely China would respond with a full arsenal of non-tariff measures, which should lower the probability attached to scenario 3. We have assumed proportionality to illustrate the potential magnitude of the impact. Furthermore, since China's imports from the US are one-third the size of US imports from China, we have to assume non-tariff measures. In scenario 2, we group the car tariffs and possible escalation with China primarily because the potential timing of both are likely to coincide. We calculated the effects separately, however, as we discuss below.

Considerations surrounding levels of disruption and goods selection

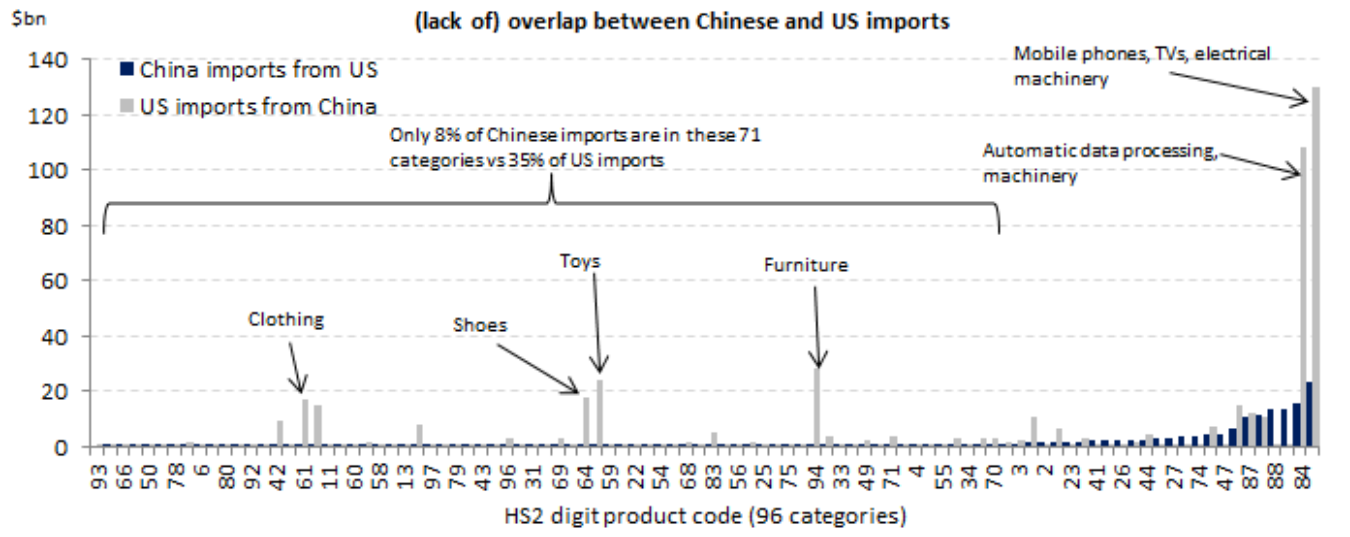
It will be clear below that the scenarios gets complicated quickly. Over 1000 products/sectors are targeted as part of the initial 25% tariffs imposed under the Section 301 investigation. But that comes after the 20% tariffs on washing machines, the 30% tariffs on solar panels and the 25%/10% tariffs on steel and aluminium that were slapped on several countries, not just China. On May 18th, the EU announced retaliatory action against the steel/aluminium tariffs, and on July 2nd issued a statement on the Section 232 autos investigation.[10]

[10] The press release on steel is here: EU statement on steel. The EC Press release on cars is here: EU statement on cars.

As has historically been common, both the EU's (footnote 8) and China's response to the US tariffs have focused on different areas than where they are being targeted; there is limited overlap in trade structures and governments are trying to limit the impact on their own economy.

Figure 14 shows China and US bilateral imports by standardized 2-digit product codes (96 categories). For many categories, China imports nothing from the US (clothing, shoes, toys and furniture) while for others, both countries import significant amounts from each other (mobile phones and machinery). Of course, the latter reflect in part intricate supply chains: e.g. China imports high value-added from the US and regional trade partners to produce smartphones which are then exported back to these countries (and others).

Figure 14: Lack of overlap in Chinese and US imports except for strong global supply chain categories

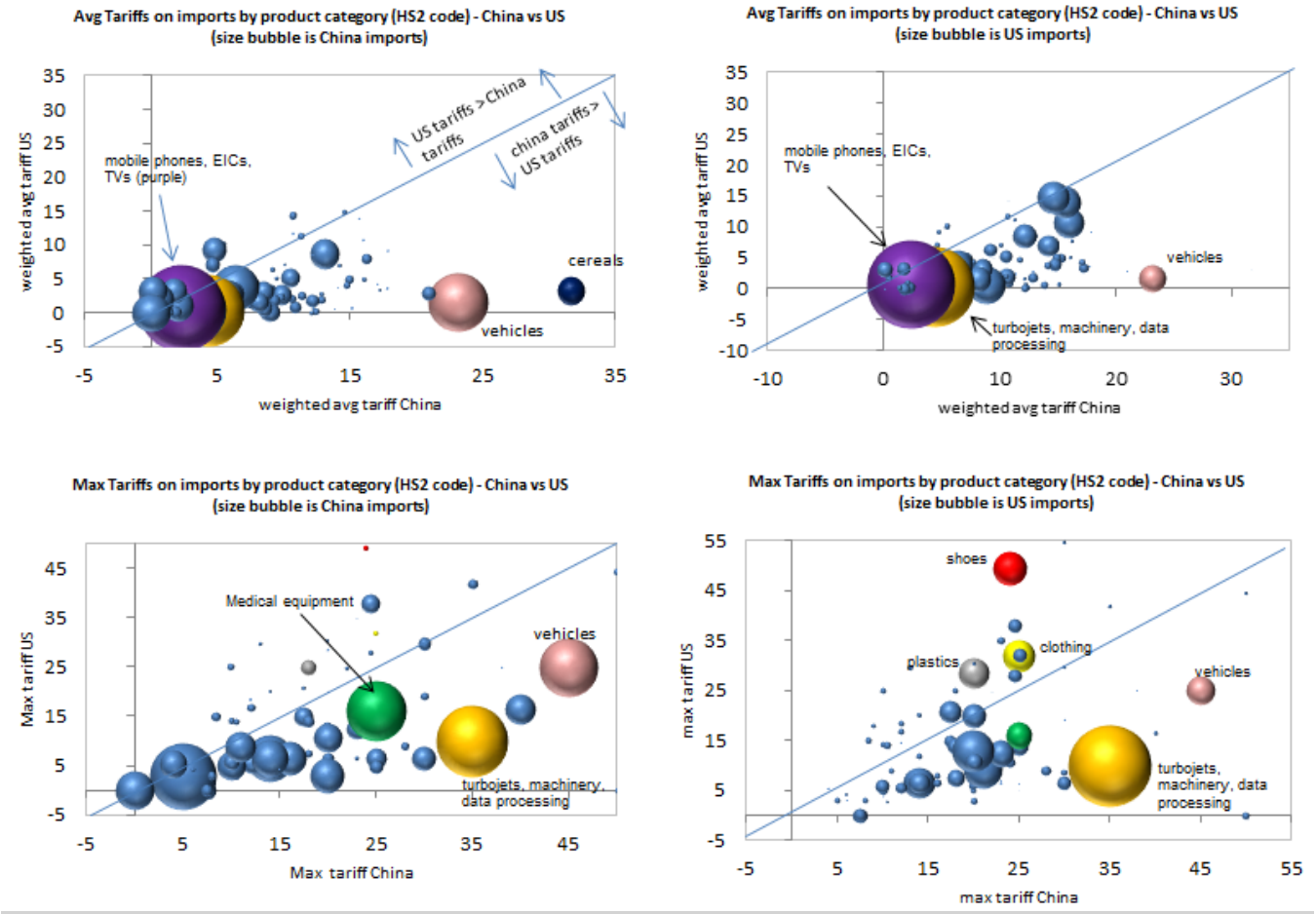


Source: Trade Analysis Information System (World Bank)

Figure 15 reveals the asymmetry between the relative importance of different categories of goods and the relevant tariffs. The top two charts show weighted average tariffs (China on x-axis and US on y-axis) with the size of the bubbles reflecting a product category's share in total imports. Left is weighted by Chinese imports, right by US imports. A few things are immediately apparent. There are virtually no categories in which China has lower average tariffs than the US: almost all the bubbles are below the diagonal line. But for the 2 largest categories—mobile phones/TVs and turbojets/machinery/data processing—the average tariffs are actually quite similar. Autos are an outlier: it is a big import category for China but clearly not for the US (the pink bubble is a lot smaller in the right hand chart) and China charges substantially higher import tariffs.

Turn to the bottom two bubble charts in Figure 15, which show maximum tariff levels within those same 96 product categories. Again, left is weighted by Chinese imports, right by US imports. There are now several categories where the US imports significant amounts of goods from China (shoes, plastics, clothing) and has higher tariffs than China.[The mobile phone/TV/EIC category (HS code 85) has one tariff line with a 3000% tariff and so is not visible in the chart.] Fairness is in the eye of the beholder, but it is clearly not the case that China has higher import tariffs in all categories.

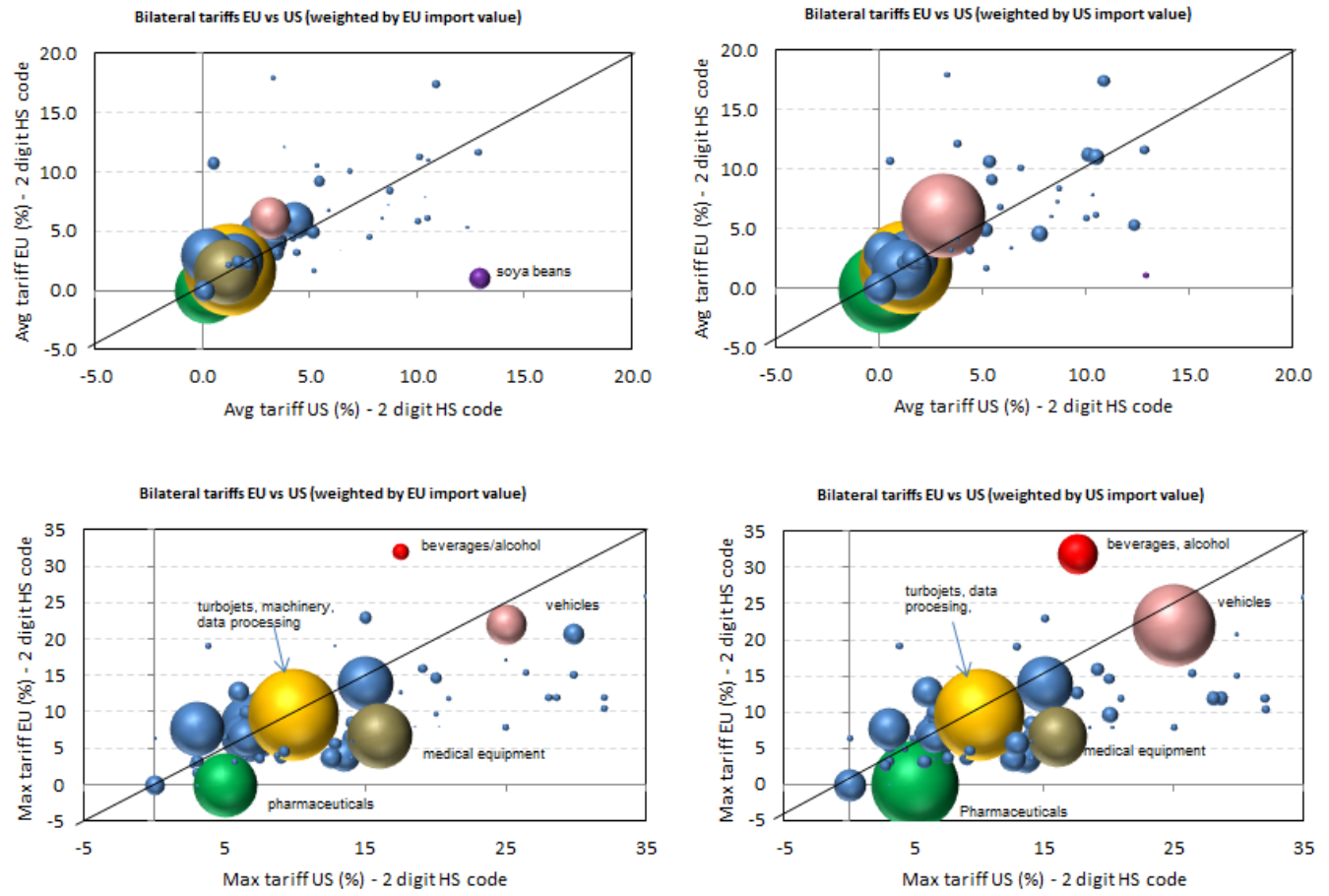
Figure 15: Comparing US and China tariff levels (charts on left weighted by China imports and charts on right by US imports)



Source: World Bank TRAINS database

Figure 16 is a repeat of Figure 15 applied to the EU. Perhaps not surprisingly given their similar state of development and overall tariff levels, there are few large outlier product categories on an average tariff basis. But the relative importance of some categories is very different. For example, US imports of European vehicles are much larger than European imports of US vehicles, and US exporters face a higher average tariff). At a 4-digit standardized tariff code level, there are only 285 tariff lines where tariffs are equal (EU tariffs are higher in 615 cases and US tariffs are higher in 322 cases). On a maximum tariff basis (the bottom 2 charts), the US clearly imposes higher tariffs than the EU on alcohol, a category where US imports are substantial. The max tariff in the vehicle category captures the 25% tariff on imported light trucks and SUVs into the US, which presumably would be part of any negotiation on further opening up the car market. Outside of light trucks and SUVs, the EU imposes a 10% tariff on personal vehicles compared to 2.5% by the US.

Figure 16: Comparing US and EU tariff levels.



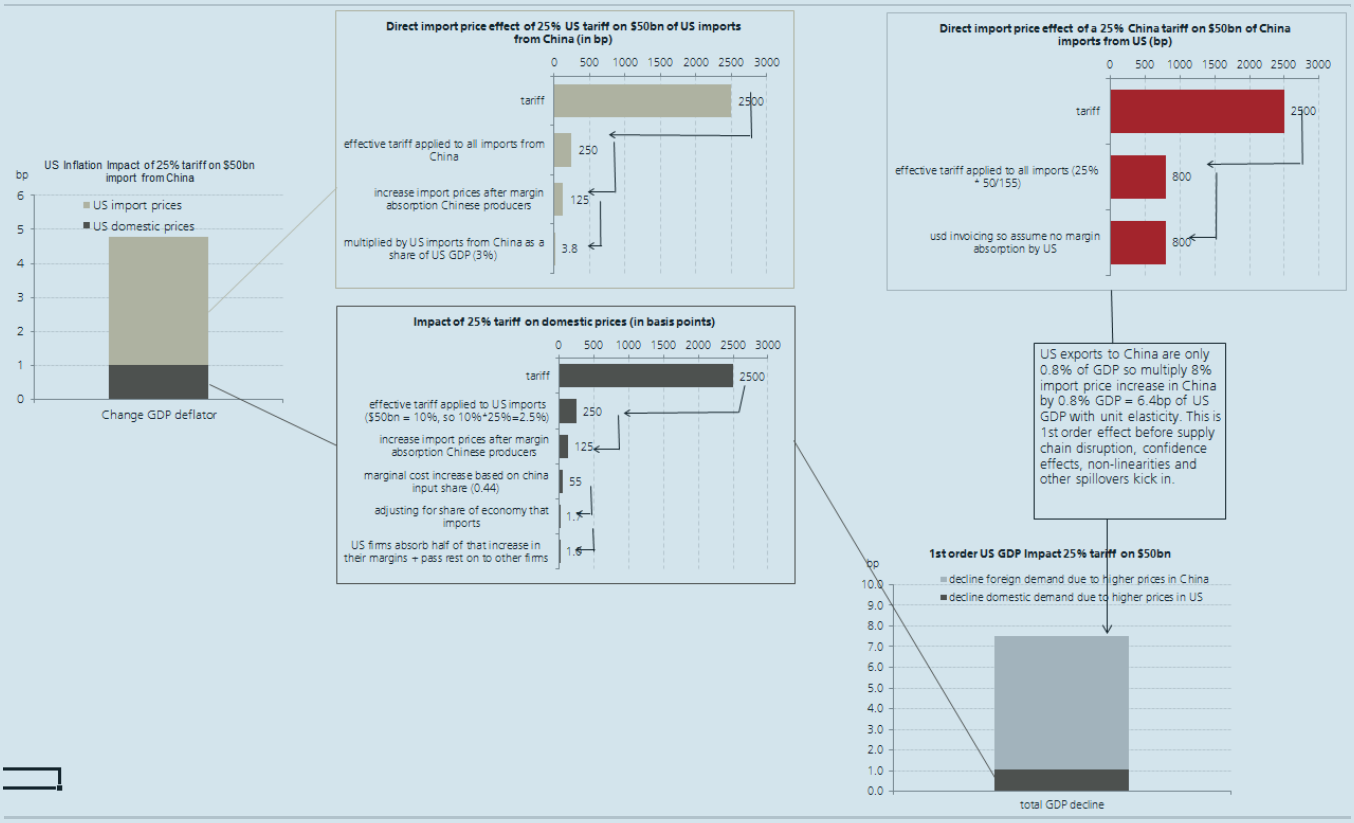
Source: World Bank Trains database, US International Trade Commission

Box 1: Calculation Methodology for Impact Assessment

We calculate the impact of tariffs in the 3 scenarios described above through a two-step process. In the first step we use the model we created last year to calculate the impact from a potential border adjustment tax to gauge the inflation impact from the tariffs. This model combines the impact on import prices and domestic prices and involves a number of assumptions about margin absorption (which in turn depends on invoicing currency), the share of foreign inputs from the US/China (for which we use World input-output tables), and the degree to which import prices are passed on domestically through the supply chain. The upshot, though, is straightforward linear multiplication that gives a sense of orders of magnitude before one starts considering more complicated effects.[11]

[11] These top down numbers coming from the model are roughly similar to the bottom up estimates provided by the country teams in earlier notes. However, the methodology is different. For the purpose of this global note we re-did all the country estimates with the same model for consistency purposes.

Figure 17: 1st order price and demand impact on the US of a 25% increase in tariffs



Source: UBS

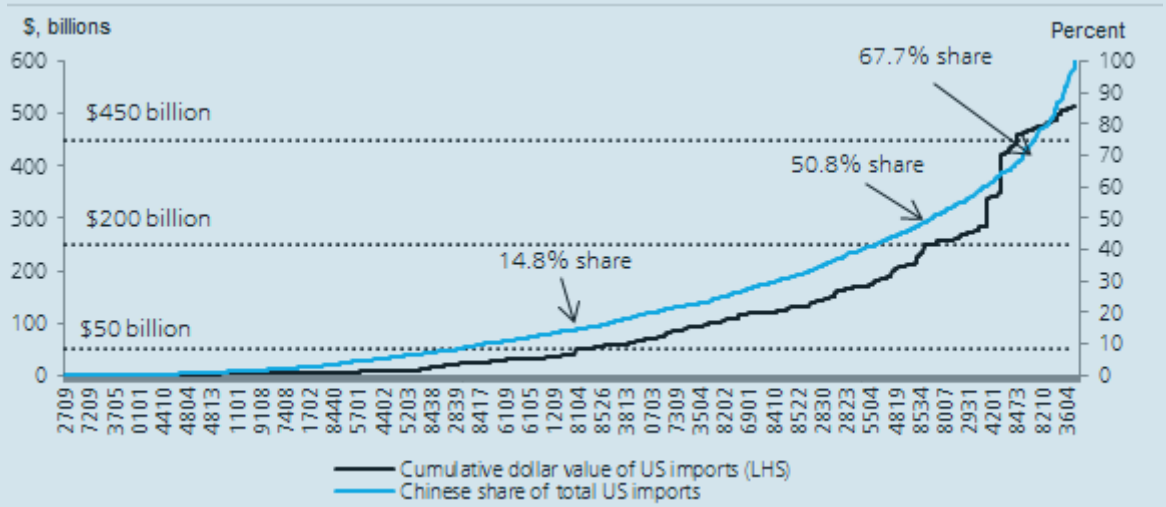
The aggregate price deflator impact (shown on the left side of the graphic in Figure 17) for the US consists of 97% domestic prices (the multiplication in the dark brown chart below) and 3% Chinese prices (the light brown chart above; China is 20% of US imports = 3% of US GDP). The graphic shows how the headline tariff dilutes into the ultimate deflator components. The red bar chart above right in the graphic shows just the import price calculation of the equivalent tariff China applies to US imports (the domestic price calculation for China is not shown). Once we have these price effects (for both the US and China) we can calculate an initial demand effect for the US. We do that using a unit elasticity assumption, i.e. if prices go up 5% then demand goes down 5%, but that is obviously subject to challenge/debate. We then calculate the 1st order growth impact on the US as a function of domestic prices going up (reduces domestic demand) and foreign prices going up (reduces demand for US exports). Bottom line, US inflation goes up by roughly 5bp and US growth goes down by 8bp.

Now of course these are just the first order impacts, i.e. we have not assumed anything yet about supply chain disruption (though we have a little bit of supply chain impact coming through in the form of price knock-on effects), confidence effects, substitution problems, or other non-linearities (e.g. job multipliers in service industries around manufacturing production chains). Furthermore, we have not assumed any additional negative feedback loop from lower growth in other countries (including China). All those effects are classified as '2nd order" effects.

The extent of those 2nd round effects (step 2 in the calculation) depends in part on the margins firms have to absorb the price impact, and their ability to substitute the more expensive tariff goods with other goods (these can either be lower

quality, and therefore more difficult to use, or more expensive, raising the average cost of inputs).

Figure 18: Disruption rises as more product categories are included (4-digit HS codes)



Source: UBS

Figure 18 above captures that substitutability problem nicely. For the first $50bn in goods identified by the US for new tariffs, the Commerce Department spent months identifying those sectors where tariffs would hurt the least. Ultimately, it seems to have settled on sectors/products where China has a low market share--average market share of 8% with a max market share of close to 15% for a few products (see where the dotted $50bn line crosses the black line below). However, if the US were to add $200bn in goods to the tariff list, substitutes are harder to find, as China has close to a 50% market share in some of those categories. And going all the way to $450bn requires finding alternatives in some sectors where China has >70% market share.

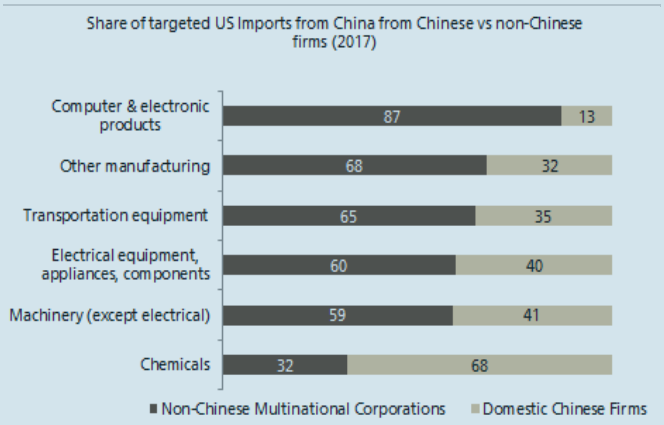
What we have assumed in our impact assessment is that the aforementioned substitutability issues are very small in the baseline (scenario 1). In scenario 2 and 3, however, this becomes much more important, and each country team has provided their best estimate of these knock-on effects.

Beside substitutability, two other factors that determine how price effects cascade through the system are the degree of integration of the supply chain and the role of intermediate goods. The latter is already significant: for a given nominal import value target by tariffs, reducing the share of consumer goods means increasing the share of intermediate goods (TVs were cut from the originally proposed list and the consumer goods share in the total dropped from 12% to 1%). Capital goods and intermediate goods combined now comprise 95% of the affected products (Figure 20), and the tariffs will presumably raise the cost of US production. Possibly compounding things, a recent note found that 80% of the tariffs were being applied to goods that match the 5 most patent-intensive industries in the US—consistent with the attempt to reduce competition for intellectual property. [12] However, a large share of exports from China comes not from Chinese firms but from foreign-owned multinational corporations (including affiliates of US

[12] See "Trump Tariffs Primarily Hit Multinational Supply Chains, Harm US Technology Competitiveness", PIIE Policy Brief 18-12 (May 2018), by M. Lovely & Y. Liang.

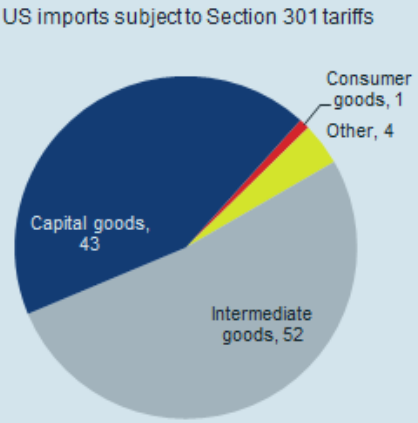
companies). For computer and electronic imports into the US, that share is as high as 87% (Figure 19). Because those multinational companies are to some extent part of the US supply chains and US-owned, US tariffs are likely taxing US producers directly.

Figure 19: Possibly as much as 60% of all Chinese exports to US come from foreign multinationals in China



Source: Peterson Institute for International economics

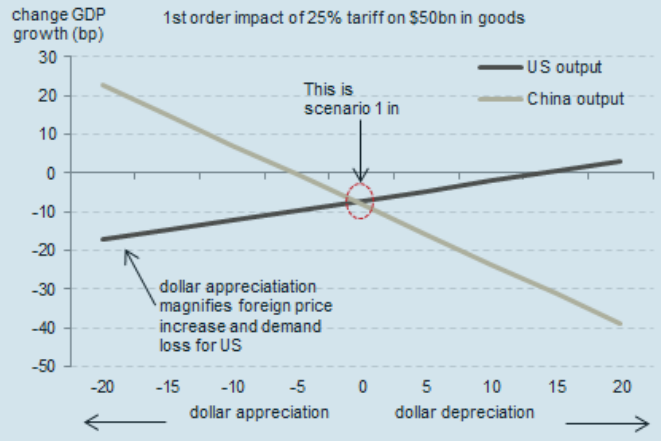
Figure 20: Breakdown US goods subject to Section 301 tariffs



Source: Peterson institute for international economics

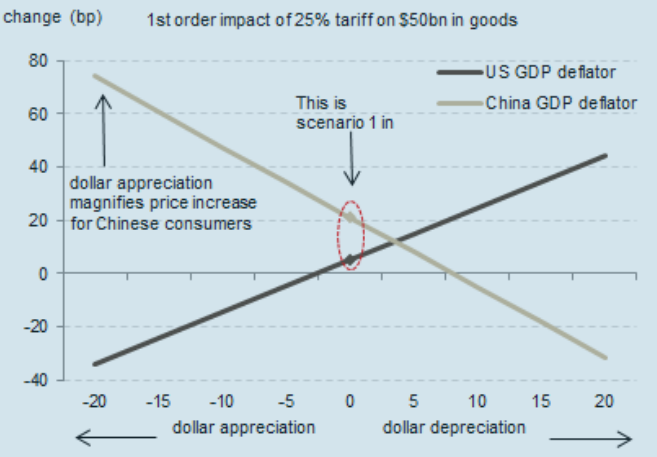
A final consideration before presenting the bottom-line impact numbers relates to exchange rates. We have done the impact assessment using a constant currency assumption (i.e. USD/CNY does not move), shown as the red circle in Figures 21-22). However, as the charts make clear, the growth/inflation calculations are extremely sensitive to this assumption. In the right chart, for instance, a dollar appreciation would quickly lead to disinflation in the US (in other words, no inflation impact coming from the tariffs), but Chinese consumers would face much higher prices, magnifying the output loss for the US from a drop in Chinese demand (as per the chart on the left). [13]

Figure 21: US & China 1st order (tariff related) output effects under different exchange rate assumptions



Source: UBS

Figure 22: US & China (tariff related) inflation effects under different exchange rate assumptions



Source: UBS

[13] Note that the FX charts only show the trade-off for the effects coming directly from the tariffs; they do not, for instance, calculate the exchange rate effects on other US exports.

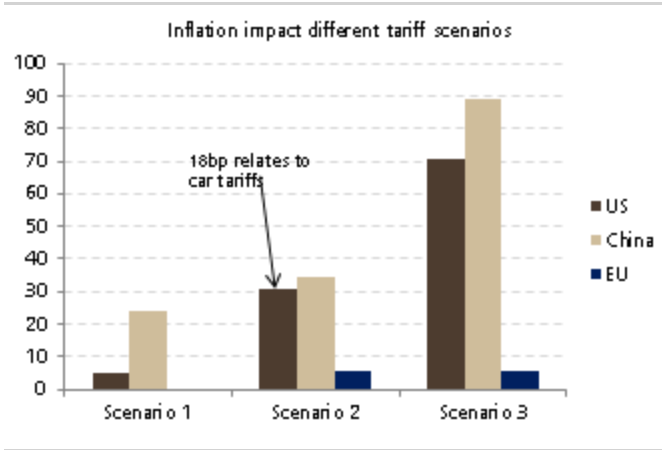
Economic Impact Trade Escalation Scenarios

Our estimates of the growth and inflation impact under the 3 scenarios are as shown in Figure 23-25.

- **Scenario 1 – inflation**. We estimate that in this baseline, the inflation impact of the tariffs for the US, once fully implemented, could be in the order of 5bp but that for China the impact could be 4 times as large. That asymmetry comes partly from our invoicing assumption (nearly all goods are invoiced in US dollars [14]) which leads Chinese exporters to absorb half of the tariff increase in their margins. That in turn reduces the price impact in the US. However, there is no similar mechanism to offset the impact of Chinese tariffs on Chinese inflation. Accordingly, global inflation in this scenario goes up by 5bp.

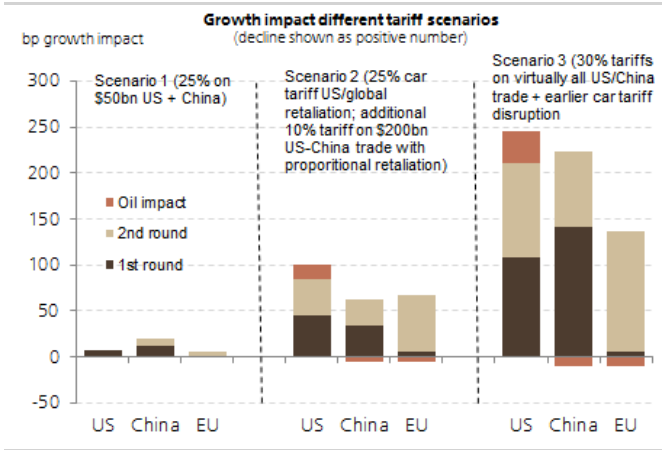
- **Scenario 1 – growth**. The growth impact is small: 8bp in the US and 19bp in China (12bp of 1st round effect and 7bp of 2nd round spillover/supply chain/non-linearity effects). The Chinese growth reduction in turn creates about 5bp of growth drag for the EU. For the world as a whole, GDP growth goes down by 6bp (the sum of all the individual country effects multiplied by their PPP weight).

Figure 23: Inflation impact (bp)



Source:

Figure 24: Growth impact (bp)



Source:

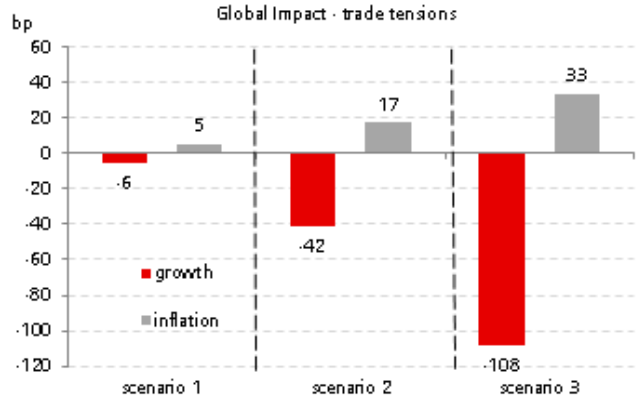
- **Scenario 2 – inflation.** Now, the US is hit by the double whammy of auto tariffs and the escalation with China. Were the US to limit itself to the Chinese 10% tariff escalation on $200bn, inflation would only go up by an additional 7bp compared to scenario 1 (i.e. cumulative additional inflation of 12bp), but auto tariffs on their own add 18bp. Admittedly, that figure will obviously drop if there are carve outs and if the tariff is lower than our assumed 25%. China's inflation increases an additional 10bp to total 34bp. Recall that under this scenario, we assume that China imposes tariffs of its own on only an additional $55bn, and that the other measures would be NTBs—for the purpose of calculating the inflation impact we have included only the tariffs. Accordingly, the net effect is

[14] See "The International Price System" by G. Gopinath, NBER working paper 21646 (Oct 2015).

that the US' inflation delta is not too dissimilar from China's. The gap closes because the US is imposing tariffs on a larger proportion of goods with multiple trade partners. EU inflation under this scenario goes up because we assume the EU imposes tariffs on $43bn worth of imports from the US--equivalent to its auto exports to the US. The combined effect of global auto tariffs and US-China trade escalation is about 17bp higher global inflation.

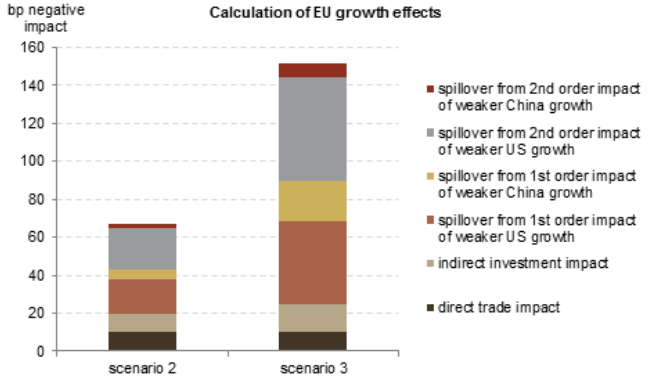
- **Scenario 2 – growth.** We published a detailed companion note titled 'Europe--how will car tariffs hit the economy', which digs into how auto tariffs would impact growth in the EU and individual countries (about 5% of all its auto production is for the US market). For the US, we estimate that the auto tariffs in their 1st round impact are worth about -24bp of growth reduction and the escalation with China about -20bp. However, the US team also estimates an additional -55bp in 2nd round effects. Part of that is oil, which has an outsized impact on US investment (see box 2). And the rest is a judgmental quantification of the impact on value added of the additional sectors. Higher cost of production, less availability of substitutes from other countries, and reduced consumption from workers who are laid off or at risk of being laid off. For China, it is a small beneficiary of oil and benefits from the fact that its trade tensions are playing out on a single front (in contrast to the US). Still, we estimate that total Chinese growth could drop up to 67bp. Chinese policy reaction would likely cut the ultimate impact in half (not shown in Figure 24), such that global growth in this scenario goes down by -42bp.

Figure 25: Global growth and inflation impact



Source:

Figure 26: Why is the spillover to the EU so large?



Source:

- **Scenario 3 – inflation.** Here we are in the realm of across the board 30% tariffs on the US' largest trade partner. Inflation in the US would increase by around 70bp (the Fed would look through that supply shock) and China's inflation by nearly 90bp. Absent in these numbers is a disinflationary feedback loop where weaker growth leads to higher output gaps, in turn leading to price effects. The model has a constant wage assumption embedded in it, which is a different way of saying that the inflation model's horizon is only 12-18 months. 2nd round disinflationary pressure from weaker growth would be slow to materialize and are excluded from these inflation estimates. We estimate global inflation would increase by about 33bp. That is substantially less than the volatility that was created by the oil volatility in recent years, but that also

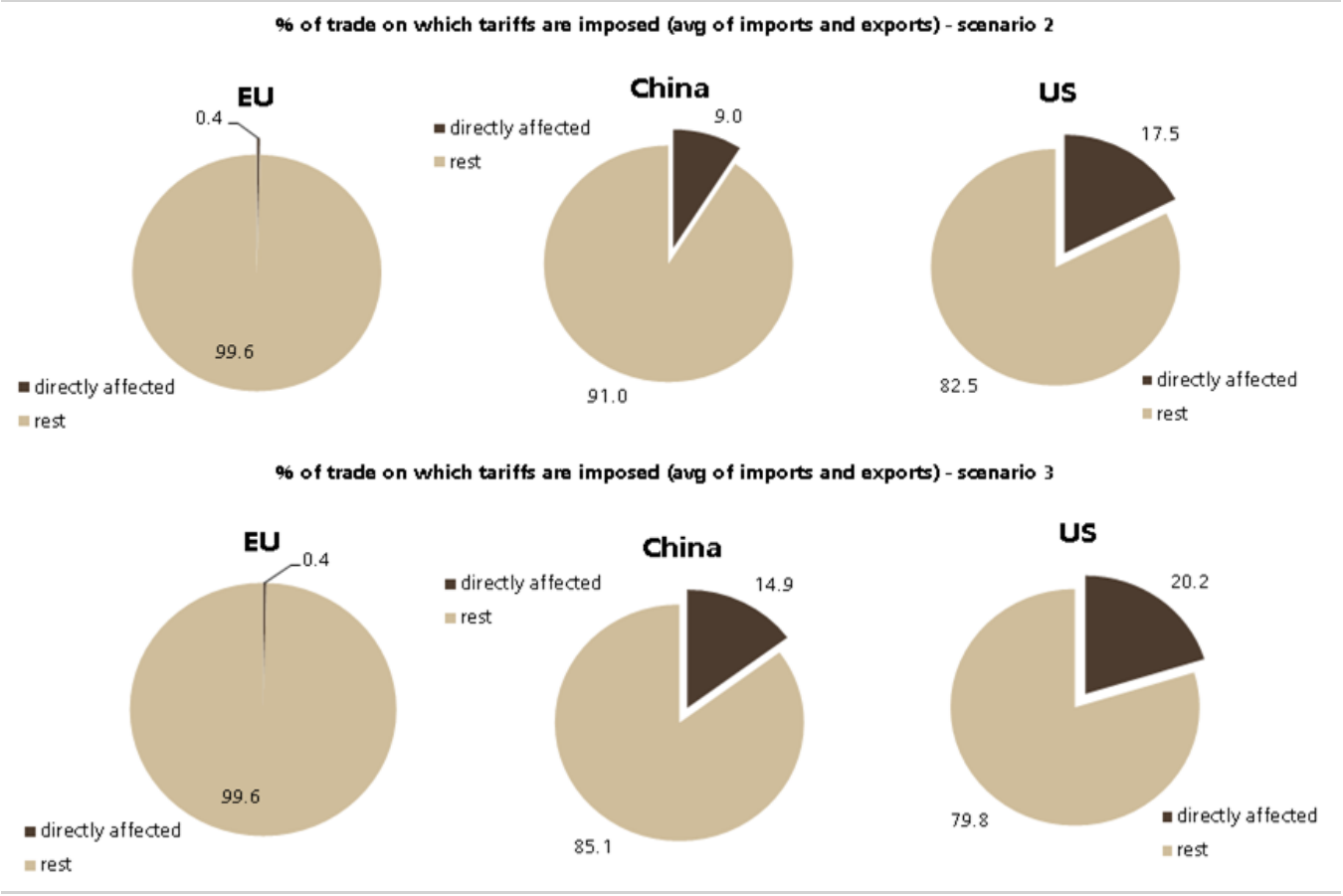
makes sense: only 2 countries are seeing their prices go up very substantially on a subset of their trade, whereas oil prices affect every country in the world.

- **Scenario 3 – growth.** The difference between scenario 2 and 3 is to jump from an effective average US tariff on Chinese imports of 6.5% to 27%, and for China to match that. So the 1st order growth impact essentially quadruples. The more complicated bit is guestimating the degree of supply chain disruption in this scenario. First, the decline in global oil prices affects US investment (production continues but new investment is hit). Under our baseline view, energy-driven investment is contributing 45 basis points to real GDP growth in 2018. With oil prices at $50/bbl, the contribution falls to 10bp. Second, because this level of escalation includes categories for which there are effectively no ready substitutes for the US, the nonlinearities become even more substantial. The likely disruption of parts of production spread. With that fall in production, job losses and fear of job losses further depress consumption spending.

  Relative to the US, China should have fewer issues finding substitutes for imports of mostly agricultural/vehicle imports. A more sizeable 2nd round drag on real GDP growth will likely come from slower global demand due to escalating trade frictions. The negative income effect from weaker export growth would lower corporate profits and wages, and weigh on household consumption and fixed investment.

  The most surprising part of Fig 24, however, is how large the indirect effects are on the Eurozone, particularly given that the 1st order growth effects in our model are tiny. Figures 7 and 26 provide intuition for why that is. The EU is three times as open as the US (according to trade shares of GDP) and twice as open as China. The rule of thumb is that every 100bp decline in US and China growth leads to a 40bp and 15 bp reduction of EU growth, respectively. But these spillovers are both direct and indirect, and the compounding quickly balloons. Our estimates thus suggest that in an all-out trade war, EU GDP could slow by 150bp, even though it is not being singled out for any tariff disputes. (Fig 26) We estimate the global growth decline in scenario 3 at -108bp, but that is obviously conditional on heroic assumptions.

Figure 27: Share of trade in scenario 2 and 3 that is directly subject to US tariffs.



Source: UBS

Needless to say, these are just illustrative scenarios intended to give some upper and lower bounds. They are not probability weighted—for instance, if one were to assign only a 50% chance of the full escalation materializing (scenario 2) and a 10% chance of scenario 3 materializing (conditional on scenario 2 materializing), and to assume that car tariff carve-outs would reduce the impact by half, then the global growth drag would by 'only' -26bp. If you instead assume a 75% chance of scenario 2 and a 25% chance of scenario 2 then the growth drag goes up to -46bp. So what type of global growth/inflation impact to assume ex ante depends very much on your assessment of the likelihood of the different steps happening. To allow clients to do their own probability weighted calculation impact for growth/inflation we've included the table below.

Figure 28: Growth "deltas"

Growth deltas	scenario 1	scenario 2	scenario 3	
US growth	-7	-100	-245	
section 301	*-7*	*-76*	*-221*	combined 1st and 2nd round effects
car tariffs		*-24*	*-24*	
China growth	-19	-67	-233	combined 1st and 2nd round effects
EU growth	-6	-62	-146	combined 1st and 2nd round effects
Global car suppliers	0	-12	-12	only 1st round
Global Growth	**-6**	**-42**	**-108**	
of which 1st round demand effects	*-3*	*-18*	*-47*	
of which supply chain disruption/non-linearities	*-2*	*-24*	*-61*	
PPP weights (% global total)				
US ppp weight	15.12	15.12	15.12	
China ppp weight	18.70	18.70	18.70	
EU ppp weight	16.30	16.30	16.30	
Car supplier weight	40.64	40.64	40.64	
Car suppliers ex EU	24.34	24.34	24.34	

Source: UBS, IMF

Box 2 - Oil Assumptions

Our oil team estimates that if global GDP falls 50bp (as is nearly the case in scenario 2) demand for oil would fall by an additional ~200kbd, which could soften the 2018 exit price to $65/bbl [$8/bbl below our baseline] and 2019 to ~$60-$65/bbl. The more extreme scenario 3 would likely take 500kbd off or so from demand – assuming its clear by end of year then we exit at $60/bbl and 2019 $50-$60/bbl. Shale becomes the pivot for incremental supply as the demand curve shifts left. As we highlighted in a piece, oil at $50/bbl would take 36bp off of US growth (employment, investment and production declines more than offset the consumer gains).

In both cases we assume our base case supply scenario (flattish Iran, bottoming out Venezuela). Easing of Iran sanctions or pick up in Venezuela would ease spare capacity issues and potentially exacerbate effect. Otherwise the dominating influence remains absence of spare capacity which probably stops us revisiting <$40-$50/bbl or lower.

While lower growth would translate to lower demand and prices, all things equal, we note that risks to supply mean that we could see a scenario where prices rise despite a fall in demand:

A scenario that might have significant implications for the global economy is one where there is a trade war but oil prices rise because a supply shock overwhelms softer demand effects. Global supply balances are quite delicate at present as Iran faces tightening US sanctions, Venezuelan production continues to decline and US supply growth hits infrastructure/resource constraints. The loss of >0.5Mb/d of production – historically not an abnormal event – in the context of shrunken global spare capacity would likely have a far more meaningful positive effect on crude oil prices than the loss of 20-50bps of demand growth. Therefore a scenario of lower GDP, lower oil demand growth, but >$100/bbl is not inconceivable

Impact on rates and FX markets

We estimate the impact of the three scenarios on interest rates and FX, based on the results from our economists and equity strategists. Our results show large impacts on interest rates in the "Escalation" and "Trade war" scenarios, particularly for US rates. However, for FX, moves in EUR/USD and the broader trade-weighted dollar are relatively small (Figure 29).

The FX result is driven by two countervailing forces: rate differentials and risk sentiment. Although risk sentiment benefits the USD and weighs on EUR/USD in both scenarios, rate differentials act in the opposite direction-- against the USD and in support of EUR/USD. This is largely a function of a lot being priced in US rates, while hardly anything is priced in European rates. So, any escalation in trade tensions is likely to have a larger impact on US rates than on European rates.

Overall, our results imply a slightly weaker trade-weighted dollar in both the "Escalation" and "Trade war" scenarios, and this is consistent with our analysis of end of cycle FX dynamics, as well as our recent work showing the historical tendency of trade wars to produce a weaker USD.

Scenario 1: Implemented

We use nominal GDP changes from our economists in the various scenarios to estimate changes in front and back-end yields, and also consider the historical impact of sell-offs in equity markets on rates, given our equity strategists' forecasts. We then use the rates results and estimates of equity market impact to derive FX estimates.

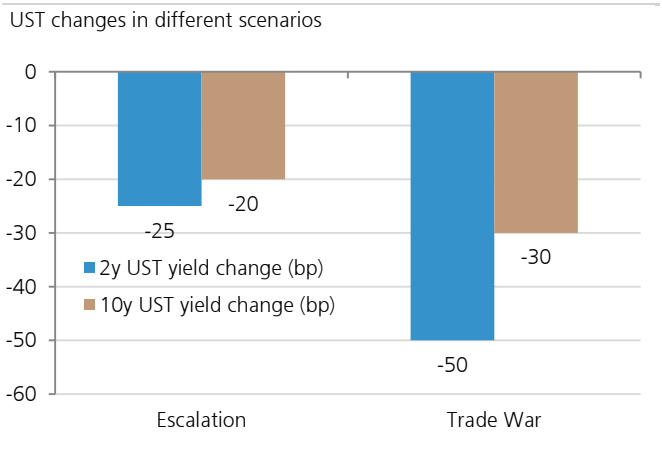
We see Scenario 1 as already being priced by markets, and therefore having little impact on rates and FX markets. The impact on US GDP under this scenario is very minor, and yields are unlikely to react much in response. With little impact on rates and equities, we estimate minimal impact on FX markets as well.

Figure 29: Potential rates and FX outcomes across scenarios

Scenarios	Escalation	Trade War
	Chg	Chg
US 2Y yield	-25bp	-50bp
US 10Y yield	-20bp	-30bp
EZ 2Y yield	-5bp	-5bp
EZ 10Y yield	-10bp	-15bp
EUR/USD	-0.2%	0.3%
DXY index	-0.3%	-0.9%

Source: UBS calculations.

Figure 30: The likelihood of US curve steepening increases as economic outcomes worsen



Source: Bloomberg, UBS.

Scenario 2: Escalation

In the "Escalation" scenario, given the reduction in US nominal GDP estimated by our economists, and the decline in the S&P500 estimated by our equity strategists, the impact on rates is more significant. Using historical betas to US nominal GDP and equities, we estimate that US 2-year yields would fall by 25bp as markets remove one Fed hike, and 10-year yields decline by 20bp.

The modest curve steepening is consistent with our underlying framework, as we would generally expect bull steepening of the yield curve on a near-term reduction in US growth (Figure 2). The Fed has been hiking, short-term funding rates are now at 2%, and markets are pricing close to three more hikes over the coming two years, all of which make steepening more likely in a weaker economic outcome.

European rates also decline in the "Escalation" scenario, but to a smaller degree. We estimate a 5bp decline in 2-year yields and a 10bp decline in 10-year yields. This is mostly a function of the fact that European rates are already low, and are pricing hardly anything from the ECB during the coming two years.

To map these results to FX, we utilize our Error-Correction Model that links movements in exchange rates with underlying financial market fundamentals, including rate differentials and equities.

Broadly, EUR/USD tends to benefit from trade-tension induced movements in rate differentials. This is almost regardless of GDP impacts, and is simply due to the fact that markets are pricing a still-significant number of hikes from the Fed, but virtually nothing from the ECB. So, risk off has the effect of moving rate differentials against the dollar.

In the opposite direction, the risk-off move in equities benefits the dollar, and weighs on the euro, given the small positive beta on equities in our EUR/USD model. This likely reflects the dollar's perceived safe-haven status.

On net, this leads to a 0.2% decline in EUR/USD under the "Escalation" scenario, as the equity effect (EUR-negative) slightly dominates the interest rate effect (EUR-positive). That said, it is worth noting that the EUR's relationship with risk has been unstable in recent years and it is possible that the EUR proves more resilient than these estimates suggest.

To estimate the impact on the trade-weighted dollar in this scenario, we focus on the betas of other major currencies to equities. This results in USD strength versus higher beta currencies (+3% versus CAD, for example), but weakness against JPY and CHF, which tend to exhibit even stronger safe-haven characteristics than the USD, in part given their status as current account surplus currencies. In total, DXY weakens by 0.3% in the escalation scenario.

Scenario 3: Trade war

In Scenario 3, with US nominal GDP, global GDP and equities falling further in our economists' and strategists' forecasts, we estimate that markets will re-price Fed expectations, taking out two hikes. We see 2-year yields falling 50bp, and 10-year yields falling 30bp, given reduced Fed hiking expectations and the fall in equity markets.

Rates fall in Europe as well, but again there is more of a floor, particularly at the front-end of the curve, and we see European 2 and 10-year rates down 5bp and 15bp, respectively.

For FX, despite the larger decline in equities in this scenario, the interest rate impact becomes slightly more dominant for EUR/USD, and leads to a small appreciation of 0.3%. Beyond the specific numbers, a key takeaway from our analysis is that EUR/USD is likely to display relative stability in scenarios of heightened trade tension, and in more severe scenarios could very well appreciate, with the dollar depreciating.

For DXY, with JPY and CHF likely to rally given our equity strategists' large equity decline in this scenario, DXY falls nearly 1%.

Summary US equity impact

Using the three different scenarios discussed in this note, we analyze the potential impacts on S&P 500 earnings, valuation and the market price. There are so many potential permutations of 1st and 2nd order effects, with 2nd order effects thus far being much larger (see Protectionist cross currents), but we focus on two scenarios in particular and think through relative sensitivities of key drivers of US equities.

"Implemented": EPS estimates unchanged, and target 3150 for the S&P 500. The tariffs implemented thus far (solar, washing machines, steel, aluminum, China imports/exports) would be a mild 7.5bp hit to US GDP growth. This is essentially baked into our baseline estimates for growth, and thus earnings, so our S&P 500 EPS estimates for 2018 ($162) and 2019 ($176) would not change. No further trade actions should see the S&P 500 trade toward our 3150 target.

"Escalation": S&P 500 downside to ~2500, 2nd order effects and offsets key. If the US imposes a 10% tariff on an additional $200bn in China goods, China retaliates and tariffs are placed on autos, we estimate that S&P 500 earnings would take a 6% hit on lower US and global growth, depending on moves in the USD and oil. The S&P 500 P/E could decline by 0.6x, as lower productivity/ LT EPS growth is discounted, and another 0.3x hit due to the impact of trade on macro drivers. In our view, some further escalation is priced with the 0.5x decline in the P/E since mid-March on trade uncertainty, which would point to ~2500 as a potential S&P 500 level should our escalation scenario play out.

We view the joint probability of 10% tariffs on $200bn of US-China trade and 25% tariffs on autos as an "outer bound outcome" that represents a real escalation scenario with notable downside.

"Trade War": potential ~21% downside for the S&P 500 to ~2200. Assuming virtually all trade between US-China is affected by tariffs and other protectionist policies, we estimate that S&P earnings would take a 14.6% hit as US and global growth would be 245 and 108.5bp lower, respectively. Second order effects would be larger, with US multinationals doing business in China also likely to be hurt by China retaliation. The S&P 500 P/E would likely fall by ~0.5x more than the escalation scenario as higher recession risks and lower long-term potential EPS growth get priced.

Figure 31: S&P 500 impact: earnings, P/E multiple, and index (% change)

% change	Implemented	Escalation	Trade war
Earnings	nm	-6.0	-14.6
Valuation	Increase	-5.6	-9.1
S&P 500 impact - unadj	No change	-11.7	-23.6
Adj for 0.5x P/E fall since Mar		-8.7	-20.7
S&P 500 est level		2500	2200
%chg vs Jul 10 price		-10.5	-21.3

Source: UBS

Impact on S&P 500 earnings

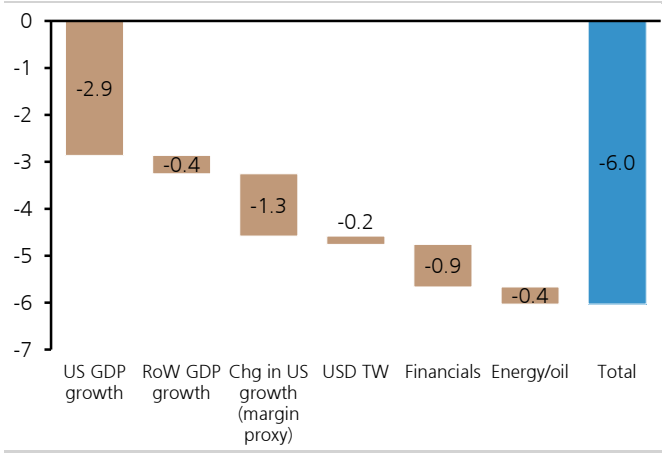
To gauge the potential impact on S&P earnings, we apply the betas from our earnings model to the various growth drivers impacted by tariffs in our Escalation and Trade War scenarios for both 1st and 2nd round impacts (see Raising EPS

forecast and Any upside left for more detail on our earnings framework). Given that tariffs are done at a micro/product level, but price and market responses have been large relative to the tariffs instituted thus far, big 2nd and 3rd order effects could further amplify earnings headwinds, such as dollar strength. On the other hand, factors such as domestic import substitution could be an offset.

Escalation scenario would reduce S&P earnings by 6%. We estimate that S&P 500 ex financials and energy earnings would take a 6% hit on lower US and global growth of 100 and 42bps, respectively. The slowing of GDP growth in our model, would lead to a hit to margins, but the magnitude of the impact would be determined by the ability to pass along costs and find substitutes for the imports. Financials ROA would take a hit on lower rates while GDP growth would slow asset growth, leading to a 4.5% headwind to Financials earnings. Lastly, Energy earnings would be 7% lower assuming oil settles around $65.

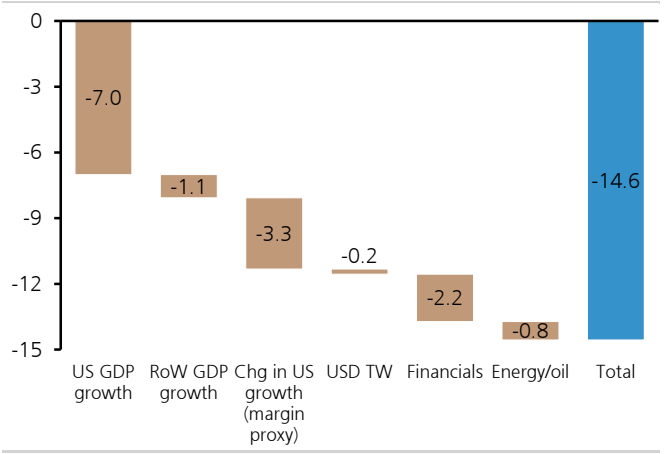
Trade war scenario would see S&P 500 earnings 14-15% lower. We estimate that earnings for S&P 500 ex financials and energy would take a 14.6% hit, assuming US and global GDP growth that is 245 and 108.5bps lower, respectively, and the USD also rises against the CNY and other EM but flat/up slightly vs. DM. Financials earnings would be reduced by about 11% while Energy earnings would take a 17% hit as oil prices would fall to $55.

Figure 32: S&P 500 earnings impact % – trade escalation



Source: UBS

Figure 33: S&P 500 earnings impact % – trade war



Source: UBS

Impact on S&P 500 valuation

The S&P NTM P/E was 16.5x on July 10, down ~0.5x since trade concerns escalated in March. Thus, we believe the current tariffs on China imports and steel/aluminum are reflected in S&P valuations and some escalation is priced. However, given that the discounting of a risk is a function of 1) uncertainty and 2) magnitude of the impact, we see risks of further de-rating in the event of escalation or a trade war. However, the de-rating would likely come before the actual earnings impact, so putting a trough multiple on trough earnings would overstate the potential move.

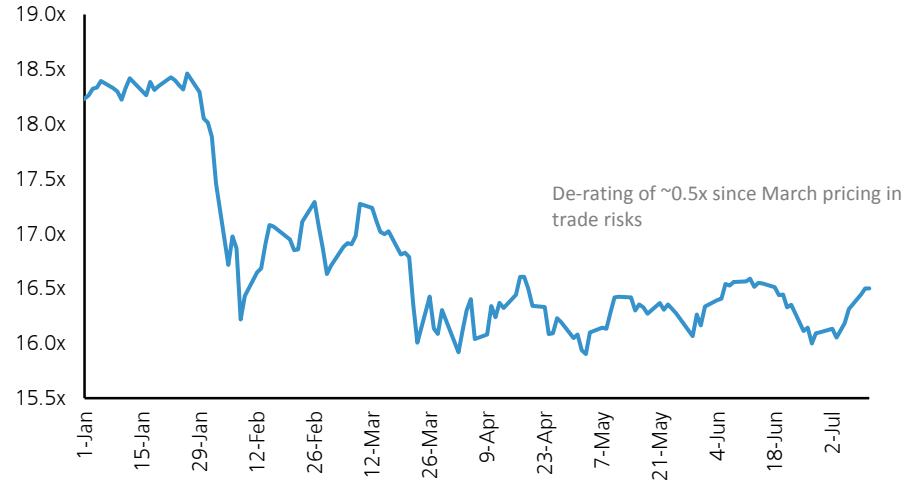
Trade affects productivity and thus LT growth, a 0.6-0.8x P/E impact. Trade enables productivity, with NBER estimates of ~20% of productivity growth due to trade in the last cycle (link). An escalation to a trade war would weigh on trade and reduce future growth expectations (link). Based on our model, the S&P 500 P/E is very sensitive to 3-5yr expected EPS growth with a beta of 2.45x. In a

downside scenario, productivity that is 20% lower because of weakening trade would be a 25-35bp hit to growth, and a 0.6-0.8x hit to the P/E, or 4-5% for the S&P 500.

Higher macro vol offsets lower rates, leading to further 0.3-0.6x de-rating. We estimate a -0.3x and -0.6x hit to P/E in the trade escalation and trade war scenarios, respectively, from the impact of macro drivers using our valuation model (link). The lowering of rates would boost the P/E, but that is more than offset by the rise in CPI vol, a steeper yield curve, higher credit spreads, lower GDP growth and lower LT EPS growth.

We estimate the full impact of escalation to be 0.9x, while a trade war would result in a 1.4x hit to the multiple. We believe further trade actions are at least partially priced in given the 0.5x fall in P/E since mid-March. With the S&P 500 forward P/E well below our estimates of fair value based on the macro drivers, we see risks of higher rates and some further trade tensions as priced, but better potential growth is not.

Figure 34: S&P 500 NTM P/E



Source: Factset, UBS

Evidence Lab mapping enables better estimates of industry impacts

To estimate the impact of the current $50bn tariffs on China imports, we leveraged the work of UBS Evidence Lab, in which detailed trade data between the US and China was aggregated at the HTS (Harmonized Tariff Schedule) code level from the US Census Bureau, and then mapped to corresponding NAICS codes to estimate industry impacts. We can use this mapping to identify potential companies that could be impacted by tariffs should further action be taken. The table below shows the detailed estimates of 1st order impacts of already implemented tariffs on industries, as well as 2nd order impacts from steel and aluminum price increases, using the detailed BEA make-use tables for respective industries.

Figure 35: Summary of tariff related impacts by industry

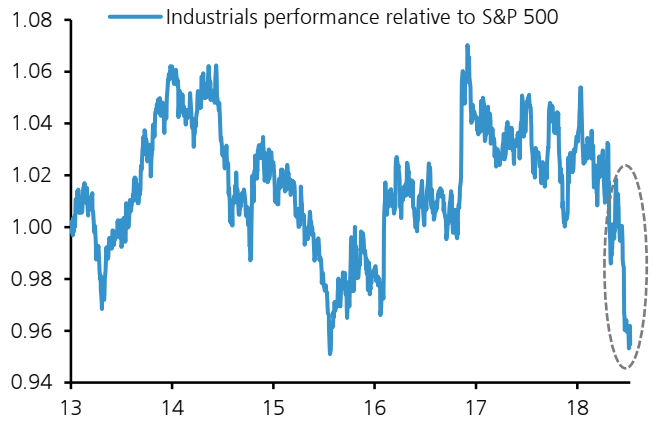
NAICS	Description	Gross output ($M)	Tariffs as % of output: China import tariff	Tariffs as % of output: Tariffs on exports to China	Tariffs as % of output: Aluminum tariff	Tariffs as % of output: Steel tariff	Price change as % of output: Aluminum price change	Price change as % of output: Steel price change
	NAICS 2-digit							
11	Agri, forestry, fishing, and hunting	428,087	0.00	0.89	0.00	0.00	0.00	0.00
21	Mining and oil & gas extraction	358,611	0.00	0.12	0.00	0.01	0.01	0.36
22	Utilities	391,069	0.00	0.00	0.00	0.00	0.03	0.11
23	Construction	1,442,037	0.00	0.00	0.00	0.01	0.00	0.00
31	Food, textile and apparel mfg.	1,059,770	0.00	0.02	0.01	0.00	0.00	0.00
32	Wood, chemical and non metallic mfg.	1,957,214	0.04	0.07	0.00	0.01	0.00	0.03
33	Metal related and misc mfg.	2,695,577	0.40	0.19	0.07	0.15	0.03	0.13
42	Wholesale trade	1,577,760	0.00	0.00	0.00	0.00	0.01	0.06
48	Transportation	867,613	0.00	0.00	0.00	0.00	0.01	0.09
55	Management of Companies and Enterprises	634,111	0.00	0.00	0.00	0.00	0.00	0.02
56	Admin, Support, Waste Management, Remediation	941,648	0.00	0.00	0.00	0.00	0.00	0.01
	Total	**28,540,928**	**0.04**	**0.04**	**0.01**	**0.02**	**0.01**	**0.03**
	NAICS 3-digit							
111	Crop production	191,302	0.00	2.00	0.00	0.00	0.00	0.00
211	Oil and gas extraction	212,099	0.00	0.19	0.00	0.01	0.00	0.00
212	Mining (except oil and gas)	98,558	0.00	0.00	0.00	0.01	0.04	1.30
213	Support activities for mining	47,954	0.00	0.00	0.00	0.01	0.00	0.00
221	Utilities	391,069	0.00	0.00	0.00	0.00	0.03	0.11
230	Residential/nonres main. and repair	255,923	0.00	0.00	0.00	0.00	0.00	0.02
233	Structures	1,186,114	0.00	0.00	0.00	0.00	0.00	0.00
311	Food mfg.	770,559	0.00	0.02	0.02	0.00	0.00	0.00
312	Bev and tobacco product mfg.	192,548	0.00	0.02	0.00	0.00	0.00	0.00
313	Textile mills	30,328	0.00	0.00	0.00	0.02	0.00	0.00
316	Leather and allied product mfg.	6,884	0.00	0.01	0.00	0.00	0.00	0.00
321	Wood product mfg.	104,295	0.00	0.00	0.00	0.00	0.00	0.00
322	Paper mfg.	184,702	0.04	0.03	0.01	0.00	0.01	0.04
323	Printing and support activities	83,132	0.00	0.00	0.00	0.00	0.00	0.00
324	Petroleum and coal products mfg.	416,198	0.00	0.00	0.00	0.00	0.00	0.04
325	Chemical mfg.	809,579	0.04	0.14	0.00	0.00	0.00	0.01
326	Plastics and rubber products mfg.	235,545	0.13	0.09	0.00	0.02	0.00	0.02
327	Nonmetallic mineral product mfg.	123,763	0.01	0.01	0.00	0.04	0.00	0.18
331	Primary metal mfg.	210,079	0.01	0.01	0.41	0.60	0.38	1.42
332	Fabricated metal product mfg.	373,371	0.22	0.00	0.14	0.34	0.02	0.06
333	Machinery mfg.	364,790	0.93	0.00	0.03	0.14	0.00	0.01
334	Computer & electronic product mfg.	400,157	0.91	0.00	0.01	0.01	0.01	0.01
335	Electrical equip, appliance & component mfg.	119,034	1.58	0.00	0.05	0.12	0.01	0.07
336	Transportation equip mfg.	994,648	0.10	0.51	0.02	0.07	0.00	0.00
337	Furniture and related product mfg.	79,221	0.00	0.00	0.07	0.07	0.00	0.00
339	Miscellaneous mfg.	154,277	0.09	0.02	0.01	0.03	0.00	0.00
481	Air transportation	186,543	0.00	0.00	0.00	0.00	0.00	0.01
482	Rail transportation	74,677	0.00	0.00	0.00	0.00	0.02	0.59
483	Water transportation	57,305	0.00	0.00	0.00	0.00	0.00	0.08
484	Truck transportation	331,001	0.00	0.00	0.00	0.00	0.01	0.08
485	Transit and ground passenger transportation	60,204	0.00	0.00	0.00	0.00	0.00	0.01
486	Pipeline transportation	33,389	0.00	0.00	0.00	0.00	0.00	0.00
518	Data processing, hosting, and related services	135,430	0.00	0.00	0.00	0.00	0.00	0.01
522	Credit intermediation and related activities	208,815	0.00	0.00	0.00	0.00	0.00	0.01
523	Securities, commodity contracts, and other financial	493,889	0.00	0.00	0.00	0.00	0.01	0.02
532	Rental and leasing services	174,665	0.00	0.00	0.01	0.01	0.00	0.01
533	Lessors of nonfin. intangibles (ex copyrighted works)	173,958	0.00	0.00	0.00	0.00	0.00	0.01
541	Professional, scientific, and technical services	2,045,907	0.00	0.00	0.00	0.00	0.00	0.01
550	Management of companies and enterprises	634,111	0.00	0.00	0.00	0.00	0.00	0.02
561	Admin and support services	845,821	0.00	0.00	0.00	0.00	0.00	0.01
562	Waste management and remediation services	95,827	0.00	0.00	0.00	0.04	0.00	0.02

Source: Evidence Lab, HTS, BEA, UBS

Strategy: Industrials + Retail disconnect

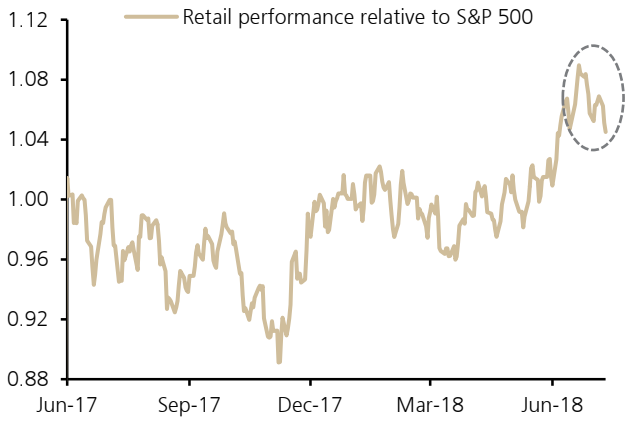
Relative industry returns since mid-June have been correlated to China tariff impacts and China revenue exposure. In particular, Industrials/cap goods are trading near 5yr lows relative to the S&P 500, with machinery the hardest hit. On the other hand, retail and apparel have outperformed notably but could be at risk if further China import tariffs are implemented that hit consumer goods. China's retaliation on the other hand could hurt Semis, Tech Hardware, Autos/Parts and US consumer brands from both an export and China revenue exposure perspective though recent weakness has begun to price in the risk.

Figure 36: Industrials relative performance vs S&P 500



Source: Bloomberg, UBS

Figure 37: Retail relative performance vs S&P 500



Source: Bloomberg, UBS

Figure 38: China revenue exposure basket relative performance vs S&P 500

Source: Bloomberg, UBS (Note: equal-weighted basket of the top 50 S&P 500 stocks ranked by estimated revenue from China.)

If the Trump administration imposes another ~$200-400bn in tariffs on Chinese goods, then China may need to shift from retaliating with tariffs to pressuring US multinationals with China exposure.

S&P 500 companies with the highest China sales exposure have underperformed the last three weeks.

Impact on European equities

Applying the different scenarios discussed by our economists to our earnings and valuation models we arrive at the potential impact on European stock markets. There are many uncertainties and 1st and 2nd order effects, with as mentioned above 2nd order effects being more significant than first order impact, especially in Europe (see Figure 24). While scenario 1 so far has a negligible impact on European earnings, scenarios 2 and 3 could bring significant downside to European earnings and stock markets. It is worth mentioning that the scenarios do not take into account offsetting impacts, especially from any policy response for example. They also assume only minor impact on the euro from current level; hence any policy response from governments or further weakness on the euro could offset some of the negative impact for European stocks.

Under Scenario 1 we see no change to our earnings forecast and price target

Figure 39: Stoxx 600 impact: earnings, P/E multiple, index

	Scenario 1	Scenario 2	Scenario 3
2018E EPS growth	9.6%	6.6%	2.0%
2019E EPS growth	7.4%	5.3%	0.4%
PE multiple	*13.7x*	*13.2x*	*11.7x*
Stoxx 600 impact	-	-6.7%	-24.6%

Source: UBS European Equity Strategy

Scenario 1: We stick to our 10% 18E EPS estimate and 440 Stoxx 600 target.

The tariffs implemented thus far translate into a small (5bp) hit to global GDP growth with the impact on European growth being even less significant. This does not change our estimates for EPS growth in Europe and we remain of the view that Stoxx 600 earnings should grow by c10% in 2018 leading to a price target of 440.

Scenario 2: c7% downside to the Stoxx 600

Scenario 2 could bring c7% downside to European equities

If the US imposes tariffs on additional $200bn in Chinese goods and we see the US administration moving ahead with EU auto tariffs, we estimate that European earnings growth would take a ~3% hit this year and a further ~2% in 2019 with most of the initial impact being felt by a few sectors such as Autos and Materials. Second order effects however could spread quickly and impact other sectors. On the other hand, any weakness in the Euro or policy response could serve to offset some of the impact of the tariffs on trade. Given the European market already trades at a below average PE despite being at early stages of its profit recovery, we believe the market is already partially pricing in Scenario 2. Hence, the impact on valuations could be relatively minor. We assume the European P/E declines by c0.5x in this scenario. The impact on EPS and valuations points to a downside of ~7% for European equities from current levels.

Scenario 3: potential c25% downside for European stocks

Assuming virtually all US trade with China is affected and other tariffs on European goods are imposed, we estimate that European earnings could take a strong hit of c7% in both 2018 and 2019 EPS growth. Although there is a limited 1st order impact on European sales, the European economy is much more open than the US or even China, therefore 2nd order effects could disproportionally impact European market. In addition, given their higher beta relative to the US, European stock markets could de-rate significantly, despite the fact they already trade at depressed valuations, as investors move away from risk assets and the market loses faith on the sustainability of Europe's EPS recovery. We see potential for European markets to de-rate c2x. This scenario could lead to a drop of c25% in the Stoxx 600.

Under Scenario 3 Europe's internationally exposed market could fall by c25%

Impact on European earnings

We use our earnings models to estimate how European markets will be impacted by the changes on growth, inflation, currency and yields expected under each scenario. Of course it is difficult to pinpoint the precise EPS impact given 2nd order effects are hard to estimate and are the main avenue through which European markets could be impacted. In addition, we could see offsetting effects from factors such as any weakness in the Euro, policy response and import substitution where Europe could fill any void left by US companies in China or Chinese companies in the US.

We expect Scenario 1 to bring no significant change to European earnings growth…

We see Scenario 1 as already baked into our base case forecasts in Europe. Consensus numbers currently point to c9% EPS growth this year and we stick to our top down forecast of 10% growth under Scenario 1. Scenarios 2 and 3, however, could bring significant downside to European EPS growth.

Scenario 2: Stoxx 600 2018E EPS growth ~3% lower

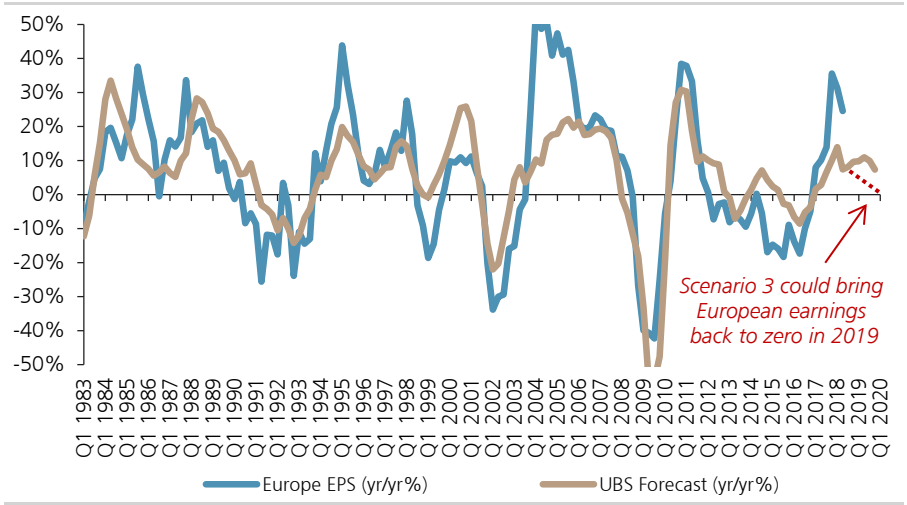
We estimate that 2018 European earnings growth could drop from the current c10% to c7%. Initially sectors such as Autos and Metals & Mining would take a direct impact but uncertainty and a hit to international trade could then take the impact further to other sectors via 2nd order impacts. In addition, Energy sector earnings could be hurt as oil prices drops to c$65 in our Energy team estimates.

Scenarios 2 and 3 however could see European earnings growth decelerating between 3% and 7%

Scenario 3: Stoxx 600 earnings growth ~7% lower

We estimate that earnings for Stoxx 600 could be lower by as much as c7% this year and next assuming an impact on nominal US and global GDP growth of c174bps and c75bps respectively.

Figure 40: European earnings model



Source: UBS European Equity Strategy, Thomson Datastream

Impact on European valuations

The Stoxx 600 12m fwd P/E is currently 13.7x, down from c15.3x at the peak in late January and from c14.4x since trade concerns escalated in March. This is significantly below the long term average PE of c14.4x and we should take into account this is a multiple applied to an earnings cycle that is still only in its second year in Europe. Thus, we believe the current tariffs on China imports and steel/aluminium are already reflected in valuations and at least in part so is scenario 2. Hence, under scenario 1 we see no further de-rating of European equities. However, given the higher beta of European markets, under scenario 2 (and especially scenario 3), risk appetite should drop considerably and Europe could suffer more significant de-rating.

The European market appears to already fully price Scenario 1 and partially price Scenario 2

Scenario 2: long term EPS impact leads to c0.5x P/E de-rating

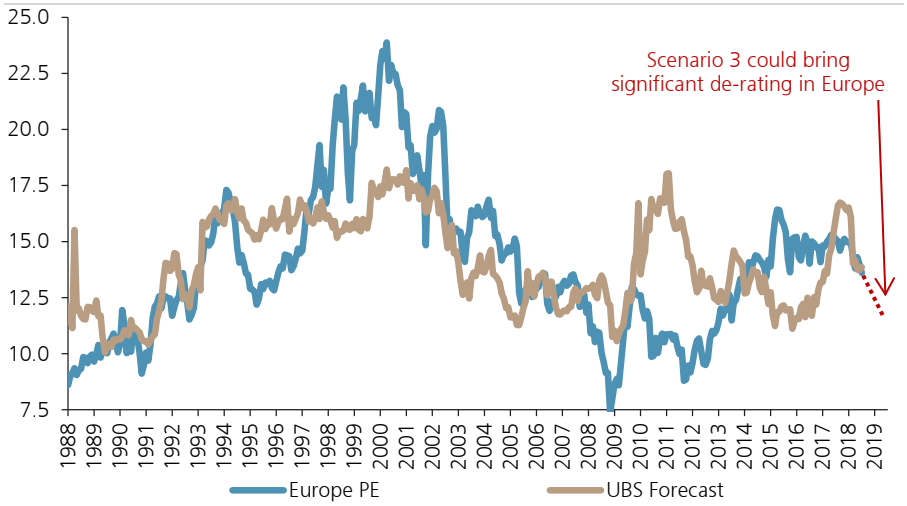
The European equity market already trades below its long term average PE despite being at early stages of its profit recovery. Europe has de-rated significantly since trade concerns escalated earlier in the year with much of the de-rating happening in sectors such as Autos where trade concerns are key. That implies the market is already pricing in Scenario 2 at least to an extent and there is a level of scepticism about European earnings growth. The market is unwilling to pay a large multiple for the expected growth in Europe. Hence, the impact of Scenario 2 on valuations could be relatively minor and already largely in the price. Still we assume the European P/E could decline by a further c0.5x given the extent of 2nd order impacts could surprise the market.

Scenario 3: Higher European beta could mean c2x PE de-rating

Despite the already depressed European PE on early cycle earnings, if the situation escalates to an all-out trade war the higher international exposure and higher risk profile of European equities could mean Europe suffers significant de-rating even from current levels. We estimate a 2x hit to P/E in the trade war scenario coming especially from the impact on long term EPS growth forecasts.

In Scenario 3 Europe's higher beta could mean it suffers significant de-rating even from already depressed PEs

Figure 41: Stoxx 600 PE model



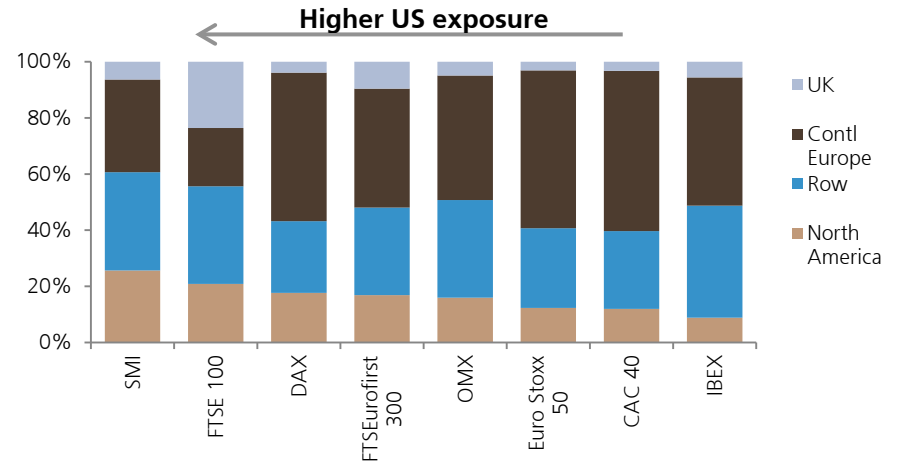
Source: UBS European Equity Strategy, Thomson Datastream

Who has the most exposure?

We look at the revenue exposure of European indices to the US market. In Europe, the Swiss SMI has the most US exposure (c25%). This comes mainly via the Pharma sector which accounts for close to 1/3 of the SMI market cap. The SMI is followed by the FTSE 100 and the DAX as the 3 most US exposed indices within the European market; all 3 having larger exposure to the US than the European market as a whole.

The SMI, FTSE 100 and the DAX are the indices with most US exposure in Europe

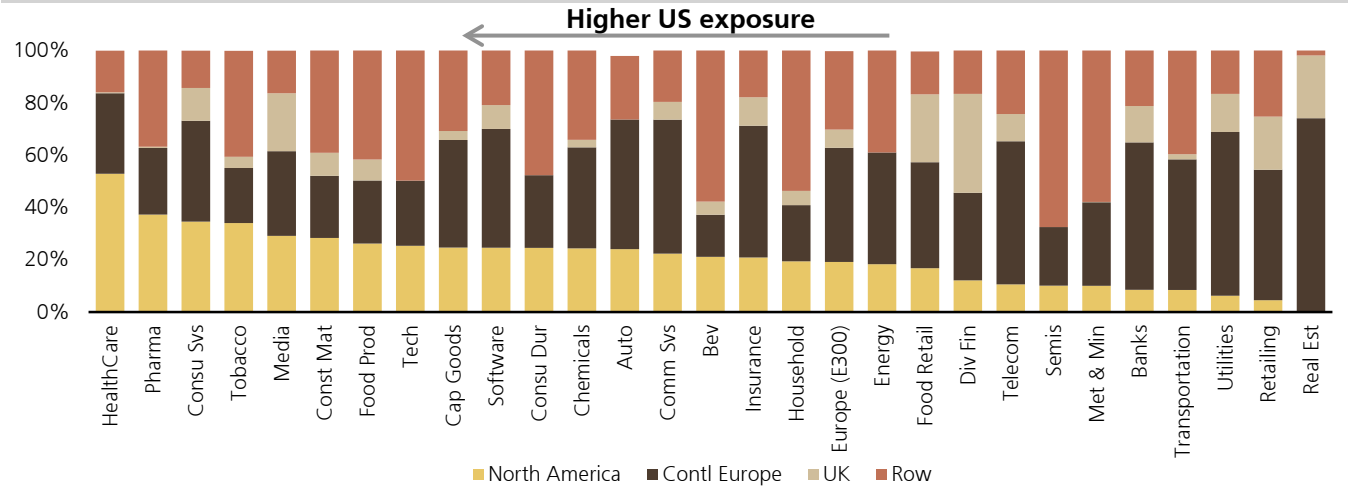
Figure 42: European indices geographical exposure



Source: UBS European Equity Strategy

Across sectors, Pharma and Healthcare equipment are the most exposed to the US. Leisure (Consumer Services), Tobacco and Media follow.

Figure 43: E300 sectors Geo exposure

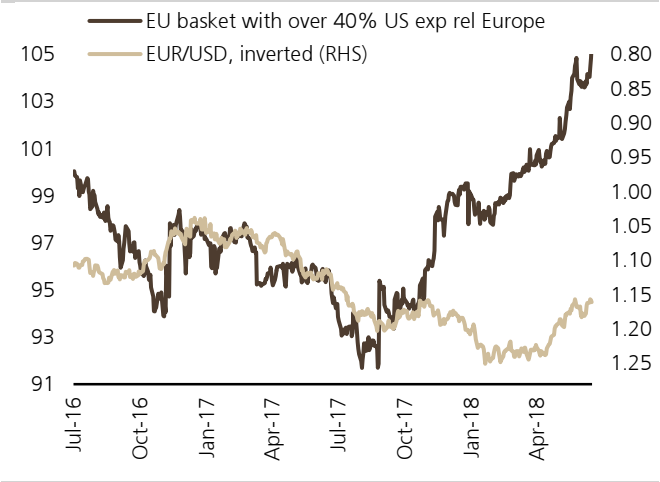


Source: UBS European Equity Strategy

In recent periods US exposed stocks in Europe have enjoyed a rebound as the soft patch in European growth in Q1 held domestic stocks back (especially Financials). European stocks with US exposure have performed significantly better than what the recent movement in the euro would suggest. That could put those stocks at risk and place domestic stocks at a more attractive position again.

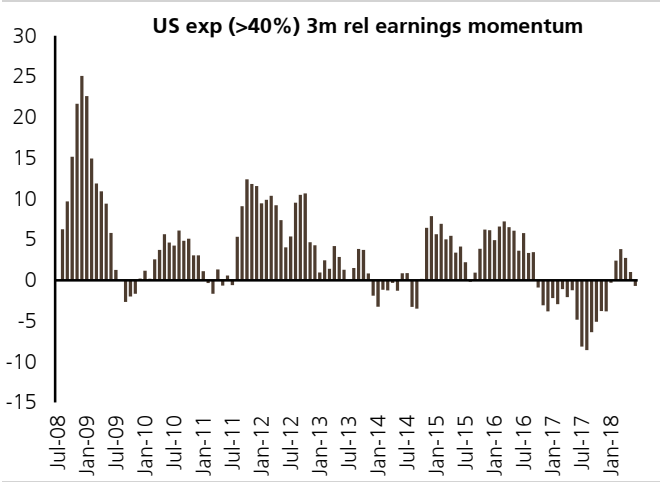
European stocks with high US exposure have strongly outperformed YTD and this outperformance is no longer supported by EPS momentum

Figure 44: Basket rel perf vs EUR TWI



Source: Thomson Datastream, UBS European Equity Strategy

Figure 45: 3m relative earnings momentum



Source: Thomson Datastream, UBS European Equity Strategy

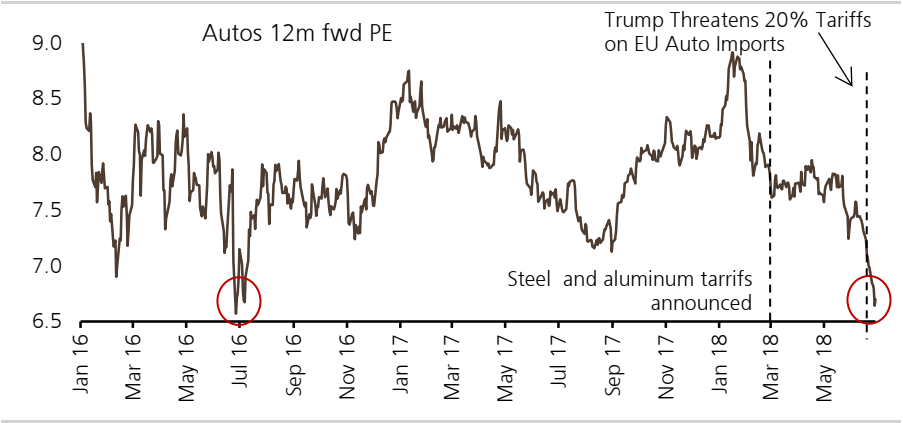
This outperformance of US exposed European stocks was supported by earnings momentum until recently. US exposed European stocks suffered the largest downgrades to earnings since the crisis in mid-2017 as the euro strengthened. But, they started 2018 rebounding from that and US exposed stocks saw upgrades relative to Europe as a whole. This now appears to be changing and US exposure again seems to be turning into a headwind for earnings momentum.

What is priced in? Most exposed sectors already saw de-rating

The Auto sector has derated significantly this year and after comments from the US president threatening tariffs on EU automobiles the sector has gone back to the trough valuations of mid-2016 when yields were at their lowest point. This suggests the sector is already largely pricing in tariffs on European autos exports to the US (part of our Scenario 2).

The Autos sector now trades at roughly the same PE as in the lows of mid-16

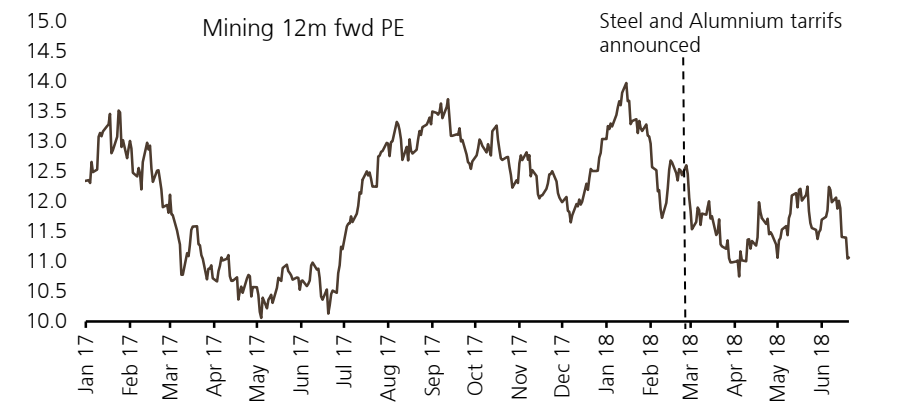
Figure 46: Auto 12m fwd PE



Source: Thomson Datastream, UBS European Equity Strategy

Although not as extreme as the derating seen in the Auto sector, the Mining sector has also reacted to US tariffs on Steel and Aluminium. The Mining sector derated significantly after the tariffs were announced earlier in the year.

Figure 47: Mining 12m fwd PE

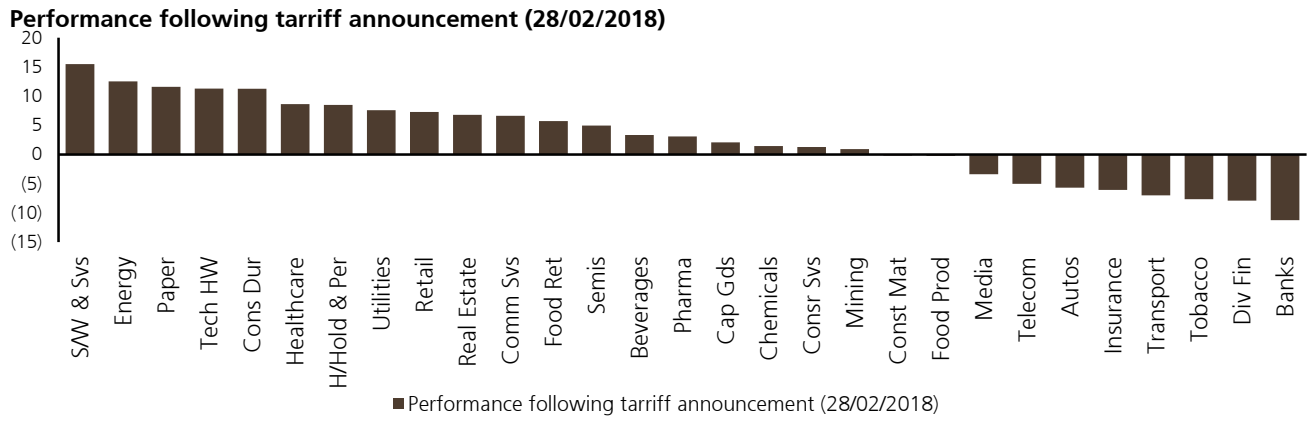


Source: Thomson Datastream, UBS European Equity Strategy

Since the announcement of tariffs we have seen Tech and Energy sectors outperform in Europe. Meanwhile, some exposed sectors such as the Autos have suffered. Perhaps surprisingly, Banks and Investment Banks are the worst performing European sectors over the period. That is despite the fact they are largely domestic sectors and suffer only from any indirect impact on loan demand.

Tech and Energy have outperformed since trade tensions started rising…

Figure 48: European sector performance following tariff announcement

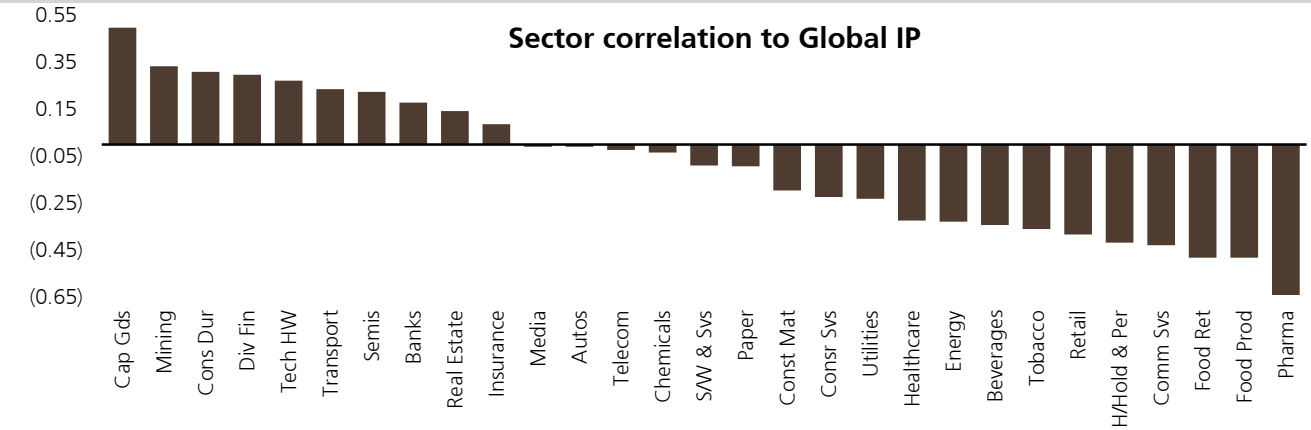


Source: Thomson Datastream, UBS European Equity Strategy

… perhaps surprisingly, Banks have been the worst performers

In addition, to gauge which sectors could be most affected if we see further escalation and significant disruption to global trade we look at the correlation between sector performance and global industrial production. As would be expected Cap Goods is the most positively correlated to Global IP. In addition the Mining and Luxury Goods sector tend to underperform when Global IP falls. Finally, the Financials tend to suffer as industrial production declines are associated with weakness in loan demand. On the other hand, defensive sectors such as Pharma, Food Producers and Food Retail tend to outperform.

Figure 49: Sector correlation to Global IP



Source: Thomson Datastream, UBS European Equity Strategy (rel perf y/y vs IP y/y)

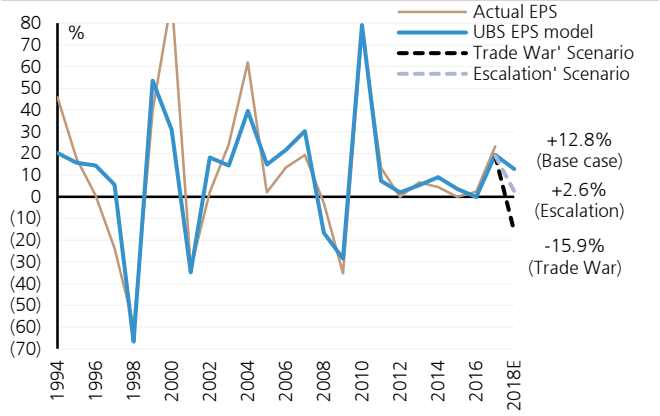
Impact on Asia ex Japan equities

Earnings impact

We use our top-down earnings model to gauge the potential impact under the 'escalation' and 'trade war' scenarios, incorporating both first and second round effects. This multi-factor regression model is based on inputs for Asia ex Japan real GDP; the change in Asia ex Japan nominal GDP; and the change in US nominal GDP. Our base case assumes earnings rise 12% this year, broadly in-line with what our top-down model also forecasts (see Figure 50 below). In our worse case scenarios, our model points to earnings growing just 3% in 'escalation' and -16% in a 'trade war' scenario.

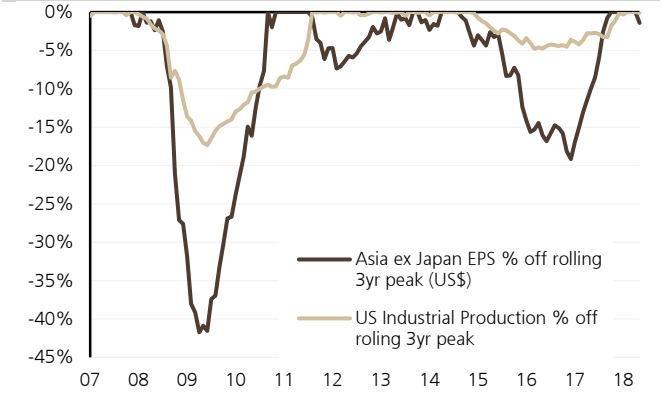
While the exact timing is uncertain, and much of the impact may be felt in 2019 rather than 2018, we see the risk to earnings as similar to the 15-20% fall in the industrial production recession in 2015-16, and see this as a good benchmark for the downside risk to equities.

Figure 50: UBS top-down earnings model output under economists' base case, escalation and trade war scenarios



Source: IBES, Thomson Datastream, UBS APAC Equity Strategy

Figure 51: MSCI Asia ex Japan EPS contractions (in US$) vs. US Industrial Production



Source: IBES, Thomson Datastream, UBS.
Note: the difference in falls between the left hand and right hand chart in 2015-16 are due to timing differences (left chart only look at annual data) and differences between currency adjustments.

Three approaches to assessing valuation downside risk

Assessing the risk to valuations is more complicated given earnings estimates will begin to be revised down and the index typically troughs ahead of the trough in earnings. We therefore try to triangulate the downside risk using three methods, using the 2015-16 experience as a guide:

(1) We simplistically assume a similar peak-to-trough fall in the market as we saw in 2015-16. A similar 32% fall implies a trough index level of 526 for MSCI Asia ex Japan.

(2) We assume the market troughs at a similar ratio to its earnings' trough as it did in 2015/16 (see Figure 52). In 2015/16 this 'trough-on-trough' P/E ratio was 11.8x (for comparison in the global financial crisis it was 10.9x) and therefore implies that the index falls to 489.

(3) We look at the P/BV trough. In 2015/16 the trailing P/BV fell to 1.22x. While in financial crises it often falls to around 1x, 2015/16 is a better benchmark in our view and therefore implies an index low of 522.

Figure 52: MSCI Asia ex Japan index and trailing EPS

Source: IBES, Thomson Datastream, UBS

Figure 53: MSCI Asia ex Japan P/BV

Source: IBES, Thomson Datastream, UBS

AxJ equities could fall a further 24% in 'trade war' scenario

Our three valuation approaches result in broadly similar downside estimates. We use a simple average (MSCI Asia ex Japan at 510) for our 'trade war' scenario. Assuming the same beta as forecast by our earnings model above suggests about one-third of the impact for the 'escalation' scenario, giving us an index target of c.700 – above where the index is currently trading.

Figure 54: Asia ex Japan equities downside scenarios

	+12m EPS growth	MSCI AxJ index target	Implied fwd P/E	Implied tr P/BV	Peak-to-trough change in index	Up/(Down)side from current level
Base case	+12%	**790**	14.2	1.85	-	18%
Escalation	+2%	**700**	13.8	1.64	-10%	4%
Trade war	-17%	**510**	12.3	1.19	-34%	-24%

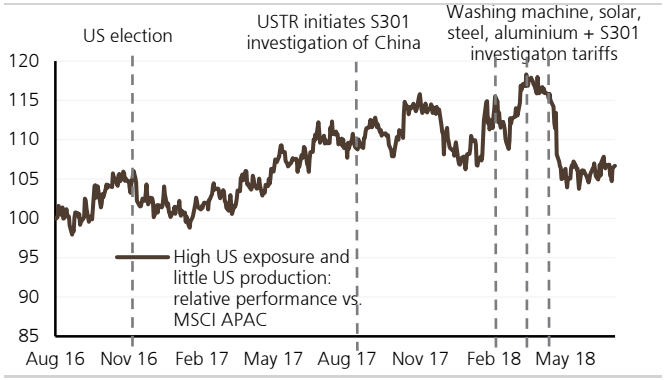
Source: UBS estimates

What's priced in?

Our estimates above suggest that an escalation is already being priced in to Asian equities. While markets have begun to price in a small probability of an all-out trade war, there is still a further 24% downside from current levels in our view.

Similarly, using a more bottom-up approach, our work also suggests that the direct impact of tariffs has already been priced into directly vulnerable stocks. Asian stocks exporting to the US have fallen more than 10% from their peak, similar to direct stock-level the impact during the US-Japan trade tariffs in the 1980s (see here). In recent weeks, equities have started to price in a possibility of an all-out trade war, as seen by Asian stocks most integrated into the global supply chain, also starting to sell-off.

Figure 55: APAC stocks with direct US exposure have fallen since the latest tariffs were announced



Source: Thomson Datastream, UBS

Figure 56: Top 100 APAC stocks in the global supply chain relative P/BV vs. defensives

Source: UBS Evidence Lab, Thomson Datastream, UBS

Strategy

Clearly in the event of a trade war we would want to turn less cyclical. We have been reducing our cyclical tilt over the past year, but a supply chain disruption would likely lead to us favouring more domestically orientated South Asia over the North Asian export markets. We would view the global supply chain stocks as at greater risk than our list of US exporters, given these have not yet fully priced in the effects of an escalating trade war.

What are the implications of our forecasts: a quantitative view

How can we take the scenarios expressed above and convert them into sector and stock level forecasts? We use our proprietary Macrosense spreadsheet (latest version available here) which is built upon the risk models calculated using our UBS Portfolio Analysis System (PAS). The Macrosense tool allows users to input their own macro assumptions and generate country, sector and factor views, as well as stock-level expected relative performance. UBS PAS can be used to analyse your existing portfolios to measure their sensitivity (beta) to these, and other, macro variables.

The Macrosense tool is built upon stock level regressions of stock returns on the macro variables. At a single stock level these sensitivities are estimated with error. Consequently, betas are better estimated for portfolios (say sectors or countries) than for individual stocks. This means that the exposure of a portfolio to a factor is measured with greater precision as the estimation error diversifies away[15].

We initially ran the analysis for the Escalation and Trade War scenarios described above. For simplicity[16] we reduced the detailed scenarios to the following four variables[17]. We have added in the final column the annualised standard deviation of the variables to give a sense of the scale of the forecasts.

Figure 57: Round 1 scenarios

	Escalation	Trade War	Standard Deviation
US 2 year bond	-10bp	-25bp	38bp
Crude Oil	-7.5%	-14%	31%
US IP	-45bp	-108bp	253bp
US 2y10y Spread	+5bp	+15bp	42bp

Source: UBS

The sector impacts (measured as under- and outperformance) within MSCI World are shown in Figure 58 and the country impacts in Figure 59. Please note that these are all relative moves – we don't here consider the absolute effect of these potential macroeconomic moves on the market overall.

The Health Care sector, followed by Consumer Discretionary does best in both cases, with Materials and (given the oil price move perhaps unsurprisingly) the Energy sector doing the worst. The ordering of the middle of the table does move around a little between the two scenarios.

[15] See the Appendix of Understanding Factor Models (9th July 2018) for a proof of this.
[16] And to avoid having variables which are highly correlated in the model
[17] Note that we have to use US Industrial Production as a proxy for US GDP growth as we need a monthly series to calculate the sensitivities.

Figure 58: MSCI World – Forecast sector outperformance in Round 1

	Escalation	Trade War
Health Care	0.58%	1.12%
Consumer Discretionary	0.18%	0.27%
Diversified Financials	0.14%	0.19%
Industrials	0.12%	0.20%
Insurance	0.09%	0.14%
Real Estate	0.07%	0.25%
Financials	-0.02%	-0.08%
Consumer Staples	-0.05%	0.01%
Information Technology	-0.08%	-0.19%
Banks	-0.15%	-0.31%
Utilities	-0.21%	-0.18%
Telecommunication Services	-0.47%	-0.75%
Materials	-0.68%	-1.37%
Energy	-1.80%	-3.37%

Source: UBS

At a country level the best outperformer would be New Zealand, followed by Israel and Finland. Towards the bottom we see the UK, Canada, Portugal and Norway.

Figure 59: MSCI World – Forecast country outperformance

	Escalation	Trade War		Escalation	Trade War
New Zealand	1.27%	2.29%	Belgium	-0.17%	-0.32%
Israel	0.85%	1.68%	Spain	-0.17%	-0.40%
Finland	0.56%	1.03%	Singapore	-0.23%	-0.44%
Hong Kong	0.39%	0.74%	France	-0.24%	-0.49%
Denmark	0.25%	0.48%	Ireland	-0.37%	-0.72%
Switzerland	0.19%	0.37%	Austria	-0.46%	-1.01%
Australia	0.10%	0.14%	Italy	-0.63%	-1.22%
Japan	0.03%	0.11%	UK	-0.72%	-1.35%
United States	-0.01%	-0.01%	Canada	-0.89%	-1.65%
Sweden	-0.02%	-0.06%	Portugal	-1.20%	-2.23%
Germany	-0.04%	-0.18%	Norway	-1.74%	-3.25%
Netherlands	-0.09%	-0.23%			

Source: UBS

We looked more closely at the US market as shown in Figure 60. Again the Energy sector is the biggest loser and Health Care the biggest gainer. There were similar results looking in Asia and Emerging Markets.

At a country level in Asia the biggest outperformer was India and Indonesia was the biggest underperformer. For MSCI EM Russia was by far the biggest loser.

Figure 60: MSCI US – Sector outperformance

	Escalation	Trade War		Escalation	Trade War
Energy	-1.76%	-3.28%	Information Technology	-0.04%	-0.15%
Telecoms	-0.79%	-1.12%	Financials	0.04%	-0.03%
Utilities	-0.49%	-0.38%	Banks	0.08%	0.02%
Materials	-0.48%	-1.04%	Diversified Financials	0.14%	0.16%
Insurance	-0.32%	-0.57%	Industrials	0.20%	0.33%
Consumer Staples	-0.22%	-0.12%	Consumer Discretionary	0.23%	0.35%
Real Estate	-0.12%	0.03%	Health Care	0.75%	1.40%

Source: UBS

We then go down to the single stock level with the top and bottom 10 forecast performers shown in Figure 61. As we can see, all the bottom performers are in the Energy sector. We only show the Trade War results as the Escalation ones are very similar.

Figure 61: Top and bottom 10 names –Trade War

Best relative performance				Worst relative performance			
QRTEA.UW	QURATE RETAIL INC	US	Cons Discr	CLR.UN	CONTINENTAL RESOURCES INC	US	Energy
CELG.UW	CELGENE CORP	US	Health Care	ECA.CT	ENCANA CORP	Canada	Energy
RCL.UN	ROYAL CARIBBEAN CRUISES	US	Cons Discr	MRO.UN	MARATHON OIL CORP	US	Energy
ZAL.GY	ZALANDO SE	Germany	Cons Discr	AKERBP.NO	AKER BP ASA	Norway	Energy
REGN.UW	REGENERON PHARM	US	Health Care	TRGP.UN	TARGA RESOURCES CORP	US	Energy
AAL.UW	AMERICAN AIRLINES GROUP	US	Industrials	STO.AT	SANTOS LTD	Australia	Energy
NCLH.UN	NORWEGIAN CRUISE LINE	US	Cons Discr	CPG.CT	CRESCENT POINT ENERGY CORP	Canada	Energy
XRX.UN	XEROX CORP	US	IT	LUPE.SS	LUNDIN PETROLEUM AB	Sweden	Energy
7974.JT	NINTENDO CO LTD	Japan	IT	HES.UN	HESS CORP	US	Energy
CAH.UN	CARDINAL HEALTH INC	US	Health Care	EQNR.NO	EQUINOR ASA	Norway	Energy

Source: UBS

As we have mentioned already, the betas in our regressions are estimated with error (although we do use a Bayesian approach to help with this) and so there are large potential for errors around the single stock forecasts which come out of this type of analysis. Also there is the assumption that a stock's sensitivity to macro factors doesn't change through time. The aggregated betas at a market or sector level tend to be more accurate.

When we consider the second round effects we end up with the forecasts shown in Figure 62. The Escalation scenario is very close to the Round 1 Trade War scenario and so we don't repeat the analysis here.

Figure 62: Round 1 & 2 scenarios

	Escalation	Trade War
US 2 year bond	-25bp	-50bp
Crude Oil	-11%	-21%
US IP	-100bp	-245bp
US 2y10y Spread	+5bp	+20bp

Source: UBS

In Figure 63 we show the sector and country forecasts given the Round 2 Retaliation scenario. The Health Care sector remains the best performer, and the Energy sector the worst.

Figure 63: Round 2 – Trade War – MSCI World Sectors and Countries

Health Care	1.69%	New Zealand	3.4%	Singapore	-0.7%
Real Estate	0.44%	Israel	2.5%	France	-0.7%
Consumer Discretionary	0.38%	Finland	1.5%	Ireland	-1.1%
Industrials	0.28%	Hong Kong	1.1%	Austria	-1.6%
Diversified Financials	0.23%	Denmark	0.8%	Italy	-1.8%
Insurance	0.20%	Switzerland	0.6%	UK	-2.0%
Consumer Staples	0.08%	Japan	0.2%	Canada	-2.5%
Utilities	-0.12%	Australia	0.2%	Portugal	-3.3%
Financials	-0.16%	United States	-0.0%	Norway	-4.9%
Information Technology	-0.31%	Sweden	-0.1%		
Banks	-0.52%	Germany	-0.3%		
Telecomms	-1.06%	Netherlands	-0.4%		
Materials	-2.11%	Belgium	-0.5%		
Energy	-5.06%	Spain	-0.6%		

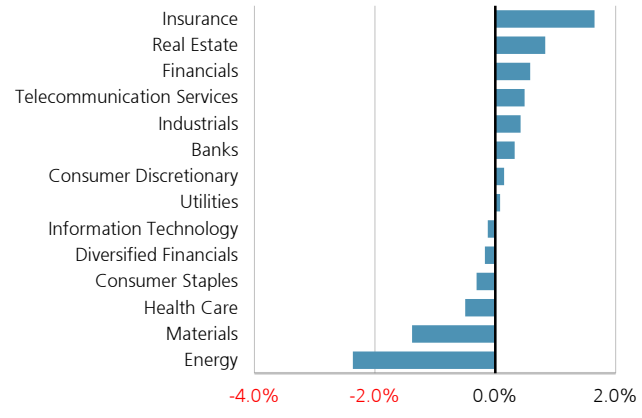
Source: UBS

In this case the single names are similar to those shown above, although with much more extreme return forecasts.

MSCI AC Asia ex Japan

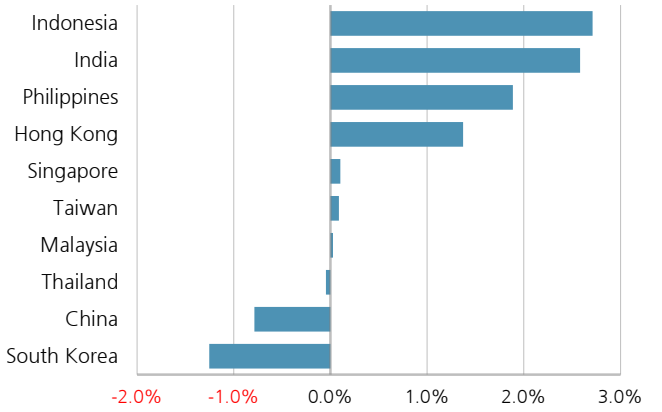
We extended the calculation to look at the MSCI AC Asia ex Japan universe. We don't include the 2yr10yr spread but the other three variables we use the Round 2 Trade War case.

Figure 64: Asia ex Japan – Round 2 Trade War



Source: UBS

Figure 65: Asia ex Japan – Round 2 Trade War



Source: UBS

In Figure 64 for sectors and Figure 65 for countries (again stressing these are relative performances) we show the results. Surprisingly China is not the worst performer at a market level – that would be South Korea in this analysis.

We finish with the stock level forecasts for this region in the same Round 2 Trade War case.

Figure 66: Asia ex Japan – Round 2 Trade War

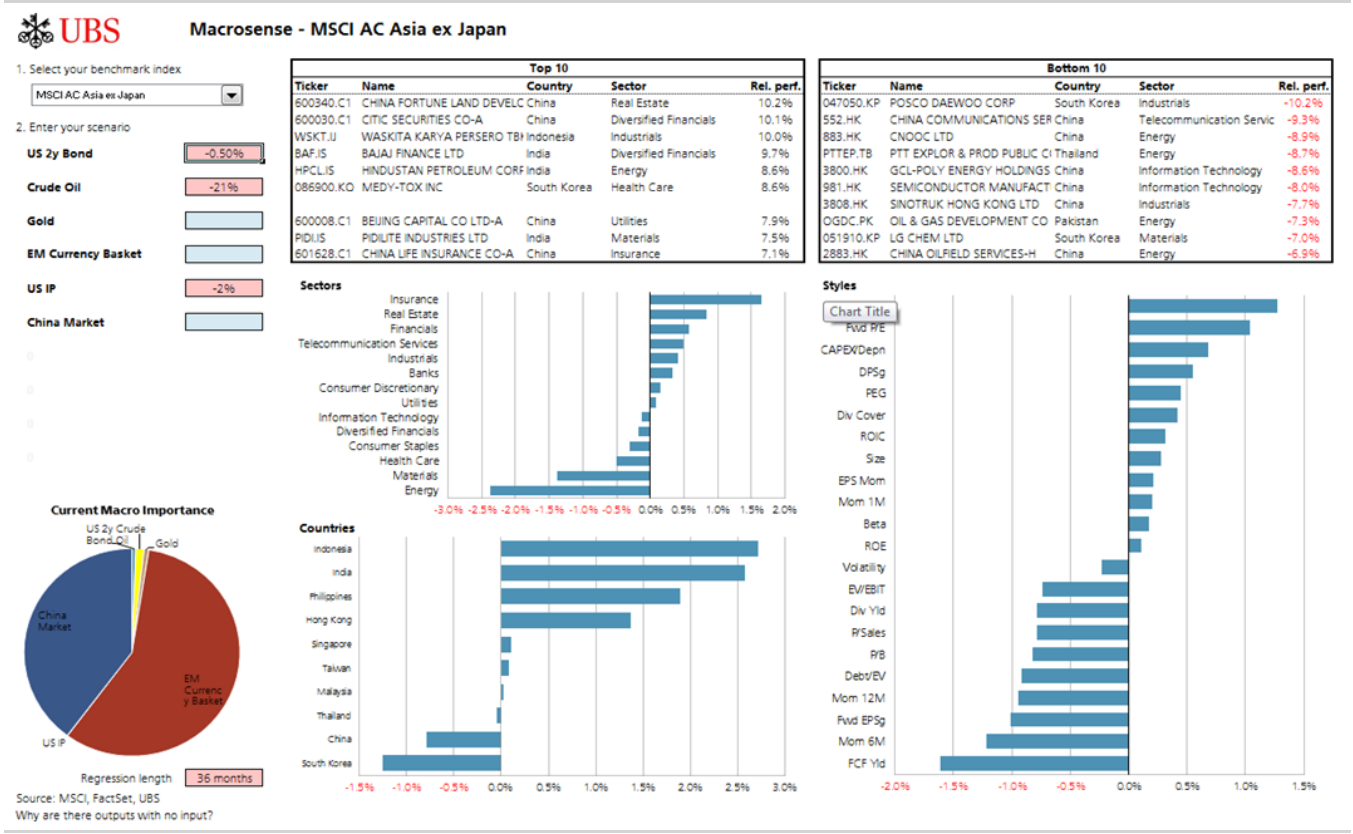
Top Names				Bottom Names			
CHINA FORTUNE LAND DEVELOP-A	China	Real Estate	10.2%	POSCO DAEWOO CORP	South Korea	Industrials	-10.2%
CITIC SECURITIES CO-A	China	Div Financials	10.1%	CHINA COMMUNICATIONS SER	China	Telecoms	-9.3%
WASKITA KARYA PERSERO	Indonesia	Industrials	10.0%	CNOOC LTD	China	Energy	-9.0%
BAJAJ FINANCE LTD	India	Div Financials	9.7%	PTT EXPLOR & PROD PUBLIC	Thailand	Energy	-8.7%
HINDUSTAN PETROLEUM	India	Energy	8.6%	GCL-POLY ENERGY HOLDINGS	China	IT	-8.6%
MEDY-TOX INC	South Korea	Health Care	8.6%	SEMICONDUCTOR MANUFACTURING	China	IT	-8.0%
			8.2%	SINOTRUK HONG KONG LTD	China	Industrials	-7.7%
BEIJING CAPITAL CO LTD-A	China	Utilities	7.9%	OIL & GAS DEVELOPMENT CO	Pakistan	Energy	-7.3%
PIDILITE INDUSTRIES LTD	India	Materials	7.5%	LG CHEM LTD	South Korea	Materials	-7.0%
CHINA LIFE INSURANCE CO-A	China	Insurance	7.1%	CHINA OILFIELD SERVICES-H	China	Energy	-6.9%

Source: UBS

Macrosense

An example calculation (the Round 2 Retaliation for Asia ex Japan) is shown in the screenshot below.

Figure 67: Macrosense – Example Output



Source: UBS

Annex 1 – List of Products (aggregated HS codes) identified by US and China so far for 25% ($50bnx2) and 10% tariff ($200bn)

Figure 68: Key Chinese products subject to additional 25% tariff by the US (the first $50bn)

Key product categories (USD million)	US List 1 (effective Jul 6)	US List 2 (to be reviewed)
Boiler, machinery and parts	**15,796**	**2,078**
O/w Printing machinery and parts	739	11
O/w Pumps and parts	1,710	-
O/w ADP storage units	1,484	-
O/w Specialized parts	1,679	-
O/w Centrifuges (other than clothes dryer)	1,059	-
O/w Taps, cocks, valves	908	-
O/w Air or vacuum pumps	730	-
O/w Spark-ignition internal combustion piston engines	71	382
O/w Machines & parts for manufacture of semiconductor or electronic ICs	-	779
Electrical machinery	**9,615**	**7,507**
O/w Electrical apparatus for switching or protecting electrical circuits	1,724	590
O/w Diodes, transistors and similar semiconductor devices	1,249	844
O/w Insulated wire, cable and other insulated electric conductors	1,085	291
O/w Electric motors and generators	911	749
O/w Electronic ICs	-	2,730
O/w Selected electrical machines	148	1,532
Instruments	**4,445**	**611**
O/w Medical and surgical instruments	759	-
Vehicles	**1,738**	**424**
O/w Motor vehicles to transport persons	1,669	-
O/w Motorcycles	-	339
Aircraft, spacecraft, and parts	**508**	-
Plastics and articles thereof	-	**2,170**
Iron or steel	-	**883**
Railway/tramway locomotives	**156**	**390**
Others	**4**	**54**
Sum	**32,262**	**14,117**

Source: US Census, USTR, UBS estimates

Figure 69: Key US products subject to 25% tariff from China (the first $50bn)

China list 1(implemented July 6)			
Key product categories (USD million)	China's List 1 (effective Jul 6)	o/w Kept from Apr list	o/w Newly added
Oil seed	**14,335**	**13,945**	**390**
O/w Soybean	13,945	13,945	-
O/w Forage products	390	-	390
Vehicles	**12,942**	**12,942**	-
O/w Motor cars	12,047	12,047	-
O/w Auto parts	660	660	-
Cereals	**1,508**	**1,507**	**1**
O/w Grain sorghum.	956	956	-
O/w Wheat and meslin.	391	391	-
O/w Maize (corn)	160	160	-
Fish & other aquatic invertebrate	**1,232**	-	**1,232**
O/w Fish, frozen	823	-	823
O/w Crustaceans	232	-	232
O/w Molluscs	112	-	112
Cotton	**983**	**983**	-
Meat	**515**	**25**	**490**
Edible fruit and nuts	**483**	-	**483**
Dairy product	**408**	-	**408**
Others	**604**		
Sum	**33,010**		

China list 2 (pending)			
Key product categories (USD million)	China's List 2 (To be reviewed)	o/w Kept from Apr list	o/w Newly added
Mineral fuels	**8,212**	**1,763**	**6,450**
Petroleum oils	4,401	-	4,401
Petroleum gases	2,038	1,763	276
Petroleum oils, other than crude	848	-	848
Coal	403	-	403
Petroleum coke	351	-	351
Plastics	**3,854**	**3,854**	-
Polyacetals	903	903	-
Polymers of ethylene	391	391	-
Instruments	**1,617**	-	**1,617**
Medical and surgical instruments	1,308	-	1,308
Apparatus based on the use of X-rays or radiations	308	-	308
Miscellaneous chemical products.	**2,227**	**2,227**	-
Soap, organic surface-active agents, washing prep	**445**	**445**	-
Albuminoidal subs	**178**	**178**	-
Organic chemicals	**261**	**261**	-
Rubber	**140**	**140**	-
Sum	**16,934**		

Source: US Census; China Customs, MOC and MOF; UBS estimates. Note: For trade data not available from China's Customs and MOC statistics, we use US Census data as references.

Figure 70: US list of additional $200bn in Chinese products subject to potential 10% tariff

Products	Imports from China (2017, USD mn)
Electrical machinery	**48,814**
O/w Machines and other apparatus for the reception, conversion and transmission or regeneration of voice, images or other data	23,883
O/w Electrical transformers, static converters and inductors	5,070
O/w Insulated wire, cable and other electric conductors	2,962
O/w Vacuum cleaners and parts	1,901
O/w Transmission apparatus for television and television camera	1,879
Boiler, machinery and parts	**38,374**
O/w Printed circuit assemblies and other parts of ADP machine	15,125
O/w Processing units, control or adapter, input/output units, magnetic disk drive storage units of ADP machine	7,868
O/w Taps, cocks, valves	2,906
O/w Air conditioning machines	1,827
O/w Refrigerators and freezers	1,558
O/w Air or vacuum pumps, compressors and fans	1,350
Furniture; bedding, mattress	**29,167**
O/w Other furniture and parts	11,314
O/w Seats	9,782
O/w Lamps	7,164
Vehicles	**11,636**
O/w Auto parts	9,420
O/w Trailers and semi-trailers, and parts	1,274
Iron and steel	**7,694**
Articles of leather; saddlery/harness	**7,339**
O/w Trunks, suit-cases	6,308
Plastics and articles thereof.	**6,428**
Organic chemicals.	**4,964**
Rubber and articles thereof.	**3,331**
Miscellaneous articles of base metal.	**3,290**
Paper & paperboard; art of paper pulp, paper/paperboard	**3,266**
Wood and articles of wood; wood charcoal.	**3,133**
Tool, implement, cutlery, spoon & fork, of base mtl etc	**2,924**
Glass and glassware.	**2,349**
Others	**24,505**
Sum	**197,214**

Source: US Census, USTR, UBS estimates

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