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CORPORATES & MARKETS

Economy

Governance crisis and economic risk

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The world is experiencing a governance crisis whose latest developments have markedly increased the risk of an economic crisis. The US and the UK, two countries that have done so much for political and economic freedom, are headed today by narcissistic clowns whose sole guiding principle is to break up a global or European order claimed to be the source of all evil, regardless of the cost. Confidence, an essential ingredient for societies to function properly, has been eroded. Economic uncertainty is attaining new heights, and this could slow investment and growth still further.

- The world economy entered the 11th year of its expansion phase this summer following the worst financial crisis in modern history. This expansion has been far from uniform. Growth slowed very sharply in 2011-2012 (euro crisis), and then in 2015-2016 (oil crisis). There has been a fresh slowdown over the past 18 months against the backdrop of trade strains. During the first two cold snaps, the pace of world growth fell to around 2.5%, not far above a recessionary zone. Each time, this risk failed to materialise because of a *positive* confidence shock. In 2012, Mario Draghi was able to use all the ECB's political capital to reassure the markets about the euro's integrity. In 2016, China and the US stimulated their economies in unison. Today, annualised world growth is running a shade above 3%, down from 4% at the start of 2018. It is not yet in a critical zone, but the confidence shock taking shape today is *negative*.
- Concerns about the destabilising nature of US economic policy since Donald Trump started to interfere (euphemism), have all proved prescient in recent months. After imprudently wasting fiscal space last year, Trump is doing all he can to make world trade increasingly costly, without forgetting to chip away at the Fed's credibility each day – a Fed that is doing what it can (through rate cuts) to limit the damage. The stand-off with China has probably reached a point of no return. We think it is illusory to continue hoping that the two countries will reach a trade deal. US consumers are benefiting from wage and job gains, their spending is solid and, for the time being, they are little exposed to the effects of the price war. But this is not true for companies. Uncertainty is leaving a visible mark today on business confidence and the investment outlook. Compounding all this, some sectors, such as oil and aerospace, also face specific problems.
- China is engaged in a difficult balancing act as it tries to reconcile the contradictory objectives of boosting activity, keeping a tight rein on indebtedness and avoiding speculation in the housing market. The authorities are rolling out a raft of selective measures to loosen monetary and financial conditions. The slowdown remains under control at this stage, but it is still a slowdown. By allowing its currency to depreciate, China has given itself a little leeway to absorb the trade shock. But this tool needs handling carefully if it wants to contain capital flight and avoid adding to President Trump's ire on the subject of "monetary manipulation".
- In Europe, some political problems have been resolved (the "yellow vests" protests in France and tensions between Rome and Brussels after Salvini's failed gambit), but the biggest of all – Brexit – has still not been settled. The economy has two faces: a depressed face (manufacturing) and a more reassuring one (other sectors). By and large, there is little contagion between the two, except in Germany, where the manufacturing crisis is too severe not to weigh on employment and total activity. There is something lunatic about the German government's apathy as it clings to its fiscal orthodoxy principles like the shipwrecked to their lifeline. Fortunately, at Mario Draghi's initiative, the ECB is preparing another major round of monetary loosening, but this is once again at odds with the Germanic proponents of monetary orthodoxy.

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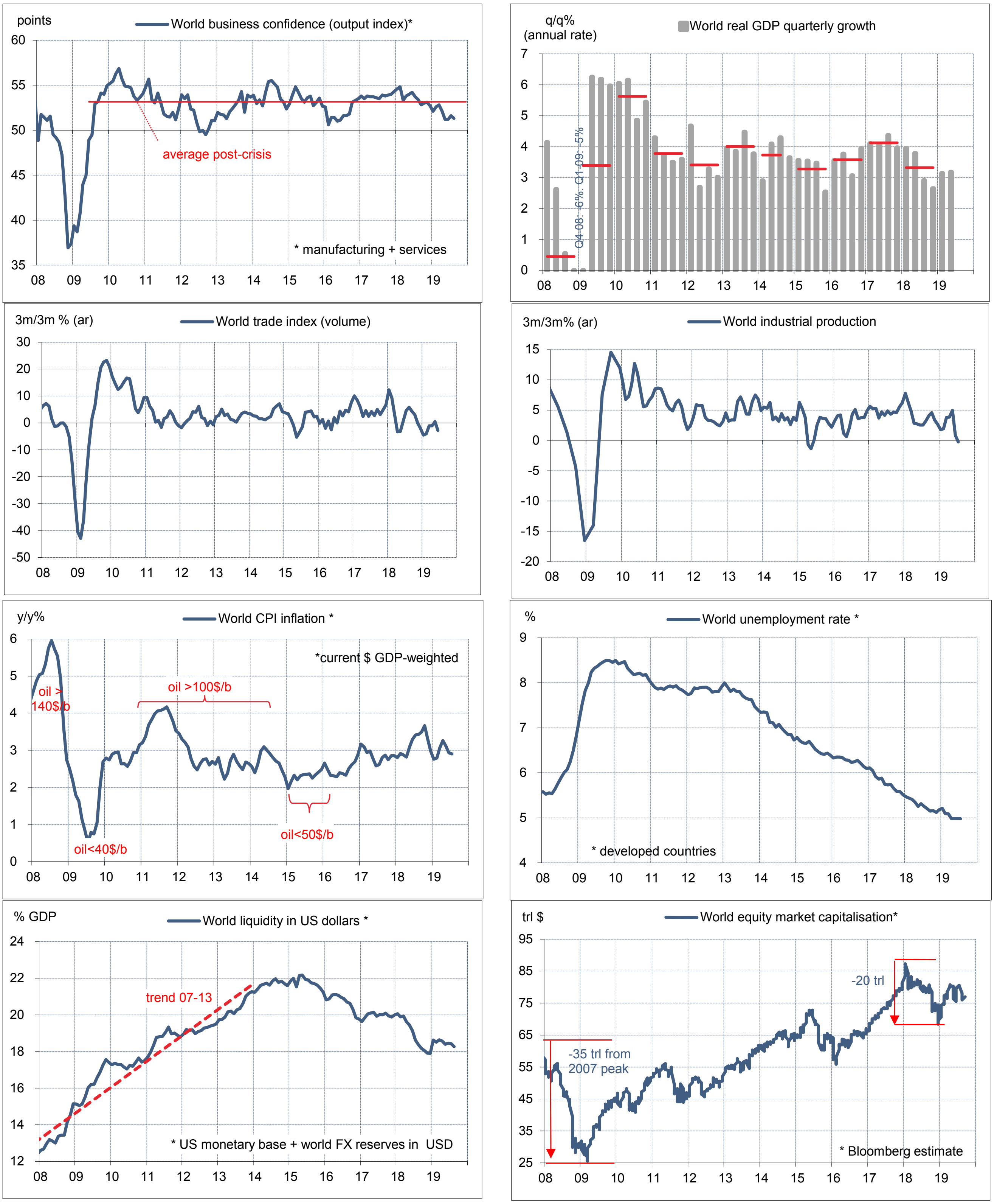
SNAPSHOT OF THE WORLD ECONOMY

World economic and financial indicators



Charts 1 - Sources: Thomson Reuters, Markit, CPB, ODDO BHF

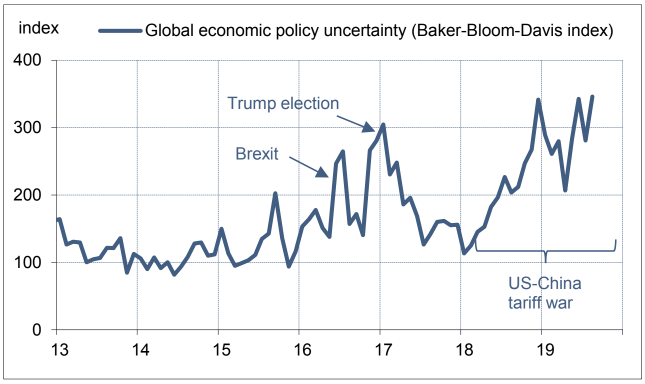
GLOBAL SCENARIO

My only question is, who is our bigger enemy, Jay Powell or Chairman Xi?
(Donald Trump, tweet of 23 August 2019)

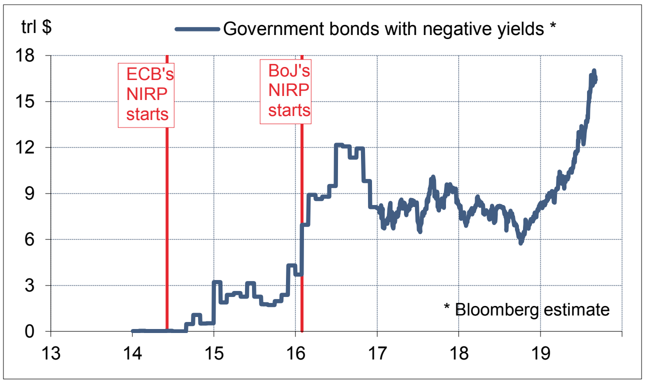
After a summer dominated by escalating US-China trade strains, creating heightened uncertainty (**Chart 2a**), the world economic outlook remains marked by downside risks.

The first data to become available and then commented on, which relate to the manufacturing sector, are almost all weak and, in some cases, such as Germany's, alarming[1]. Speculation about a recession, said to be lurking around the corner and poised to swoop up on the world, has reached fever pitch in the media, with the risk that these concerns will become self-realising. The shape of the US yield curve has become a source of fascination (and horror) for observers of financial markets, right up to the US President himself, who was not known to be so well versed in the study of such technical subjects. This curve has been deformed by a plunge in long-term bond yields that can only be explained theoretically by expectations of a drop in economic growth or inflation. The nominal amount of government bonds with negative yields on maturities of up to 10, 20 or even 30 years has never been as high (**Chart 2b**). This is true of the whole of Europe, with the exception of the UK, and Japan. Faced with this, equity markets have been volatile since the spring but have remained resilient overall, as if floating on air.

World: economic uncertainty index



World: government bonds with negative yields



Charts 2 – Sources: Bloomberg, ODDO BHF

In short, the real economy and capital markets are being tossed back and forth between forces fostering instability (trade strains) and others fostering stability (monetary loosening). The three principal characters in this play are the US President, the Chinese President and the Fed chair[2]. The former views the two others as "enemies" – a worrying situation to say the least.

[1] *In OECD economies, which are post-industrial, the manufacturing sector represents 15% of value added on average. It stands at 11% in the US and almost 25% in Germany.*
[2] *See also our previous* Report, *"Three men in a boat: Trump, Xi, Powell", 22 May 2019.*

Good and bad news over the summer

Let's examine a few basic data to assess the world economy and its recent evolution. The last full set of national accounts relates to Q2. During this period, real world GDP grew at a q/q annualised rate of 3.2%, exactly the same as in Q1. The sharp slowdown in growth seen in 2018, when it fell from 4% in Q1 to 2.7% in Q4, did not gather pace in the first half of 2019. Economic growth did indeed slow in Q2 in the lion's share of developed countries but picked up slightly in the rest of the world. Little "hard" data is available to shed light on Q3, only business confidence indices for the most part. These have extended a trend already seen over the past year, namely a growing divergence between the manufacturing sector and the rest of the economy, which consists primarily of services. It would be exaggerating things to talk of a "decoupling", but it is clear that both the level and change in confidence indices in these two spheres of the economy vary sharply. This is particularly marked in Europe (**Chart 3a**). What is at stake today is the resilience of services in the face of a manufacturing recession. The greater the weight of manufacturing, the greater the risk of contagion. This is why the state of the German economy has become so worrying.

The manufacturing slump continues to deepen today. At the global level, the PMI-manufacturing index has dipped below the threshold separating an economic expansion from a contraction since last May. Unfortunately, there is nothing surprising about this in the context of a trade war that has intensified over the past 18 months. The volume of world trade in goods has shrunk for the third quarter running, and export order books continue to be depleted. That said, these trade strains should not be blamed for everything. In some cases, companies or industries have been hit by shocks not directly related to tariff hikes. This was the case last year in the German automotive sector and, more recently, in the US aerospace sector (**Box 1**).

Box 1 – US manufacturing: specific shocks and global shock

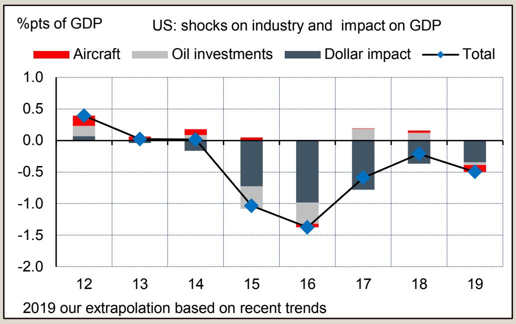
For the first time in more than three years, the ISM index of the manufacturing sector fell below the 50-point threshold in August 2019. The new export orders index plunged to 43.3. The only time it was lower than this was between October 2008 and April 2009, with a low point of 34.7 at the depth of the Great Recession. Whatever Donald Trump says, the turbulence caused by the trade war is eroding the confidence of US manufacturers. This has been compounded by a series of highly specific shocks.

• Dollar appreciation – Since its most recent trough early in 2018, the dollar has appreciated by around 9%. If this trend is extrapolated, the dollar can be expected to rise by around 5% in 2019. On the basis of certain models used by the Fed, such a change would lead after three years to a 3.5% reduction in exports and a 0.7pts erosion of GDP growth, or -0.2pts annually. Part of the dollar's appreciation is the result of tariff hikes. This is a self-inflicted wound.

• The lower oil price – What is good news for consumers is bad news for producers. The shale oil sector weathered an extremely severe crisis in 2014-2016 before recovering in 2017-18. The stabilisation of the oil price at a fairly low level has reversed this recovery. Investment in the sector has been weakening since the start of the year. This represents a growth differential of -0.2pts of GDP compared with 2018.

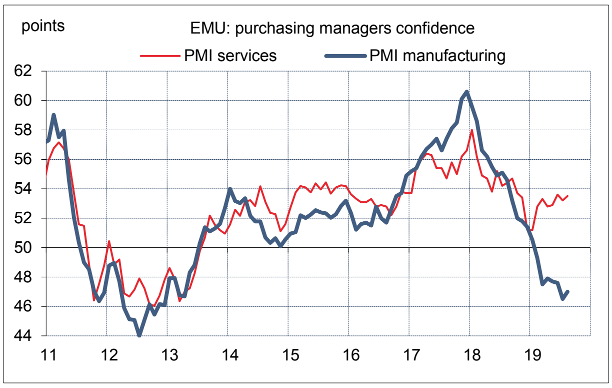
• The Boeing shock – The flight ban on the 737 MAX after two commercial flight crashes has been in place since last March and there are no plans for flights to resume at this stage. It is tricky to estimate the macro impact of production disruption, but US aircraft exports fell steeply in Q2, representing the equivalent of 0.1pts of GDP (left-hand chart). Expect the cost to be higher in future quarters.

When all the shocks to exports (via the dollar's appreciation), the oil sector and the aerospace industry are added up, the hit to GDP stands at around 0.5pts in 2019 extrapolating data that is already available (right-hand chart). Industrial activity reached a cyclical peak in December 2018 and has declined by 1.2% subsequently. This is not a correction of sufficient scale to cause a recession, but it is a notable handicap.

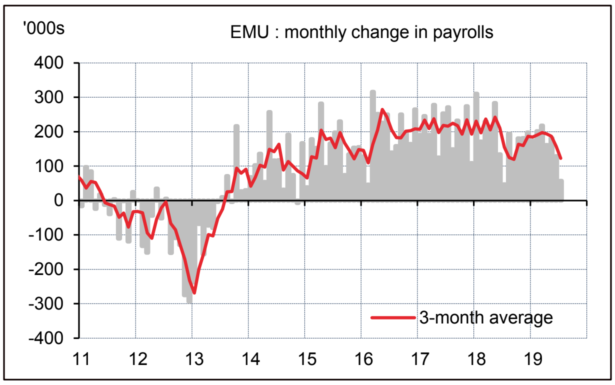


Unlike manufacturing, the rest of the economy is dependent more on the state of domestic demand than foreign demand. It is less subject to inventory adjustments, and cyclical fluctuations are therefore weaker. The resilience of nonmanufacturing sectors hinges above all on conditions in the labour and credit markets. Surveys of commercial banks are not currently signalling any restrictions on loan standards. In the US and Europe, job creations have moderated (**Chart 3b**), but are still running at a sufficient pace to put downward pressure on unemployment. It is not inevitable that the rest of the economy will follow manufacturing down the road to decline.

Europe: the big gap – manufacturing and services



Europe: pace of job creations



Charts 3 – Sources: Thomson Reuters, ODDO BHF

In short, it seems to us that the world economic outlook is more nuanced than it is generally described by focusing on industrial data. There is no question that downside risks exist, but nor should one gloss over the good news in recent months. We have drawn up a short list of the "pluses" and "minuses":

- (+) Financial conditions – They have generally been loosened. In the Fed's wake, monetary policies have been eased almost everywhere in the world, contributing to the resilience of asset markets and averting a widening of credit spreads. Though raising fundamental questions, the broad-based decline in long-term bond yields has the immediate effect of making consumer, business and sovereign debt levels more sustainable.
- (+) Oil price – In view of production or export constraints faced by several countries in recent months and quarters (Venezuela and Iran), there were fears of a sharp and swift price rise, denting consumer incomes. There is nothing like an oil shock to tip an economy into recession. Examples of this are not in short supply. In reality, the oil price has fallen by around 20% from last year's peaks. This is a redistribution of resources to the benefit of net importer countries. That said, the price decline is not on the excessive scale seen in 2014-2015, to the point that it posed severe challenges to the production sector.
- (+) Political risk – France did not succumb to the "yellow vests" crisis. Italy has ridden itself of a government so hostile to Europe that a budgetary crisis appeared imminent. The populist wave that many thought would submerge the European Parliament has not emerged. On the contrary, the distribution of key positions favoured political forces most supportive of a deepening of the European project. In many places, if not everywhere, political strains have eased[3]. There is a risk of seeing Germany's Great Coalition break up after a new head of the SPD party is appointed, but would this be such a bad thing given the lack of initiatives emanating from the current government?
- (-) Trump – Through his comments, his actions and U-turns that have no rational basis but seem to depend on his mood (especially his bad moods), the US President is the principal cause of mounting global uncertainties. Trump has made his country's economic policy unpredictable and spares no effort to divide the post-war global order still further, seeming to believe (and he is alone in this) that this order disadvantages the US. For reasons that remain obscure, he reignited the tariff war with China only a few weeks after calling a truce. Barely a day went by over the summer when he did not launch attacks at the Fed, the benefits of which are not blindingly obvious either. Almost as often, Donald Trump has accused the entire planet, especially China and Europe, of "monetary manipulations", to the point that some of his

[3] *On the Brexit question, no-one knows the next episode of this saga at the time of writing: a no-deal, a further postponement of the exit date or fresh elections (and for what majority). See our* Eco Note of 30 August: *"Which costume for Halloween-Brexit?"*

advisers have had to deny that he was considering direct intervention to weaken the dollar. Lastly, after hinting that his administration was preparing new fiscal stimulus measures, he denied everything outright.

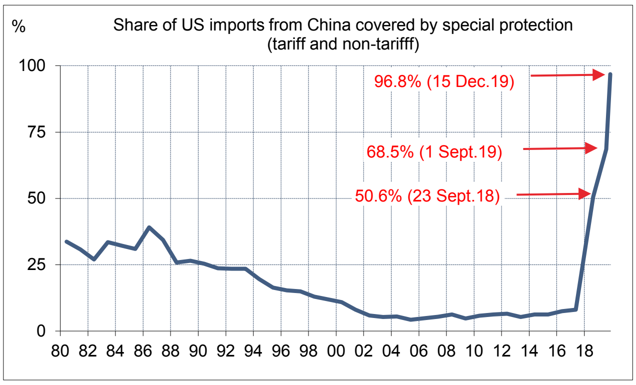
- (-) Trade barriers – The tariffs that China and the US have mutually slapped on each other have reached record levels (see *below*). Trade relations have warmed between the US and Japan, but those between Japan and South Korea have become glacial. There is no guarantee that the US Congress will adopt the proposed North American free trade agreement (USMCA) modified by the Trump administration. Nor is there any guarantee that the White House's threat to impose tariffs on the European automotive sector will not be executed before the end of the year.
- (-) Interest rates – A yield curve was usually considered normal when it was both upward-sloping and its short end did not differ much from the pace of nominal GDP growth (see *below*). Neither the level of the yield curve nor, in many countries, its shape meet these two criteria today. This raises questions about the assumptions governing the activity of banks and asset managers, and consequently poses a risk for financial stability in the medium term.

US-China: at the point of no return

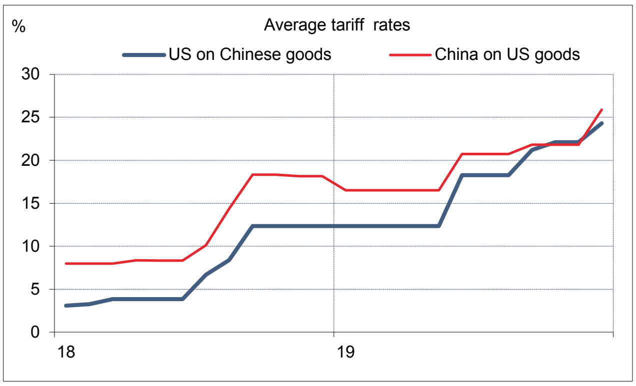
According to a survey by the Pew Research Center in May-June 2019, 60% of people questioned in the US have a negative opinion of China, compared with 26% who have a positive opinion – a 34pt gap. When Donald Trump became President in 2017, this gap stood at just three points (47% vs 44%). During most of the 2000s, there were more positive than negative opinions. The surge in anti-Chinese sentiment encompasses both Democrats and Republicans (it is stronger among the latter). Rivalry in the military field worries people more than economic competition.

At the political level, it pays off for Donald Trump to position himself as the President who addresses the "Chinese problem". Even if he is unable to win over Democratic voters, he intends to strengthen his grip on the Republican electorate in this way. That this policy is an economic aberration is viewed either as a secondary problem or as a small cost compared with the bigger benefits in the medium term. In the lead-up to the next elections, he will probably exert maximum pressure on China in the trade and technology fields, with phases of appeasement when the market's reaction becomes too negative. It appears illusory to us to wager on a "deal" between the two countries that would lift uncertainty permanently. What's more, there is no guarantee that Chinese authorities are themselves in favour of this.

US-China: extension of US tariffs



US-China: tariff rates



Charts 4 – Sources: PIIE (Chad Bown), ODDO BHF

The latest episodes of the "trade war" represent a considerable escalation in terms of the coverage of incriminated goods and the level of tariffs (**Charts 4**). According to the Peterson Institute[4], the first big tariff offensive in the summer of 2018 led to a new tariffs on half of goods imported from China. The second wave in the summer of 2019 raised this proportion to more than two-thirds at the start of September, with 97% in sight at the end of the year. Besides intermediate goods, capital and consumer goods are also affected, increasing the risk of higher prices of imported goods. The average US tariff on Chinese goods quadrupled in 2018 from 3% to 12%. It will have doubled in 2019 to reach 24% by the end of the year. China has retaliated against all the White House's announcements in a graduated manner, i.e. without escalating the conflict. In total, an average tax of 25% will be levied on US goods by the end of 2019, up from 18% a year earlier and 8% at the end of 2017. It is worth noting that tariffs levied in China on non-US goods have tended to decrease.

Sino-American tariff hostilities have been building up gradually over the past two years. During periods of appeasement, some measures have been suspended or deferred, but once implemented none have been reversed to date. This demonstrates that each country is convinced that it has right on its side, without being challenged by its public opinion (US) or its nomenklatura (China). Neither has been weakened to the point of needing to seek a swift compromise. All the conditions are in place for a lasting conflict, leading us to reconsider the economic cost of this trade war.

The negative impact on the volume of trade has never been in doubt, even if the adjustment takes time. This is the logical reaction after a tariff hike, especially when it is coupled with a reorganisation of supply chains (diversion of trade to a third countries and relocations). At present, US imports of Chinese goods are down 12% year-on-year, while Chinese imports of US goods are down 24%. Another way of assessing the direct cost is to look at tariff revenues in the US. They currently stand at $ 70bn on an annual basis, double the 2017 level. Does it need clarifying that, contrary to the White House's repeated claims, the Treasury does not receive this sum from China but from US companies that import Chinese products?

The repercussions on US consumers hinge on a number of parameters. Firstly, the change in the exchange rate. A depreciation of the Chinese currency against the dollar (a phenomenon that accelerated over the summer) lowers the cost of imports. Second, importers' margins. They can absorb all or part of the increase in import prices in their profits. Lastly, competitive conditions. Companies may be tempted to raise their retail prices as they suffer less competition from Chinese companies. Studies available today demonstrate that the impact on inflation in the US is modest today and likely to remain so[5].

In reality, the principal macroeconomic risk due to the trade war relates to the climate of uncertainty. The decline in business confidence in recent months, especially in the manufacturing sector, suggests that this factor is of growing importance. This has been confirmed by formal analyses of the effects of the uncertainty shock. According to the Fed[6], the first round of tariffs in H1 2018 shaved 0.8pts off global GDP growth a year later by increasing uncertainty (same impact on the US). The second round in H2 2019 is expected to prolong and amplify (by just over one point) the negative shock. Based on these estimates, tariff uncertainty is a decisive explanation of the global slowdown over more than the past year.

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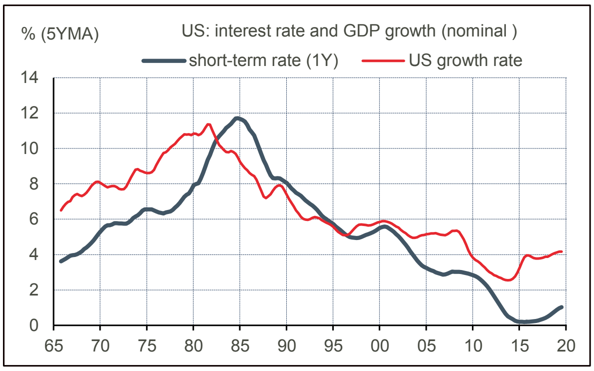
[4] *See Bown (2019) ˝US-China trade war: the guns of August", PIIE.*
[5] *See Hale & al. (2019) ˝Inflationary effects of trade disputes with China", FRBSF Economic Letter*
[6] *See Caldara & al. (2019) ˝Does trade policy uncertainty affect global economic activity", FEDS note.*

What compass do interest-rate markets have?

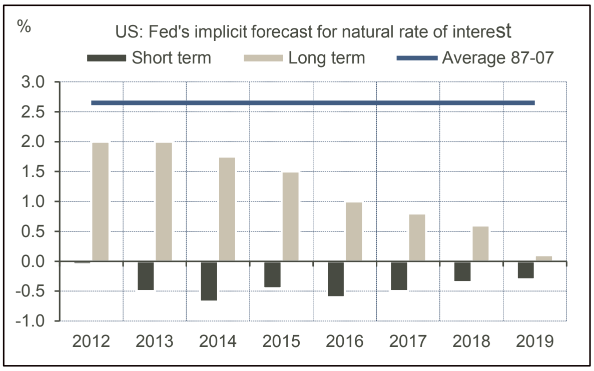
Is it possible to understand (and attempt to predict) long-term bond yields? This is a key question in view of recent developments, especially the plunge in yields on German bonds into negative territory[7]. A negative nominal yield is at odds with common sense. It is a challenge for asset managers, financial stability and the conduct of monetary policies.

Let's go back to basics. For central banks, the key model for thinking about interest rates is based on the estimate of the natural (real) rate that serves as an anchor for market rates. Variations around this natural rate are determined by the output gap and various factors affecting inflation expectations. In normal conditions, the interest rate should be equal to economic growth. Over the very long term, this correlation appears robust, but this is not the case over shorter time horizons (**Chart 5a**). Further, it is the inflation component, not the real interest rate, that explains this correlation. It hardly needs saying that other structural factors are important. For example, an ECB study estimates that the ageing of the population explains around 100bp of the decline in the natural rate since 1980 and will lower it by another 70bp within 20 years[8]. The recycling of savings by emerging countries has often been cited, especially in the 2000s, as a source of pressure on interest rates[9]. Overall, the consensus view is that the natural rate has been on a secular downward trend since the 1980s. In the US, the FOMC estimates that the natural rate is close to zero, compared with 2.5% some 30 years ago (**Chart 5b**). There appears to be more uncertainty in the Eurozone, but it is estimated to be in negative territory at around -1%.

US: interest rates and growth rates (nominal)



US: estimates of the natural rate



Charts 5 – Sources: Thomson Reuters, ODDO BHF

Based on these estimates of the natural rate (to be viewed with caution), interest-rate markets should fluctuate above or below it depending on the output gap. In the US, the economy is at full employment, but this is not true in the Eurozone. As an approximation, it is possible to justify short-term yields of 2% in the US, i.e. a natural rate of 0% + a zero output gap + inflation of close to 2%. In the Eurozone, where inflation is stuck at 1% (despite a target of 2%) and the economy is still running below its potential, it is possible to explain why short-term yields are in negative territory.

The last step is to move from short-term yields to long-term yields by adding a term premium. This is normally positive, but in the wake of QE policies (which depress long-term yields) it is thought to have fallen, to the point of being nil or even negative. As long as central banks maintain very large balance sheets, they have to acknowledge that they operate in a near-flat yield curve configuration, with more frequent inversions than in the past caused by market volatility. From this starting point, long-term bond yields of around 2% in the US seem to be levels that could persist in the medium term as long as the natural rate does not show any upward trend (for example, following structural reforms aiming to boost potential growth).

[7] *Adjusted for currency risk, a portfolio of* Treasuries *yielding around 1.5% is not very different from a portfolio of* Bunds *yielding -0.5%, but the second case makes a deeper impression.*
[8] *See ECB (2018) "The natural rate of interest: estimates, drivers and challenges to monetary policy"*
[9] *See IMF (2018) "Lower for longer: neutral rates in the United States"*

This standard view of interest rates (summarised very broadly here) considers that monetary policy is neutral in the estimate of equilibrium rates and that these are only determined by the structural parameters of the economy, such as productivity, demographics and savings. This view has been the subject of a strongly-argued critique by researchers at the BIS[10]. They begin by remarking that the link between interest rates and the savings/investment balance – the fundamental approach – has only been verified over a relatively recent period but does not stand up to a broader examination over time or in space. The same authors prefer to focus on the role of monetary policies in forming financial cycles. They note in particular the anchoring role played by the day's dominant currency (sterling in the early 20th Century, followed by the dollar since 1945). In a universe of fully mobile capital flows, yields on the dominant currency are the most influential. In recent decades, for example, German yields have reacted more to changes in US yields than to growth in Germany or Europe.

This alternative view of interest rates attributes the current weakness of yields to the asymmetry of monetary policies since the 1980s – in other words, to the fact that these policies are loosened sharply during crisis periods but are not then normalised as they should be afterwards. This creates financial bubbles that spark new crises, which central banks respond to with even more massive or protracted loosening. From this perspective, the past decade since the last financial crisis has exceeded all previously accepted limits (lower-for-longer interest-rate policies, negative interest-rate policies, QE policies and the early end to the Fed's normalisation phase). If this view is correct, the secular downward trend in interest rates will only end when central banks throw off the burden of having to boost growth at any cost, leaving this task to fiscal or regulatory policies. Such an *aggiornamento* is not imminent, but the debate is already well advanced in the academic field and is starting to cross over into the political field (e.g., the debates about secular stagnation and the ways to escape it and about the opportunity for governments to issue debt at negative yields to finance infrastructures designed to address the challenges of digitalisation and climate change).

Whatever the case, neither the traditional view, which presupposes the existence of a natural rate, nor the alternative view, which emphasises monetary factors, are capable of explaining the interest-rate changes observed in recent months. It is not the modest revision to the US growth outlook, nor the 25bp adjustment to the Fed Funds rate (even if other cuts are set to follow), that can explain the plunge in long-term bond yields of nearly 100bp. In such rapid adjustment phases, technical factors are frequently in play. A shock can prompt investors to readjust the duration of their portfolios, reinforcing the trend set by interest-rate markets[11]. As a result, it can accentuate moves in interest rates, both upwards, as during the taper tantrum episode of 2013, or downwards as is the case today.

There is clearly a share of over-reaction in recent interest-rate fluctuations. Justifications given in hindsight emphasise the risk of a recession in the US (**see dedicated section**) and the U-turn by monetary policies across most of the world following the Fed's pivot. There is little doubt that the Fed has not yet completed its "*mid-cycle adjustment*", but not to the point, we think, of validating the market's current forecasts for the Fed Funds rate. In large part, these expectations reflect mounting trade-related uncertainty, but Jerome Powell noted recently in his Jackson Hole speech that the central bank lacks the tools to respond to this type of shock. If, as we think, the US economy avoids a recession in the coming months, forecasts of the Fed Funds rate and long-term bonds yields will be re-assessed. In comparison, the Eurozone's great fragility warrants preventative loosening by the ECB (**see dedicated section**). This would provide even more justification for a fiscal stimulus, but in Germany, a country with the greatest fiscal space, the government is sticking its head in the sand **(see dedicated section**).

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[10] See Borio & al. (2017), "Why so low for so long? A long-term view of real interest rates", et (2019) "What anchors for the natural rate of interest", BIS working papers
[11] See Shin (2017), "Is there a risk of snapback in long-dated yields", BIS

US, RECESSION OR RECESSION-PHOBIA

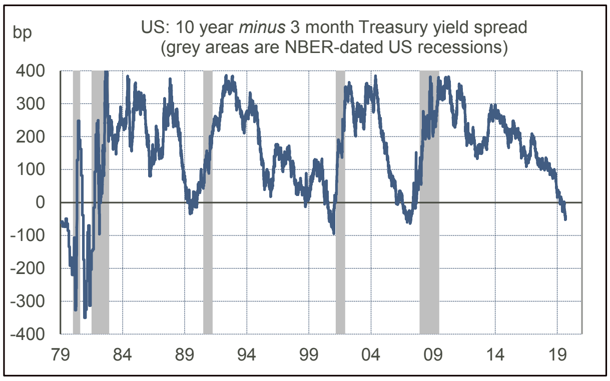
A recession is an economic phenomenon characterised by a contraction in activity in most sectors for several quarters. Recession phobia is a psychological phenomenon consisting of seeing recession everywhere. This manifests itself in a tendency to retain only information pointing towards recession, to repeat it as a mantra, and to ignore everything else. Recession phobia has gone almost viral over the course of the summer due to the inversion of the yield curve. The signal is probably exaggerated but the risk of recession is serious, particularly as Donald Trump seems hell bent on stoking uncertainty[12].

Google searches for the expression "inverted yield curve" have spiked in August to around three times the volume of those observed prior to the previous US recession, over ten years ago. The US president himself tweeted on 14 August on the topic of the "CRAZY INVERTED YIELD CURVE". Press headlines screaming " inverted curve = recession" abound. In the US, an inversion of the yield curve has preceded all of the recessions of recent decades (**Chart 6a**). While the same observation cannot be extended to all other countries and across all periods, it should nonetheless be taken *seriously*[13]. This requires at the very least avoiding mistaking the symptom for the illness.

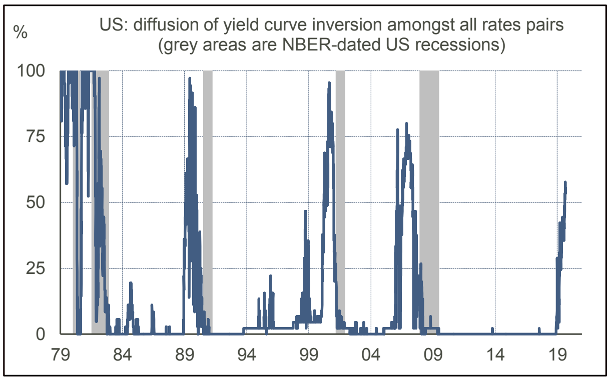
Yield curve, how to read the signal?

The US yield curve has flattened significantly since 2016 when the Fed embarked on its monetary tightening cycle (short-term rates rising faster than long-term ones). It inverted in recent weeks when the Fed once again eased its policy (long-term rates falling faster than short-term ones). If we consider all possible rate pairs over maturities ranging from one month to 30 years, over 50% of them now reflect an inversion (**Chart 6b**). We generally focus on a short-term long-term rate spread, the most common ones being the 2-10 years spread (negative intraday on a few days in August) and the 3M-10 year spread (negative since last May). The New York Fed retains the latter as the most reliable. Since the end of the 1960s, such a signal has always pointed towards a recession in the 6-18 months following the inversion, which would place the start of the next US recession between December 2019 and December 2020.

US : slope of the yield curve (10 year - 3 month)



US : diffusion of yield curve inversion



Charts 6 – Sources : Fed, ODDO BHF

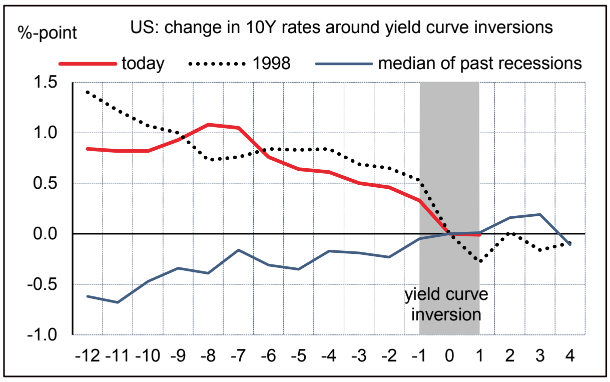
[12] *This section was first published, in a slightly modified form, on August 22.*
[13] *See St. Louis Fed (2019), "Do yield curve inversions predict recessions in other countries?"*

An indicator with such a strong track record clearly warrants the greatest attention. That said, the question as to whether the bond markets' behaviour is truly comparable with that of the past is a legitimate one. After the last financial crisis, the Fed conducted large purchases of public securities, influencing the range of rates on maturities that were significantly longer than usual. Henceforth, QE has become an almost familiar tool of monetary policy. In any case, two singular characteristics stand out in the current period of yield curve inversion.

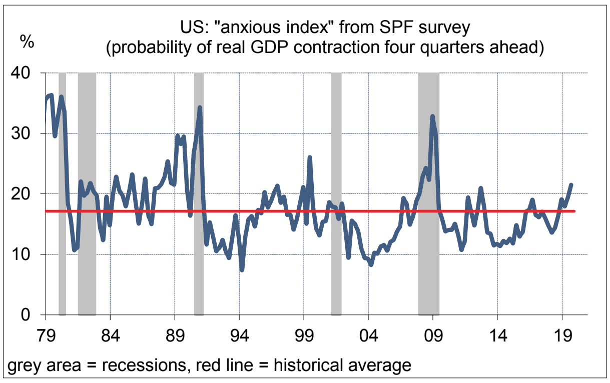
- First, the inversion of the US curve occurs against a backdrop of a general decline in interest rates. This is the opposite of what usually happens before a recession (**Chart 7a**). The typical inversion generally results from a rapid/excessive tightening of monetary policy, which pushes the entire range of interest rates upwards and tightens financing conditions. Nothing of the sort at present. Long rates are lower than a year ago. From this standpoint, the most accurate historical analogy is 1998 when the yield curve had inverted in a context of strong financial turbulence (emerging countries financial crisis, LTCM's bankruptcy) without the US economy sliding into recession. At the time, the Fed had lowered its policy rates. As for the reduction in long-term rates, it was able to help both companies (reduction in the cost of debt) and households (reduction in the cost of home loans). The same causes should produce the same effects today.
- Second, central bankers today appear more attentive than they were in the past to factoring in the yield curve signal. This poses an interesting problem in terms of reflexivity. Bearing in mind that monetary policy influences long-term rates, indirectly through short-term rates, and even directly through QE, the central bank can try to correct a negative signal (inverted curve) through preventive action. This may explain the monetary decisions taken by the Fed at the beginning of this year (abandoning rate hikes) and again this summer (lowering rates). As a result, it may be necessary to analyse recent developments in the yield curve less as information on future economic activity than as an expectation of future monetary policy decisions.

In these conditions, the yield curve inversion signal should not be ignored[14], but at least placed in perspective and rounded out by other analyses. In a context marked by weaker global growth, heightened trade tensions between the US and China and an unprecedented degree of uncertainty regarding economic policy (largely due to Donald Trump's posturing), clearly the US economic has greater exposure to a negative shock. The probability of recession is tending to increase, as measured, for example, by the "anxious index" from the Philadelphia Fed's Survey of Professional Forecasters. In the latest edition, published on 9 August, the probability of a contraction in real GDP over the next year continues the rebound initiated in 2018: it now stands at 21%, above the historical average of 17% (**Chart 7b**).

US : change in 10Y rates around yield curve inversion



US : Philly Fed's anxious index



Charts 7 – Sources : Thomson Reuters, ODDO BHF

[14] *In 2005-2006, a period during which the trend in long rates was mysterious (the so-called "bond market conundrum"), the Fed seemed to ignore the curve signal, which in hindsight was a mistake. See Bernanke (2006), "Reflections on the yield curve and monetary policy", 20 March.*

10 models of recession

A recession is a relatively rare event, each with its own specific characteristics, and represents a discontinuity in the business cycle. Clearly it is possible to assess the probability of recession risk based on historical data, but we need to be aware of the limitations of this exercise. No model is perfect. In the following analysis, we update our review of 10 alternative recession models for the US economy[15]. We divide these models into two groups. On the one hand, coincident models that seek on the basis of real data to gauge the probability of entering recession at the T point (knowing in real time if the economy has entered recession is not as trivial a question as it might seem). On the other hand, forward models which give a recession probability at a 12 months horizon. The results are presented in the **Table 8**.

US : recession probabilities

	US recession probability							
	2001 recession (average)	2008 recession (average)	mid-2015	mid-2016	mid-2017	mid-2018	mid-2019	mid-2020
Coincident models								
- unemployment rate	65	80	0	0	0	0	0	-
- jobless claims	44	58	1	3	3	2	2	-
- stock market	39	51	7	3	4	15	2	-
- building permits	0	83	0	0	0	0	1	-
Average	**37**	**68**	**2**	**2**	**2**	**4**	**1**	**-**
Forward models								
- yield curve	42	28	0	1	2	3	6	59
- diffusion index	15	53	7	7	16	5	4	37
- bond premium	61	28	9	19	25	12	11	14
- oil price	38	34	18	4	3	3	20	13
- corporate profits	68	34	9	14	27	20	17	15
Average	**45**	**35**	**9**	**9**	**14**	**9**	**11**	**27**
Benchmark								
- business cycle duration	36	27	16	20	26	30	37	40

Table n°8 – Sources : Thomson Reuters, ODDO BHF

As a comparison point, the last line of the table includes a model based solely on the duration of the expansion phase. There is no economic justification for this, quite the opposite ("expansions do not die of old age") but the argument whereby a recession is set to occur soon because the last one dates back more than ten years is sometimes put forward.

Looking at the coincident models, the best one is based on the unemployment rate trend. No recession has ever occurred without an increase of at least 0.4pt in the unemployment rate. No such trend is apparent currently, with the jobless trend remaining on a downward slope. Similarly, jobless claims are very low, well below the alarm thresholds. Neither the stock market (which sends many false recession signals), or the residential housing market show an economy in recession. All told, these coincident models are unanimous: the US is not at present in recession (1% probability on average). Given the widespread nature of recession phobia of late, it is certainly worth recalling this reading. While there are a number of uncertainties (trade-wise, industrially, and financially), the US continues to be characterised currently above all by an increase in employment, private sector spending and lending.

The forward models are better calibrated to translate the uncertainty into recession probability. As we have seen, the model based on the yield curve has an excellent track record historically and points to a worrying level (over 50%). The same is true for the model that measures diffusion (but not the intensity) of economic weakness in its sectoral or geographical components. It is true that after a surge in growth last year, partly thanks to the fiscal stimulus, the US economy experiences a slowdown. The other forward models, based on bond premiums, the oil price or corporate profits, indicate a much lower recession probability, of around 15%. All told, these forward models give an average recession probability of 27% at one year. This is a much higher level than in the last few years and warrants the attention of economic policy makers.

What causes recessions? History is quite clear on this point. In the US, a recession occurs when the economy, which is already weakened, suffers an external shock, which can be oil-related (a sudden price jump), monetary

[15] *See our* Economy & Rates report of June *2019, "On your marks, get set, cut" where we explain each of these models in greater detail.*

(excessive hikes in the Fed's policy rates) or financial (a credit bubble bursting). At the moment, the oil price is 20% lower than it was a year ago, the Fed is easing its monetary policy, and credit markets are not showing the excesses they were in 2000 for corporations or in 2007 for households, and long rates are dropping. There is nothing recessionary about this configuration. It is worth adding that, in Congress, no one seems to be worrying about the level of the deficit, and in the White House, the word is that fresh tax cuts could be in the offing. A recession by next year does not look inevitable by any means.

That said, economic agents are adjusting their behaviour in part to their expectations. The greater the fear of a recession, the greater the temptation to postpone or suspend consumer, investment or hiring decisions. As we see it, the main recession risk stems from the uncertainty caused by the US president. The best protection against recession does not lie in rate cuts by the Fed or in a fresh bout of fiscal stimulus, but in a return to normal trade relations. All in all, this looks to be president Trump’s doing. It is the president alone (or almost) who seems to be pushing the US economy to the brink.

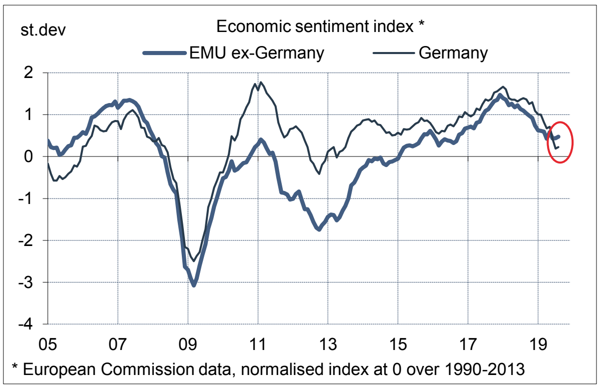
The German Problem

Last summer the German economy weakened all of a sudden. The market may have thought the shock would be short lived and limited to the automotive sector but a year later Germany has not recovered. Now industry is in recession, and there are signs of contagion to services. What should be done? There is a battle of ideas between two "theses". On the one hand, from the "Anglo-Saxon" world, there are multiple calls for an immediate Keynesian fiscal stimulus. On the other, in German economic and political circles, anything that runs counter to fiscal and monetary orthodoxy is broadly rejected. Who's right, who's wrong?[16]

For nearly a year now, the in-vogue expression to describe the short-term outlook for Germany is "technical recession", in other words a situation where some sectors of the economy are so weak that there ensues a modest contraction in GDP. Meanwhile, the rest of the economy remains quite solid to prevent the more pronounced and lasting adjustments that characterise an ordinary recession (reduction in spending, surging unemployment, wave of business failures). A "technical" recession lasts two quarters. This situation was narrowly avoided in H2 2018[17].

The risk is there again now, as real GDP fell by 0.1% q-o-q in Q2 2019 and the business climate continued to weaken over the summer. Now, the economic sentiment index, calculated with all sectors taken into account, is lower in Germany than in the rest of the Eurozone, a state of affairs not seen since the early 2000s (**Chart 9a**). It is therefore possible, as the Bundesbank points out, that real GDP could continue to decline in Q3

Germany: economic sentiment



Germany: employment growth

Charts 9 – Sources : Thomson Reuters, ODDO BHF

Under cyclical and structural pressure

The correction being experienced by German industry is now in its fifth consecutive quarter and the erosion in backlogs does not presage an imminent rebound. The longer the industrial recession goes on, the greater the risk of contagion to the rest of the economy. At this stage, there are no genuinely negative signals in the construction sector, where activity remains solid and there is a high level of confidence. The services sector has shown some signs

16 This section was first published, in a slightly modified form, on September 4.
17 Initially, real GDP had declined by 0.2% q-o-q in Q3 then stagnated in Q4 2018. The figures were then revised to -0.1% and +0.2% respectively.

of weakness of late. It is all down to the labour market. Employment remains on a positive trend, but its growth has slowed (**Chart 9b**). This partly stems from the slump in temporary employment, but it is also because businesses are signalling hiring problems. Job openings excluding temporary jobs have started to decline in recent months. After a continuous decline for five years, the number of unemployed has stopped falling since May, beginning a slight recovery. But it is worth remembering that the starting point is one of full employment. German household income continues to be underpinned by gains in employment and in wages, against a backdrop of low inflation. This is conducive to supporting internal demand, at a time when external demand is flagging.

The economic outlook has nonetheless dimmed. Germany, which was a rock when so many other European countries were buffeted by the recurring financial crises between 2010 and 2015, is now underperforming the rest of the euro zone. Why? There is no single explanation but rather a combination of negative factors that are undermining the German "model".

- Germany is a major exporter. As such, it is directly threatened by the US-China tariff war, which is slowing global trade, as well as by Donald Trump's rage against any country that runs a substantial surplus with the US, by Brexit and more broadly by anything that might disrupt globalised production and trade.
- Germany has built its industrial might in large part on the excellence of its car industry[18] (it accounts for an outsize share of economic output compared with other European countries) but the sector is under heavy pressure to transform itself and comply with increasingly strict environmental standards. Incidentally, it is curious that the authorities are keen to step up the transition towards electronic engines while at the same time rejecting nuclear power.
- Germany generates hefty external surpluses, which are the reflection of excess domestic savings relative to investment, but remuneration of these savings has now been strongly eroded, especially when they are in the form of government bonds or bank deposits. Very low, even negative, interest rates are a boon for borrowers, but not for savers. For years this situation has fuelled a witch-hunt against the ECB, accused of ruining German savers (the "Swabian housewife") and undermining the German banks.
- Germany was rebuilt after the war on the basis of a system that encourages the market economy via norms (ordoliberalism), including that economic policy must combat inflation at all costs and avoid excessive indebtedness. These norms were transposed into the Treaty creating the monetary union. As a result, the ECB's mandate is restricted to ensuring price stability and it is not allowed to directly finance governments, which themselves must limit their debt and deficits. What use are these norms, in particular the criteria relating to public finances, in a world of zero or negative interest rates? This is the essence of the battle of ideas between those in favour of a fiscal stimulus (in the majority outside Germany) and defenders of the orthodoxy (in the majority in Germany).

The fiscal policy debate

The debate about fiscal stimulus in Germany is not completely new but it has recently gained traction since the economy, as we have seen, is flirting with the recession threshold. For years now, most organisations the likes of the IMF and the OECD have deemed, with some reason, that Germany's external surpluses (up to 9% of GDP at the peak of 2016) are on the excessive side. This naturally gave rise to the idea that an increase in the country's spending would help a global rebalancing. But then, several criticisms have been frequently raised.

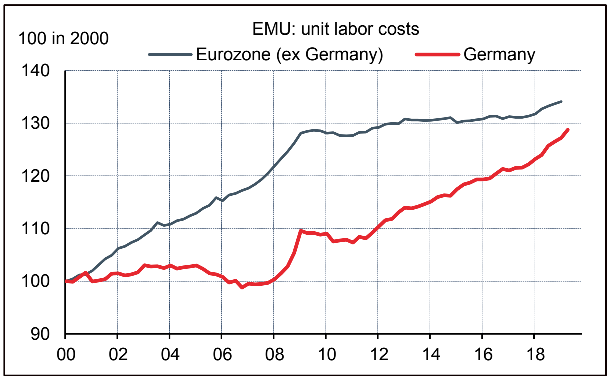
First, many trace the savings surplus in Germany back to the weakness of private demand, not public demand. Throughout the noughties, this resulted from the policy of wage restraint adopted with a view to restoring competitiveness after the shock of reunification. The goal was to put a tight rein

[18] *See our Economic Note dated 25 April 2019: "What's Germany worth without the automotive industry?"*

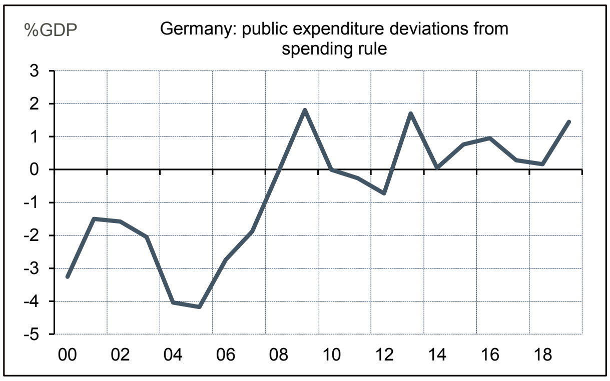
on unit labour costs. The situation is very different today. In recent years, these costs in Germany have grown at a much faster pace than in the rest of the Eurozone (**Chart 10a**). To amplify the adjustment, the Commission generally recommends a cut in labour taxes to stimulate household consumption.

There is also the question of compliance with domestic fiscal criteria that are stricter than Maastricht's stipulations. After the great recession and the surge in the debt-GDP ratio, Germany included the principle of a debt brake ("*Schuldenbremse*") in its constitutional law to achieve a balanced structural federal budget ("*schwarze Null*"). When corrected for cyclical effects, the federal budget is not supposed to exceed 0.35% of GDP. This amounts to a ban on an active fiscal policy and exclusive reliance on automatic stabilisers. According to the OECD, a one point drop in real GDP growth goes in tandem with a 0.48 point increase in the budget deficit, which in return supports activity[19]. According to the Commission, a one point drop in household revenue will result in a reduction of just 0.3 points in household consumption, thanks to the increase in government transfer payments[20]. Note also that public expenditure in Germany is a little brisker than what would be recommended by the rule (widely held to be optimal) of tracking potential growth[21] (**Chart 10b**). These orthodox fiscal rules are broadly supported in the German political arena, and even more so by the conservatives. Recently, the finance ministry floated the possibility of a € 50bn stimulus plan, but only in the event of a severe recession. Saying that there is little discernible appetite for a preventive push for a more active fiscal policy would be an understatement.

Germany : unit labor costs



Germany : government expenditure



Charts 10 – Sources : Thomson Reuters, ODDO BHF

Lastly, conditions for the implementation of a stimulus policy should be considered. In the face of a shock that is primarily affecting foreign demand, stimulating domestic demand will not necessarily ensure one-for-one compensation and could even cause overheating if domestic production does not pick up. Taking the automotive sector as an example, it is clear that the problem is one of supply (sharp decline in production) rather than domestic sales. Premiums for scrappage are useful when excessive inventories need to be swiftly eliminated, but this is not currently the case. There is also the question of the targeted horizon. Some influential voices have suggested that very low interest rates are an opportunity to fund additional government spending[22]. Since the German state can borrow at negative cost, it is said that that it should design a large infrastructure programme focused on the challenges that are deemed priorities for the medium term, such as energy transition and the digitisation of the economy. On the other hand, some assert that it would be a mistake to respond with structural measures to a cyclical slowdown.

We have looked at the arguments that are most frequently used to oppose a relaxation of fiscal policy in Germany, less by conviction than to establish the degree of resistance amongst economist (the Council of Economic Advisers

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[19] *See OECD (2015), "Adjusting fiscal balances for the business cycle: new tax and expenditure elasticity for OECD countries"*
[20] *See European Commission (2019), "Automatic stabilizers in the EU: size and effectiveness"*
[21] *See CEPR (2018), "Reconciling risk sharing with market discipline: A constructive approach to euro area reform"*
[22] *See Blanchard (2019), "Public debt and low interest rates", AER Lecture; and Blanchard & Ubide (2019), "Why critics of a more relaxed attitude on public debt are wrong", PIIE*

leans very much towards an orthodox approach) and politicians. No-one would claim that it is easy to devise and, even more so, implement a fiscal stimulus. But alluding to difficulties in the implementation or to the undesirable sides-effect associated with such-and-such a measure cannot be an economic policy. This is unfortunately the only impression that can be drawn after listening to a number of leading figures in Germany, whether from government or the Bundesbank.

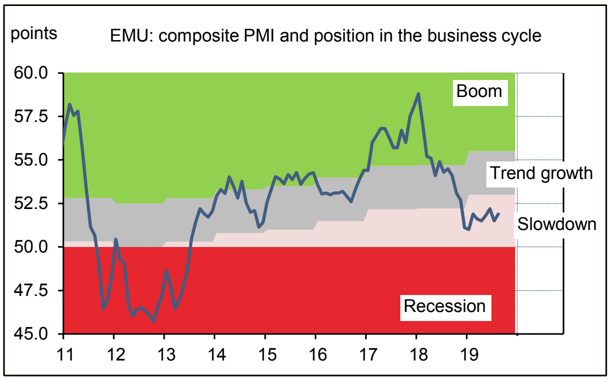
THE ECB, AFTER EIGHT YEAR OF POLICY EASING

Many central banks in America, Asia and Europe have already loosened their monetary policy in recent months. It is now the ECB's turn to join the trend, with even more reasons than elsewhere, as growth in the Eurozone is weaker and inflation is well below target. Mario Draghi has got us used to the idea that a "package" of measures and not just a rate cut is needed to ease the monetary policy. Reviving asset purchases is far from receiving a unanimous thumbs-up in the Governing Council. We believe that Mario Draghi will nevertheless see his views prevail, leaving Christine Lagarde with a legacy of a monetary policy that is durably accommodative (but close to depletion) [23].

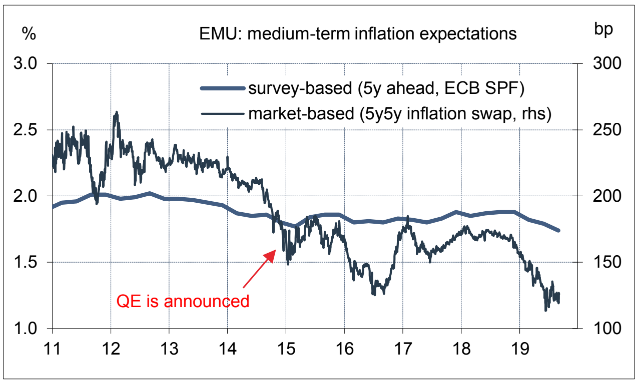
For the past three months, Mario Draghi has been preparing an easing of monetary policy in response to "the pervasive uncertainty", which poses a downward risk to growth and inflation. This recommendation was discussed at the Governing Council meeting on 6 June. It was more clearly stated at the Sintra forum on 18 June. It was endorsed by the Governing Council at its meeting on 25 July. Since then, the ECB's committees tasked with examining the possible options have had ample time to set the course. It is now time to take action.

During the summer, the economic situation in the Eurozone did not improve or really deteriorate, which means that it remains fragile overall (**Chart 11a**), with a more pronounced downward risk in Germany. Some uncertainty factors have eased, such as political risk in Italy; others remain just as difficult to understand in a rational light, such as Brexit; while others, such as US-China trade tensions, have deteriorated. Lastly, neither current nor expected inflation is picking up. A close analysis of the price indices reveals the outline of an upturn in the cyclical components of inflation[24], but the overall picture is that inflation remains well below the target level. Medium-term inflation expectations are lower than in 2014 (**Chart 11b**). At the time, deflation was frequently mentioned and, although this risk was perhaps overestimated, the low level of expected inflation led the ECB to launch its first asset purchase programme.

Eurozone : position in the business cycle



Eurozone: inflation expectations



Charts 11 – Sources : Thomson Reuters, OCDE, ODDO BHF

The same causes (downward economic risk) should reasonably have the same consequences (monetary policy easing) unless it can be shown that that the ECB's policy has become ineffective, or even unproductive. This argument is often put forward, but as far as we know is has never been proven in any compelling manner. Empirical evidence points in the other direction. According

[23] This section was first published, in a slightly modified form, on September 5.
[24] The ECB has at times focused on the super-core price index which is calculated by removing volatile elements such as energy and food, in addition to prices that are insensitive to the output gap. See ECB (2018), "Measures of underlying inflation for the euro area".

to the estimates made by the ECB's chief economist, if no monetary easing had been put in place in 2014, growth in the Eurozone would have been 0.7pt-0.8pt below the 2017-2018 level, with inflation around 0.4pt below[25]. Whilst the impact of the four different measures (NIRP, TLTRO, forward guidance, QE) is not identical, none has been shown to have either a dominant or insignificant effect. Their effects are deemed to be complementary and self-reinforcing. According to Mario Draghi and a number of his colleagues, it is therefore crucial to present a "package" of measures rather than just one single measure.

A policy package

What might this "package" contain? Since June 2019, several members of the Governing Council have put their cards on the table, with a notable campaign by the group of "hawks" over recent days[26]. This should help to better assess what is certain, what is likely and what is not.

- **Rates (negative)** – a decline in the deposit rate is more or less guaranteed. Many would be favourable to this course of action due to a conviction that this is a useful tool, whilst others might see it as an argument to refuse other measures such as QE. Nevertheless, it is difficult to see why after rates have been cut in almost every corner of the globe, the ECB would be the only central bank to deny itself this option, at the risk of a strengthening in the euro. As we know, commercial banks view the negative rates policy (NIRP) very badly indeed. This is why it is likely that a depo rate cut would be accompanied by measures aimed at mitigating the impact on banks' profits, with the creation of a tiering system for the taxation of excess reserves (see **Appendix**). The scale of the rate cut is still to be set (we think -10bp, with an option for more cut later).
- **Forward Guidance** – the ECB has already adjusted its guidance on a number of occasions over recent months, firstly pushing back a possible increase in policy rates before adopting an easing bias that stands until mid-2020. We think it likely that the horizon will be pushed back even further, particularly since the current forward guidance stresses that the easing bias will stand for as long as there is no visible sustainable convergence of inflation towards its target. This central point is far more important than the time frame.
- **TLTRO** – A new series of TLTRO had been announced in March with the first operation to be implemented this month. The plan back then was to have less generous borrowing conditions than in the past to wean the banks off liquidity injections from the ECB. Six months later, the thinking has changed given the weakness of the banking sector. It would be strange if certain measures were calibrated to favour the banks and others not.
- **QE** – This is the main point of contention regarding the make-up of the "package". Several Council members are ideologically opposed to the resumption of asset purchases - a policy they have always rejected or criticised. Others are undecided, taking the view that the economic risks are not as great as in 2014 or that the additional impact of QE would be limited. If we accept that the ECB's tools have complementary effects, forgoing QE would reduce the package's efficiency and obviously be the cause of significant disappointment in the capital markets. Financial conditions would be tightened. This is a powerful argument for winning over the undecided. We think that Mr Draghi will succeed in convincing the majority (but not the entirety) of the Council to launch a new asset purchase programme. How much? We think that the budget will be around half of the first programme's total, i.e. in the region of € 30bn per month. How long? As is the case for the forward guidance, it would make little sense to commit for less than one year. Investment universe? There is not much appetite for introducing new asset classes such as bank debt, and even less for equities. The investment structure should be an extension of the current situation with government bonds predominating (85% of the total) and the rest mainly consisting of corporate debt. The resumption of QE might require some adjustments to the investment criteria, such as a 33% limit per issuer. We see these as

[25] See Lane (2019), "Monetary policy and below-target inflation", speech given on 2 July.
[26] Here we can include J.Weidmann (Germany), S.Lautenschläger (Board), Y.Mersch (Board), K.Knot (the Netherlands), R.Holzmann (Austria).

technical details that are of secondary importance compared with the critical question of whether the ECB will re-inflate its balance sheet by purchasing assets.

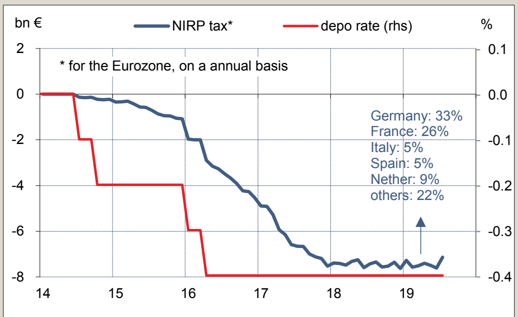
The meeting of 12 September is the penultimate to be chaired by Mario Draghi before his term as ECB president expires on 31 October. It is therefore his last chance to mark his influence – is there any need to say how much the ECB has changed in the past eight years? – and a means of preparing for a smooth transition with Christine Lagarde. If Mr Draghi, against our expectations, does not succeed in gaining approval for a QE programme, the signal for the future president would be particularly negative. The task lying ahead for Ms Lagarde is by no means an easy one. Monetary policy tools have already been largely used and their effectiveness, as we have seen, is increasingly challenged. It is commonplace for central bankers to say that monetary policy cannot do everything and that greater use of fiscal or regulatory policies is needed to support activity. This is a line that Ms Lagarde has often taken at the IMF. But in the Eurozone, there is no certainty that there will be closer co-operation between the ECB, the decentralised national authorities in charge of domestic budgets and the community budget which is not large enough to achieve macroeconomic stabilisation.

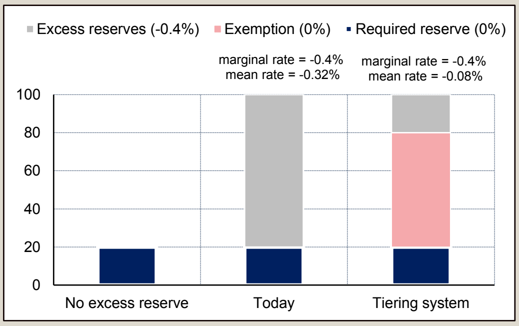
Box 2– Negative rates and tiering system

Once the ECB embarked on a negative interest rate policy (NIRP) in 2014, criticism quickly emerged to decry the damaging effects of this policy for savers and banks. The ECB produced several studies to defend the importance of seeing monetary policy in all its facets, rather than focus just on negative interest rates. The argument put forward by the ECB at the time was that by helping the real economy, monetary policy had a positive net impact on banks' profitability[(1)]. It is true that NIRP does compress their interest margins, which is a negative side effect, but on the other hand there is a greater positive direct impact through the decline in credit default rates and capital gains[(2)].

These arguments have been debunked as policy rates are still negative five years later. Apart from a few cases (businesses, large depositors), banks cannot actually tax the deposits of their clients and their interest margin is further eroded. Moreover, capital gains are occasional and non-recurrent. Could not there be a level of policy rate (reversal interest rate) from which the direct effects are outweighed by the side effects so that monetary easing results in a contraction and not an expansion in the supply of bank credit? That is the big question. Currently, there is no blockage in the credit channel, but it is a risk if NIRP is stepped up. At present, with the deposit rate at -0.4%, banks' excess reserves equate to a drain on their profit of around € 8bn a year (lhs chart). Moreover, the problem is that the impact of the "NIRP tax" varies widely across the banking sectors of Eurozone countries. Close to 60% of the excess reserves are currently held by German and French banks.

Under these conditions, the ECB has begun to adjust its initial assertion, acknowledging a sizeable effect on banks' profits and ultimately on their market valuation[(3)], while emphasising that the low profitability of the banking sector reflects many other factors than its own policy (digitisation costs, increasing regulatory requirements, lack of consolidation). To offset NIRP's side effects, a tiering system to tax excess reserves is one solution. Several central banks (Japan, Switzerland, Denmark) have implemented a system of this kind. The arrangements may vary, but the general idea is to make a portion of the excess reserves exempt, or to "tax" them at a different rate from the deposit rate. For example, if 75% of the reserves were exempted, it would be possible to increase (in other words make less negative) the average rate of reserve taxation without modifying the marginal rate which guides market rates (rhs chart). This would mean a significantly lower bill for the banks, even if the deposit rate is reduced further.





(1) ECB (2015), Critique of accommodating central bank policies and the 'expropriation of the saver'. (2) Coeuré (2016), Assessing the implications of negative interest rate. (3) ECB (2019), Do low interest rates hurt banks' equity values?

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