

In case you missed it: Emerging markets in turmoil

A flash crash in the Turkish lira, a double shot of sanctions on Russia and weakness in the Chinese yuan sent ripples through global markets this week, sparking concern that Europe and the US could be drawn in, just as Brexit risks mount and the US yield curve flattens out. Can the strain be contained or should we worry about contagion?

In this bundle



FX | Turkey

Turkey flash crash: Chaotic contagion

A sharp drop in the Turkish lira could have implications for Europe's banks and the Federal Reserve's interest rate path. We expect the yen to...



FX ...

A weaker Chinese Yuan: Contagion or confusion for global currencies?

While weakness in the Chinese yuan (CNY) is being touted as a source of global market risk, we find limited evidence of broad-based contagion from...



United Kingdom

Four charts show the risk of a 'no deal' Brexit to the UK economy

Talk of a 'no deal' Brexit is ramping up as UK lawmakers remain divided on future European trade. We still think it's more likely that an...

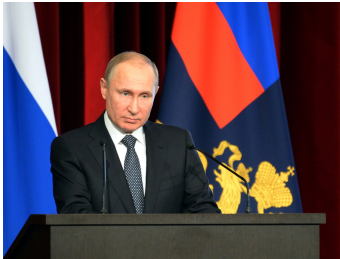
By James Smith



United States

US yield curve: Self-fulfilling prophecy?

Like everyone else, the Fed is watching the yield curve for signs of the next recession. But it seems unsure on what signal to take from the flattening curve



FX | Russia

Russia: Hit by a double shot of sanctions

Russian assets have sold off heavily over the last 24 hours on the back of two US sanctions stories. The mood in the US Congress towards Russia certainly...

By Chris Turner and Egor Fedorov



US yield curve and recession risk - watch the shape not the slope

With the 2s10s yield curve on a persistent flattening trend and dipping below 25bp last month, talk about a possible downturn in 2H19/2020 has heated up....

By Benjamin Schroeder and Padhraic Garvey, CFA



Argentina

Argentina oil & gas: Unleashing its potential

The oil and gas sector in Argentina is moving in the right direction, with the liberalisation of the domestic market. A number of obstacles remain....

By Warren Patterson

Turkey flash crash: Chaotic contagion

A sharp drop in the Turkish lira could have implications for Europe's banks and the Federal Reserve's interest rate path. We expect the yen to remain a preferred safe-haven vehicle



Source: iStock

USD: Hard to talk economics amid geopolitical turmoil

While we think the short-term cyclical US dollar dynamics may have peaked – with today's US CPI data likely to corroborate this view – it is difficult to credibly pitch any short-term economic view when global FX markets are grappling with a significant degree of geopolitical angst and unprecedented wild swings. In this environment, the mindset will remain 'default to dollars' – not least when the Fed is seemingly the only central bank tightening in any sustained manner. Were these emerging market gyrations to continue, however, one could imagine that the Fed may have to consider a pause in its tightening cycle – a stance we saw adopted in 2016 (Chinese yuan weakness and Brexit). From a data standpoint, the focus will be on July US CPI today; it's interesting to see US Treasury yields holding up fairly well despite the market turmoil that we are seeing in the emerging markets world. This may not last if things were to get worse – and if there is no major upside surprise in US CPI inflation, investors could start to rethink a more hawkish Fed. Still, look for the dollar index to move higher towards 96 as risk-off prevails.

EUR: ECB bank warning & Turkish lira flash crash sees rising contagion risks

EUR/USD decisively broke through the 1.1500 support level amid reports that the European Banking supervisor is looking at the exposure of European banks to the Turkish banking sector – where a weaker lira is posing a risk. With the TRY collapsing in the early European trading hours, and USD/TRY breaking above the 6.00 level, we see limited scope for a EUR/USD rebound in the short-term. That said, during the sharp TRY sell-off this morning, the spillover into the EUR was limited (non-existent) – implying that the euro contagion effects may be more muted than initially feared. This may hold for the time being unless the implications for the European banking sector deteriorate materially.

JPY: A preferred safe-haven vehicle amid a fragile global market environment

Along with the US dollar, we expect the yen to remain a preferred safe-haven vehicle. Stronger-than-expected 2Q Japanese GDP data overnight will likely go under the radar today; however, we feel the rebound in the economy – coupled with a slightly less dovish Bank of Japan – will enable the yen to revert back to exhibiting its usual safe-haven characteristics in a fragile global market environment. Long JPY against EMEA FX is a good tactical play as the balance of risks is for further weakness in EMEA markets, which may negatively impact on global risk.

EMEA FX: Russia, Turkey on ropes as US sanctions deliver sucker punch

It's been a torrid time for the TRY and the rouble – both on the receiving end of US sanctions. In the near-term, there seems little Russian authorities can do – or in fact would want to do – to take the pressure off the RUB since it is US Congress driving the story here. We think an additional risk premium priced into the RUB and a positioning adjustment from asset managers [could send USD/RUB to 70](#). Conversely, the near-term path for the TRY is more in the hands of Ankara. The Finance Ministry may provide some insights into its 'New Economic Model' later today – perhaps with reference to budget deficits to address fiscal imbalances. But we doubt Turkey is ready to limit its fiscal flexibility right now. And without measures to address its inflation problem, TRY will likely remain under pressure.

Author

Viraj Patel

Foreign Exchange Strategist

+44 20 7767 6405

viraj.patel@ing.com

A weaker Chinese Yuan: Contagion or confusion for global currencies?

While weakness in the Chinese yuan (CNY) is being touted as a source of global market risk, we find limited evidence of broad-based contagion from independent CNY weakness – with the spillover effects varying across regions and specific currencies. Our view for a more stable CNY could see Asia FX tactically outperform the more vulnerable CEEMEA FX space



Key messages: Limited signs of broad-based contagion from a weaker CNY

- While in the currency space, the Chinese yuan (CNY) has been one of the biggest direct casualties of President Trump's rampant trade war, we attempt to unravel the extent to which CNY weakness has been a source of risk for global FX markets.
- We find limited evidence of broad-based contagion from independent (non-USD-related) CNY moves in the current trade war episode – with the spillover effects varying across regions and specific currencies. We also note that the spillover effects vary over time depending on the prevailing PBoC FX policy regime.
- Regional disparities show that Asian FX suffered the most collateral damage from a weaker

- CNY as the US-China trade war has escalated, with the cross-correlations between other EM FX blocs (Latam and CEEMEA) and the yuan significantly lower.
- We expect the removal of CNY weakness as a source of market risk to remove the depreciation bias in highly correlated currencies – and allow for both a relative relief rally and local factors to dictate currency movements. While under benign conditions, Asian currencies would have probably seen a sharper relief rally under a more relatively stable CNY, the current market turmoil in EM FX – namely Turkey and Russia – is likely to counteract any broad move lower in USD/Asia FX.
 - We think a more stable CNY could allow for a relative outperformance of Asia FX versus CEEMEA FX – with the latter group of currencies playing catch-up to the more oversold Asian currency bloc. More specifically, we also see some spillovers from the fragile risk environment (TRY collapsing, USD/CNY higher, EUR/USD below 1.1500) into the CEE FX – with HUF underperforming the CEE region.
 - With EMEA a source of geopolitical risk, we think it will be difficult for the ZAR to also stabilise – in effect the Rand's source of market risk has shifted from a weaker CNY to a weaker TRY and RUB.

PBoC FX policy regime influences CNY co-movement with global currencies

Ever since the PBoC devalued the yuan on 11 August 2015 – a move that was seen to make the currency more flexible and free-floating – sharp movements in USD/CNY have anecdotally been an important source of market risk for global currencies (notably those that are particularly sensitive to the Chinese trade or commodity story). But as the PBoC's FX policy has evolved since August 2015, so too has the relative importance of USD/CNY movements in influencing global FX markets.

We attempt to unravel to the extent to which CNY weakness of late has been a dragging force on currencies elsewhere. In line with a [recent study by the BIS](#), we identify three PBoC FX policy phases since the CNY devaluation on 11 August 2015: (1) **Transition** after the fixing reform; (2) **Basket management** that was aimed to keep CNY stable against major trading partner currencies; (3) **Countercyclical management** that gave the PBoC some flexibility to prevent herd-like behaviour in markets. We also add a fourth phase to depict the start of the **US-China trade war** era (see Box 2 at the end of the note for more detail on the four CNY policy phases).

The second chart below shows that the rolling correlation between daily moves in CNY and three regional FX baskets (Asia, Latam and CEEMEA) has ebbed and flowed materially since August 2015 – with changes in the PBoC FX policy approach broadly marking distinct regime shifts. Here we make our first two concluding observations:

1. **Asian currencies have retained the tightest correlation with USD/CNY moves since the US-China trade war began**, while other regional currency blocs have been less tightly correlated. Latam FX overall has been driven more by local factors than CNY weakness.
2. **The PBoC FX policy regime matters for the overall correlation between USD/CNY and global currencies** – with global currencies generally more sensitive to CNY depreciation episodes (as opposed to CNY appreciation episodes). Should CNY weakness persist, [our economists believe the PBoC's likely next step would be a return to the 'countercyclical factor'](#) – and this in itself could be seen as the central bank steadying the USD/CNY ship. In this instance, we would expect USD/CNY stability to also remove the depreciation bias in highly correlated currencies – and allow for both a more sizable relief rally and local factors

to dictate currency movements.



Individual currencies show differentiation in their sensitivity to CNY

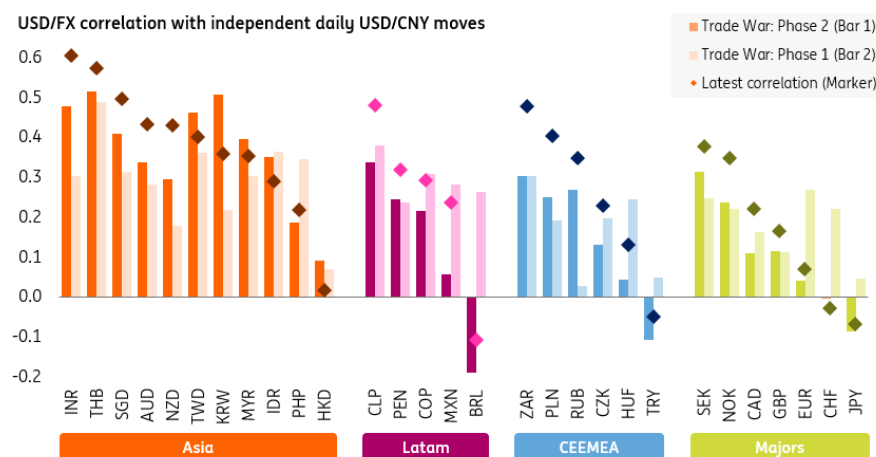
Focusing on the current trade war episode, we break down the USD/CNY move higher into two distinct phases. The initial move from 6.25 to 6.40 was largely a broad USD-related move – with the greenback gaining ground on the back of a short USD positioning adjustment and higher US rates story. The second leg higher in USD/CNY, from 6.40 to 6.85-6.90 (current), is what we deem to be more idiosyncratic CNY weakness – and coincides with the Trump administration escalating the US-China trade war by looking into US\$200bn worth of tariffs on Chinese imports.

The chart below shows the correlation of individual currencies to independent CNY moves during these two phases. To draw a more accurate inference of the co-movement between CNY and global currencies, we control for daily USD/CNY moves that are broadly USD related (see Box 1 at the end of the note for our methodology).

While the regional disparities are clear – with Asia FX exhibiting a structurally higher co-movement with CNY during Phase 2 of the current Trade War – there are also some interesting intra-regional disparities. Within Latam, the **Chilean peso (CLP)** has been most sensitive to CNY weakness – given

its particular sensitivity to the Chinese commodity (copper) trade story. Within CEEMEA, the **South African Rand (ZAR)** has exhibited the tightest co-movement with CNY – again for a similar reason given ZAR's sensitivity to the commodity markets.

Cross-correlations between CNY and global FX in the 2018 Trade War era



Source: ING estimates, Bloomberg, Macrobond. Note: Chart shows average of 40-day rolling correlations for sample period. Also see Box 1 below for the methodology we use to determine independent CNY moves

Two scenarios going forward: CNY slump or CNY stability?

The purpose so far has been to highlight the limited evidence of broad-based contagion from the recent sharp CNY depreciation. Pinpointing the differentiation in the sensitivity of individual currencies to USD/CNY moves can help to identify any relative value opportunities – based on the two broad scenarios for CNY going forward:

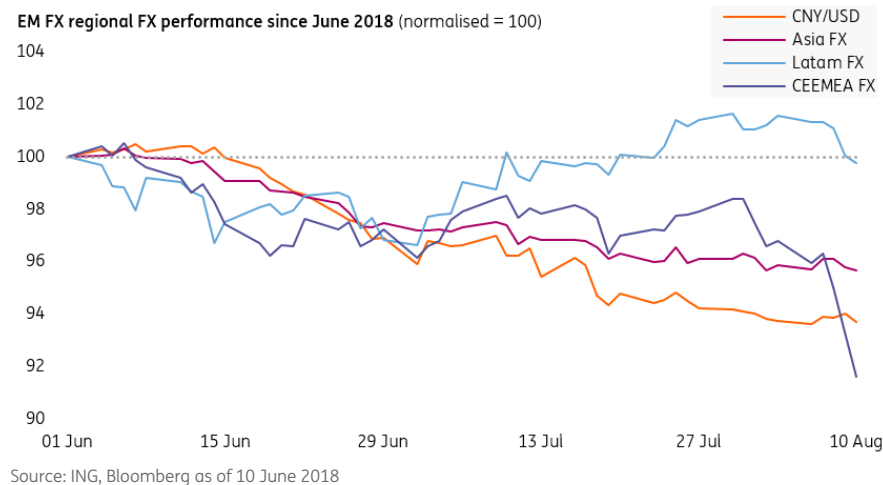
1. Relative CNY stability (base scenario)

We think the PBoC's re-introduction of the [forward trading reserve requirement](#) last week was a strong signal that officials may be looking to draw a line under the sand for CNY weakness. While we may see CNY move lower in days when the USD is broadly strengthening – ING's Greater China Economist, Iris Pang, does not expect to see any sharp idiosyncratic CNY depreciation (see alternative case below). In effect, the PBoC's signal of intent for a stable CNY – and the possibility of introducing further tools to stabilise the currency (ie, the reintroduction of the countercyclical factor) – may see a subtle shift in the trade war trading dynamics, with broader global markets becoming less sensitive to any pick-up in headline noise.

This relative stability in USD/CNY may also help to stabilise those currencies most sensitive to the yuan (ie, Asia FX). While under benign conditions, Asian currencies would have probably seen a sharper relief rally, the current market turmoil in EM FX – namely Turkey and Russia – may counteract any broad move lower in USD/Asia FX. Instead, we expect the removal of CNY weakness as a source of market risk to foster a convergence between Asia FX and CEEMEA FX – with the latter group of currencies playing catch-up to the more oversold Asian currency bloc. With EMEA a source of geopolitical risk, we think it will be difficult for the ZAR to also stabilise – in effect the Rand's source of market risk has shifted from a weaker CNY to a weaker TRY and RUB.

2. Sharp idiosyncratic CNY depreciation (alternative scenario)

If we were to see further idiosyncratic CNY weakness stemming from an escalation in the global trade war – then we would expect those currencies most sensitive to independent CNY moves to remain under pressure. In particular, ZAR could find pressure from both a weaker EMEA FX complex – as well as further weakness in CNY and commodities.



Box 1: Methodology to identify independent daily CNY moves

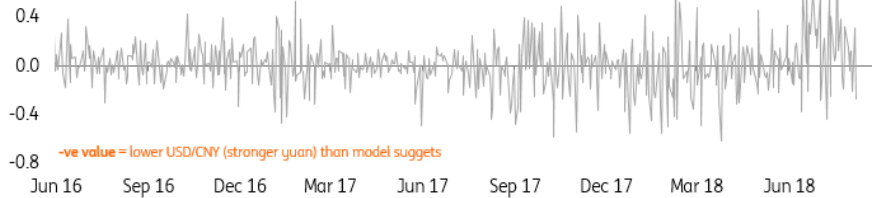
To differentiate between USD-related and independent CNY moves, we regress daily changes in USD/CNY on both daily and lagged daily changes in the DXY index over a 40-day rolling window. We then define the residuals of this regression as **independent CNY moves** (top panel of chart below) – that is clean of any broad USD movements. Running cross-correlations using these independent CNY moves allows us to make better-unbiased conclusions over the co-movement between CNY and global currencies.

The bottom panel of the chart below shows the coefficient of the DXY index in our USD/CNY regression. What's interesting to note is the step-change lower in sensitivity of USD/CNY moves to daily DXY changes since mid-June – which is around the same time that President Trump ordered the US trade representative to investigate additional tariffs on US\$200bn-worth of Chinese imports. Therefore, one could argue that the second leg higher in USD/CNY since mid-June (from 6.45-6.50 to 6.85-6.90) was more idiosyncratic CNY weakness due to heightened trade war risks and PBoC policy easing. It is the cross-correlations during this phase that we are particularly interested in to determine those currencies most sensitive to CNY weakness.

Regression-based analysis to determine independent CNY moves

Independent daily moves in USD/CNY (%)

0.8 +ve value = higher USD/CNY (weaker yuan) than model suggests



Model regression beta



Source: ING FX Strategy, Macrobond, Bloomberg. Note: Model regresses daily changes in USD/CNY on daily and lagged daily changes in the DXY index over a rolling 40-day window

Box 2: A brief history of PBoC FX policy since August 2015

Adopting a similar framework to a [recent BIS study](#), we identify four PBoC FX policy phases since the CNY devaluation on 11 August 2015:

1. **Transition** (18/08/2015 to 13/02/2016): In addition to introducing a reserve requirement on trading FX forwards for domestic banks, the PBoC aimed to provide stability in the CNY market following a period of turbulence after the fixing reform in August 2015. However, a couple of sharp moves lower in CNY – notably at the start of 2016 – continued to unsettle markets, with CNY fixing confusion reigning high.
2. **Basket management** (14/02/2016 to 25/05/2017): A distinct change in the CNY policy dynamics can be linked to an interview given by then PBoC Governor Zhou in mid-February 2016. The interview suggested that the PBoC would adopt a stable CNY against a basket of currencies – and while this didn't transpire in the subsequent months, the BIS notes that the predictability in the CNY fixing (based on the prior day's move) helped to ease market nerves.
3. **Countercyclical management** (26/05/2017 to 09/01/2018): With the USD turning lower in 2Q18 after some [jawboning from President Trump](#), the PBoC introduced a 'countercyclical factor' into the CNY fixing mechanism. The aim was to avoid a herd-like behaviour in CNY markets – that could lead to currency overshooting (no longer was the prior day's move incorporated in the fixing). This didn't stop CNY moving lower amid broad-based USD weakness – with the PBoC relaxing its forward reserve requirement in September 2017. The 'countercyclical factor' was altogether removed on 9 January 2018.
4. **Trade Wars** (22/03/2018 to present): While President Trump announced tariffs on steel and aluminium at the beginning of March, we note that the bilateral trade war between the US and China did not heat up until 22 March – when President Trump

instructed the US Trade Representative (USTR) to investigate US\$50bn worth of tariffs on China. This coincided with a turning point in USD/CNY – with the yuan embarking on a period of sharp depreciation.

Please see [Recent RMB policy and currency co-movements](#) (McCauley and Shu, 2018) for a more detailed history of CNY policy since August 2015.

Author

Viraj Patel

Foreign Exchange Strategist

+44 20 7767 6405

viraj.patel@ing.com

Four charts show the risk of a 'no deal' Brexit to the UK economy

Talk of a 'no deal' Brexit is ramping up as UK lawmakers remain divided on future European trade. We still think it's more likely that an agreement will be struck to prevent the UK from crashing out of Europe without a deal, but if we're wrong, here are a few key ways the economy could be hit



Source: Shutterstock

Talk of 'no deal' is ramping up significantly



Source: Bloomberg

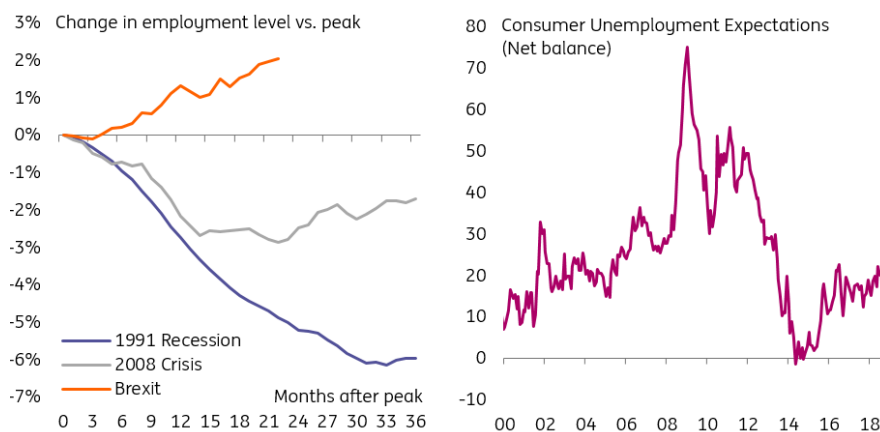
There are 233 days to go until Brexit and with negotiations stuck in deadlock, talk of 'no deal' is ramping up. The number of news stories discussing the topic has spiked, while Google searches for 'no deal Brexit' have surged. This comes as the UK government prepares to outline its contingency preparations for a possible hard exit next March, something which International Trade Secretary Liam Fox suggested over the weekend now has a 60% probability of occurring.

At this stage, we still think it's more likely that the [UK and EU forge an agreement to avoid the hardest of Brexit scenarios](#), allowing the transition period to begin after March 2019. But the situation is highly uncertain and if we're wrong, the economic impact could be significant. Leaked UK government forecasts earlier this year suggested that without a deal, the economy could be [8% smaller over a 15-year horizon](#) relative to current projections.

There are many potential ways the economy could be hit if 'no deal' happens, but here we take a look at a few of the major factors at play.

[Find out how a 'no deal' Brexit could be avoided](#)

People have kept jobs so far - but that could change



Source: Macrobond, DG ECFIN

It's been a tough time for retailers since the Brexit vote. Consumers cut back as import prices rose, while higher minimum wage costs and increased business rates have placed heavy pressure on margins. But while households have become more frugal, spending hasn't completely collapsed, and the economy has so far avoided a recession. There are several potential reasons for this, but the fact that most people have kept their jobs is undoubtedly one of the most influential.

Employment has increased by 2% since June 2016, compared to sharp and prolonged declines during the previous two notable economic downturns. And whilst overall consumer confidence remains depressed, unemployment expectations remain very low by historical standards.

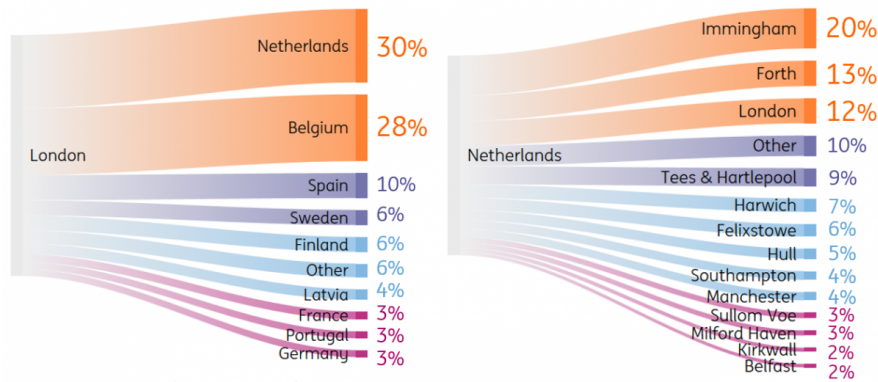
But this sentiment could face a serious test when the government begins to formally outline its 'no deal' preparations later this month. Press leaks so far suggest the proposed measures range from [food/medicine stockpiling](#) to [mooring electricity generators](#) off the coast of Northern Ireland. Having faced months of criticism for lack of 'no deal' preparation, the government is trying to demonstrate it's serious about potentially walking away from talks. You could also make the argument that by talking up the risks of 'no deal' now, the government may be attempting to get

Brexiters and opposition MPs to think twice about rejecting the final deal May agrees in Brussels.

But this could prove to be a risky approach. After all, food stockpiling is fairly unprecedented in a modern developed economy and it's not clear how people would react. Admittedly, we doubt many consumers are that fazed by the threat of 'no deal' at this stage. But as time goes on, it's not unimaginable that a few dramatic newspaper headlines could see consumers cut back on spending further, particularly if individuals begin to become more concerned about job security.

'No deal' could create major congestion – and not just at Dover

Proportion of gross tonnage of goods transported to/from London port* (left), Netherlands overall (right)



*Proportion of EU countries only (Non-EU countries excluded)

Source: Eurostat

There's little doubt a 'no deal' scenario would create significant disruption at borders, and the obvious point of friction is Dover. Much of the UK's trade with Europe is done by lorry via the Channel, and the British Freight Transport Association has estimated that even two-minute delays at customs could generate 29-mile queues back up the motorway into Kent.

But frictions at the UK's other major ports could be equally damaging. To understand why, consider the Port of London, the UK's third largest port by gross tonnage. Here 58% of total inbound and outbound traffic is to/from either the Netherlands or Belgium (it's a similar story at the UK's other big ports too). This is because the big Dutch/Belgian ports of Rotterdam, Antwerp and Zeebrugge are big re-exporters. Goods arrive from across the globe, and are put on smaller ships and transported to the UK (and vice versa).

But while the UK predominantly trades with a fairly narrow set of European ports, the same is not true the other way around. By our calculations, 70% of the UK's marine trade with Europe is spread across no less than nine different British ports. Delays at any one of these terminals could have serious ramifications for supply chains on both sides of the channel, as well as the smooth running of Northern European ports.

70% of the UK's marine trade with Europe is spread across no less than nine different British ports

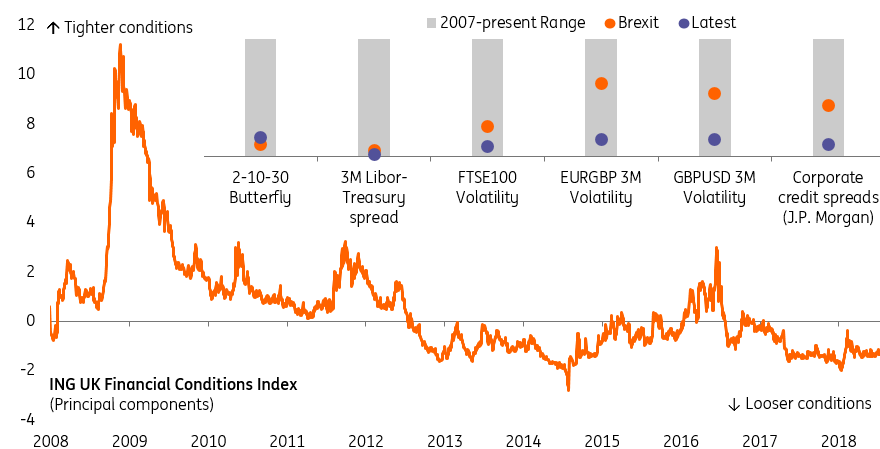
This is, of course, a bit of simplification. Different ports specialise in different goods, some of which

are typically subject to less regulatory/customs scrutiny than others. In any case, the UK may end up keeping its borders open in the immediate aftermath of a 'no deal' Brexit anyway.

That said, as our International Trade team points out, the UK's WTO obligations potentially mean it would have to extend this zero-tariff treatment to all its global imports, which could complicate future trade negotiations (because these conditions can't really be improved upon).

In any case, whether the EU would be so flexible is unclear. Brussels is already wary of the UK's customs approach, having imposed a €2 billion fine on the British government last year for failing to crack down on illegal Chinese imports. It therefore might not take long before the EU seeks to tighten up on border checks after Brexit.

Tighter financial conditions would cause problems on both sides of the channel



Index is a simple principal components analysis of yield curve slope, TED spread, credit spreads and the volatility of the FTSE100 and GBP

Financial conditions have been another key insulating factor for the UK economy since Brexit. Unlike earlier in the post-crisis years, credit and interbank spreads remained calm, while the initial spike in equity/currency volatility quickly subsided.

But the situation could look very different in the event of 'no deal'. The sudden elevation in uncertainty would likely spark a severe period of risk-off, where the flight to safety could see credit spreads widen and volatility spike. Even before March 2019, if the perceived risk of 'no deal' continues to rise, financial conditions could start to tighten well in advance of the EU exit date.

There are also major question marks over what would happen to financial passporting. Some kind of emergency stop-gap solution is not implausible (the UK has proposed a ["temporary permissions regime"](#)) - and the Bank of England is confident that financial firms have the capital to insulate themselves against the 'no deal' risk. However, the possibility of a sudden change in market access could see banks significantly tighten up on credit availability for households and businesses, amplifying the negative growth impact of lower confidence and production/supply chain disruption.

Of course, the one possible offset in all of this would be the pound. Sterling would likely plunge in

the event of a 'no deal'. But while the theory says this should help cushion exporters, we aren't so convinced. Given the complexity and globalised nature of supply chains, the impact of border frictions on just-in-time production is likely to far outweigh changes in pricing for exporters. After all, many UK firms that trade exclusively with Europe may have never had to deal with the practicalities of trading on WTO terms. Tariff schedules are typically very complex, and if firms get it wrong, dispute resolution can take many months.

This means that the primary effect of the weaker pound would likely be sharply higher prices for consumers.

[Read more about the threat to UK foreign direct investment](#)

So will a 'no deal' Brexit actually happen?

In the end, the answer to this question probably boils down to whether parliament accepts the withdrawal agreement Prime Minister Theresa May agrees with the EU.

The major sticking point in talks is the Irish backstop - the legally-binding agreement to maintain a frictionless border between Northern Ireland and the Republic. So far, the issue has proven highly contentious, not least because the UK government fears it could create regulatory barriers within the UK's own internal market.

But as 'no deal' fears mount, the EU appears to be offering an olive branch. Michel Barnier has hinted that the backstop could be "de-dramatised", potentially by making efforts to reduce infrastructure at the border, and even possibly [reducing the role of the ECJ](#).

Whether this will be enough to convince UK lawmakers is unclear. But as March 2019 draws nearer, Brexiteer MPs may be less inclined to vote against the overall withdrawal agreement in parliament. Rejecting this deal could raise the odds of another election, an extended article 50 period, or possibly even a second referendum - all of which are highly undesirable for Brexiteers because they would increase the risk of there being no Brexit at all.

So while the outlook for Brexit over the next few months is incredibly uncertain, we still suspect the most likely outcome is that a mixture of fudge and "de-dramatised" language sees the withdrawal agreement passed by a majority of UK MPs, allowing the transition period to commence.

Author

James Smith

Developed Markets Economist, UK

james.smith@ing.com

US yield curve: Self-fulfilling prophecy?

Like everyone else, the Fed is watching the yield curve for signs of the next recession. But it seems unsure on what signal to take from the flattening curve



Source: Shutterstock

The yield curve tells us about recession risk

The US economic expansion is now into its ninth year, the second-longest on record. So even as growth is hitting new heights, it's little wonder there is more and more anxiety about when the next recession might come along. In particular, the US yield curve has been under [increasing scrutiny](#). When short-term rates rise above long-term rates and the curve inverts - a recession usually follows. This is why the inverted yield curve is one of the most widely followed early warning indicators.

The yield curve's predictive power is generally believed to be derived from the way the curve captures investor's beliefs about the outlook for the economy. When the economy is expected to do poorly, investors prefer to lock in safe returns, which pushes long-term yields down relative to short-term yields, causing the curve to flatten and eventually invert.

If the Fed sees inversion as a reliable precursor of weaker growth, especially if it coincides with other signs of slowing growth, then an inverted curve could lead to slower hikes, or even a pause

But there is also an element of self-fulfilling prophecy going on here. If near-term yields are close to or higher than long-term ones, then banks and investors are incentivised to keep cash in relatively high-yielding short-term bonds rather than lend or invest in new projects which hampers economic growth in the near term. To the extent that markets take a flattening or inverted yield curve as a sign of trouble ahead, risk-aversion reinforces the adverse effect on the economy.

[Read: US yield curve and recession risk - watch the shape not the slope](#)

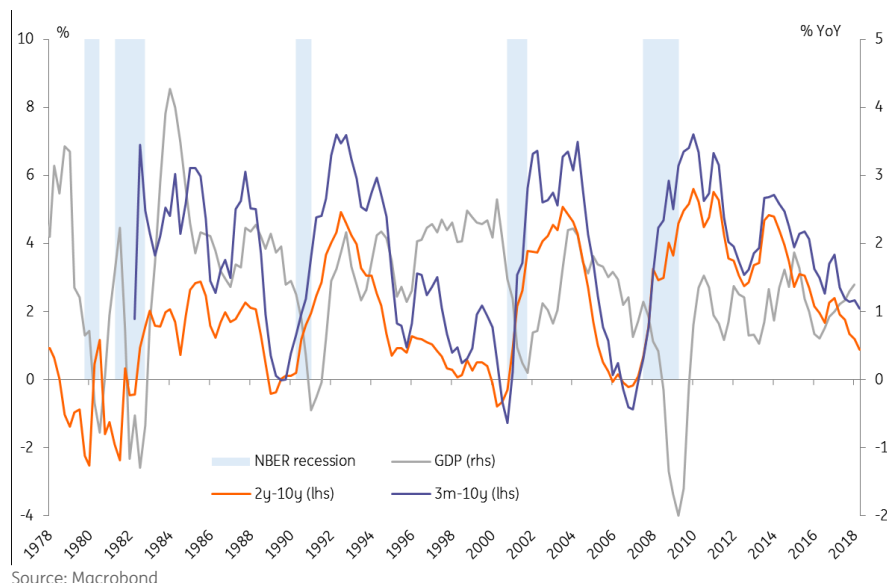
And it is flattening fast

The most commonly cited measure of yield curve inversion is probably the yield on a 10-year treasury bond minus that on a 2-year treasury bond. This relationship has turned negative ahead of each of the past nine recessions going back to the 1960s. Even when yield curve inversion turns out to be a 'false positive,' as in 1998, a flat or inverted yield curve typically coincides with a material slowdown in growth and a pause in the Fed's rate hike cycle.

The 3m-10yr curve, which Fed Governor [Lael Brainard recently cited](#), follows a similar pattern to the 2yr-10yr tends to invert closer to the start of a recession and has only produced one 'false positive' reading, back in the 1960s.

On both these measures, the US yield curve has flattened significantly over recent years. The 2y-10y curve is now just 29bps (vs. 51bps at the start of 2018), and the 3m-10y curve is at 93bps (from 101bps at the start of the year). History suggests this indicates a recession is more likely, though a downturn is probably not imminent just yet.

US yield curve inversion; measured by 2yr-10yr and 3m-10yr



But does the Fed believe it's different this time?

Fed officials have started to discuss the yield curve in recent speeches and [the minutes of the FOMC's June meeting](#) show that some are now questioning the reliability of the yield curve as an early warning signal.

"Participants pointed to a number of factors, other than the gradual rise of the federal funds rate, that could contribute to a reduction in the spread between long-term and short-term Treasury yields, including a reduction in investors' estimates of the longer-run neutral real interest rate; lower longer-term inflation expectations; or a lower level of term premiums in recent years relative to historical experience reflecting, in part, central bank asset purchases."

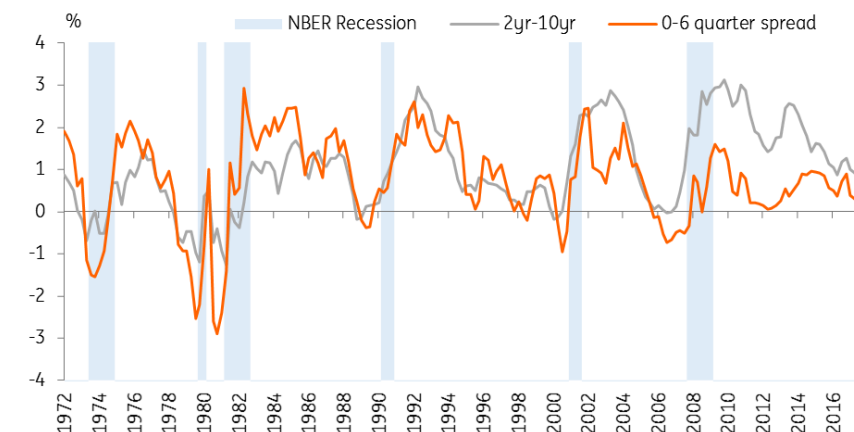
In short, some Fed governors appear to argue that yields on longer-term bonds, like the 10-year, are held down by a set of factors that either weren't present or were less important in previous economic cycles. That means the spread between short term and long term bonds will tend to be smaller than the past, and therefore may not have the same predictive value.

The minutes also show the Fed is looking at alternative measures that are less affected by term premia. Fed staff recently [published a comparison](#) of the predictive power of different measures of the yield curve. This research indicates that a shorter term curve comparing the current 3-month T-bill rate with the implied forward rate (on T-bills) six quarters ahead is a better predictor of an upcoming recession than longer tenor measures such as the 2yr-10yr.

Our rates strategists [also argue](#) that the 2yr5yr10 (butterfly) measure, which measures the shape of the curve across the short, medium and long-term tenors, is an accurate and more timely recession indicator, though it is also susceptible to quantitative easing distortions.

Both the measure favoured by Fed staffers and the butterfly measure favoured by our rates strategists have historically moved closely with the 2yr-10yr until 2008. In contrast to the 2yr-10yr and 3m-10yr measures, the shorter term curve has not flattened much in recent years and is broadly unchanged in 2018. If this is the better measure of recession probability, then there is less cause for concern about the growth outlook.

The Fed's shorter term yield curve measure compared to the 2yr-10yr curve



Source: Macrobond and Federal Reserve

So what does this mean for Fed policy?

How the FOMC interprets the yield curve could make a big difference to the policy outlook.

If policymakers think a flat 2yr-10yr curve is less worrying than history suggests and chose to focus on the shorter curve, they are more likely to keep hiking rates even if the longer curve inverts. If they see inversion as a reliable precursor for weaker growth then an inverted curve, especially if it coincides with other signs of slowing growth, could lead to slower hikes, or even a pause.

It's not clear where the balance of the committee sits on this question. Chairman Powell downplayed the importance of the yield curve in his recent testimony to Congress. But perma-dove [Neel Kashkari has argued](#) that the flat yield curve is another reason why he prefers fewer rate hikes than the FOMC's current plan, and a number of other rate-setters have also voiced concerns about how markets would react to an inverted yield curve.

The FOMC will be mindful that a similar debate played out towards the end of the last rate hike cycle in 2005-06. The yield curve then inverted and the Fed kept hiking and a recession followed by the end of 2007.

For now, the question remains a hypothetical one. Even on the 2yr-10yr measure, the curve is still some way from inverting and if we are right in thinking 10-year yields are likely to push back above 3% then the curve should remain positive for some time yet.

Meanwhile, the US economy is firing on all cylinders: unemployment is near record lows, GDP growth on track for 3% or more this year, and inflation is above target. That means the case for the Fed to keep gradually raising rates remains strong. And while the Fed will continue to keep an eye on the yield curve, as long as economic fundamentals remain solid we think the FOMC is unlikely to change course.

Author

Amrita Naik Nimbalkar

Junior Economist, Global Macro

amrita.naik.nimbalkar@ing.com

Mateusz Sutowicz

Senior Economist, Poland

mateusz.sutowicz@ing.pl

Alissa Lefebvre

Economist

alissa.lefebvre@ing.com

Deepali Bhargava

Regional Head of Research, Asia-Pacific

Deepali.Bhargava@ing.com

Ruben Dewitte

Economist

+32495364780

ruben.dewitte@ing.com

Kinga Havasi

Economic research trainee

kinga.havasi@ing.com

Marten van Garderen

Consumer Economist, Netherlands

marten.van.garderen@ing.com

David Havrlant

Chief Economist, Czech Republic

420 770 321 486

david.havrlant@ing.com

Sander Burgers

Senior Economist, Dutch Housing

sander.burgers@ing.com

Lynn Song

Chief Economist, Greater China

lynn.song@asia.ing.com

Michiel Tukker

Senior European Rates Strategist

michiel.tukker@ing.com

Michal Rubaszek

Senior Economist, Poland

michal.rubaszek@ing.pl

This is a test author

Stefan Posea

Economist, Romania

tiberiu-stefan.posea@ing.com

Marine Leleux

Sector Strategist, Financials

marine.leleux2@ing.com

Jesse Norcross

Senior Sector Strategist, Real Estate

jesse.norcross@ing.com

Teise Stellema

Research Assistant, Energy Transition

teise.stellema@ing.com

Diederik Stadig

Sector Economist, TMT & Healthcare

diederik.stadig@ing.com

Diogo Gouveia

Sector Economist

diogo.duarte.vieira.de.gouveia@ing.com

Marine Leleux

Sector Strategist, Financials

marine.leleux2@ing.com

Ewa Manthey

Commodities Strategist

ewa.manthey@ing.com

ING Analysts

James Wilson

EM Sovereign Strategist

James.wilson@ing.com

Sophie Smith

Digital Editor

sophie.smith@ing.com

Frantisek Taborsky

EMEA FX & FI Strategist

frantisek.taborsky@ing.com

Adam Antoniak

Senior Economist, Poland

adam.antoniak@ing.pl

Min Joo Kang

Senior Economist, South Korea and Japan

min.joo.kang@asia.ing.com

Coco Zhang

ESG Research

coco.zhang@ing.com

Jan Frederik Slijkerman

Senior Sector Strategist, TMT
jan.frederik.slijkerman@ing.com

Katinka Jongkind
Senior Economist, Services and Leisure
Katinka.Jongkind@ing.com

Marina Le Blanc
Sector Strategist, Financials
Marina.Le.Blanc@ing.com

Samuel Abettan
Junior Economist
samuel.abettan@ing.com

Franziska Biehl
Senior Economist, Germany
Franziska.Marie.Biehl@ing.de

Rebecca Byrne
Senior Editor and Supervisory Analyst
rebecca.byrne@ing.com

Mirjam Bani
Sector Economist, Commercial Real Estate & Public Sector (Netherlands)
mirjam.bani@ing.com

Timothy Rahill
Credit Strategist
timothy.rahill@ing.com

Leszek Kasek
Senior Economist, Poland
leszek.kasek@ing.pl

Oleksiy Soroka, CFA
Senior High Yield Credit Strategist
oleksiy.soroka@ing.com

Antoine Bouvet
Head of European Rates Strategy
antoine.bouvet@ing.com

Jeroen van den Broek
Global Head of Sector Research
jeroen.van.den.broek@ing.com

Edse Dantuma

Senior Sector Economist, Industry and Healthcare
edse.dantuma@ing.com

Francesco Pesole
FX Strategist
francesco.pesole@ing.com

Rico Luman
Senior Sector Economist, Transport and Logistics
Rico.Luman@ing.com

Jurjen Witteveen
Sector Economist
jurjen.witteveen@ing.com

Dmitry Dolgin
Chief Economist, CIS
dmitry.dolgin@ing.de

Nicholas Mapa
Senior Economist, Philippines
nicholas.antonio.mapa@asia.ing.com

Egor Fedorov
Senior Credit Analyst
egor.fedorov@ing.com

Sebastian Franke
Consumer Economist
sebastian.franke@ing.de

Gerben Hieminga
Senior Sector Economist, Energy
gerben.hieminga@ing.com

Nadège Tillier
Head of Corporates Sector Strategy
nadege.tillier@ing.com

Charlotte de Montpellier
Senior Economist, France and Switzerland
charlotte.de.montpellier@ing.com

Laura Straeter
Behavioural Scientist
+31(0)611172684
laura.Straeter@ing.com

Valentin Tataru

Chief Economist, Romania

valentin.tataru@ing.com

James Smith

Developed Markets Economist, UK

james.smith@ing.com

Suvi Platerink Kosonen

Senior Sector Strategist, Financials

suvi.platerink-kosonen@ing.com

Thijs Geijer

Senior Sector Economist, Food & Agri

thijs.geijer@ing.com

Maurice van Sante

Senior Economist Construction & Team Lead Sectors

maurice.van.sante@ing.com

Marcel Klok

Senior Economist, Netherlands

marcel.klok@ing.com

Piotr Poplawski

Senior Economist, Poland

piotr.poplawski@ing.pl

Paolo Pizzoli

Senior Economist, Italy, Greece

paolo.pizzoli@ing.com

Marieke Blom

Chief Economist and Global Head of Research

marieke.blom@ing.com

Raoul Leering

Senior Macro Economist

raoul.leering@ing.com

Maarten Leen

Head of Global IFRS9 ME Scenarios

maarten.leen@ing.com

Maureen Schuller

Head of Financials Sector Strategy

Maureen.Schuller@ing.com

Warren Patterson

Head of Commodities Strategy

Warren.Patterson@asia.ing.com

Rafal Benecki

Chief Economist, Poland

rafal.benecki@ing.pl

Philippe Ledent

Senior Economist, Belgium, Luxembourg

philippe.ledent@ing.com

Peter Virovacz

Senior Economist, Hungary

peter.virovacz@ing.com

Inga Fechner

Senior Economist, Germany, Global Trade

inga.fechner@ing.de

Dimitry Fleming

Senior Data Analyst, Netherlands

Dimitry.Fleming@ing.com

Ciprian Dascalu

Chief Economist, Romania

+40 31 406 8990

ciprian.dascalu@ing.com

Muhammet Mercan

Chief Economist, Turkey

muhammet.mercan@ingbank.com.tr

Iris Pang

Chief Economist, Greater China

iris.pang@asia.ing.com

Sophie Freeman

Writer, Group Research

+44 20 7767 6209

Sophie.Freeman@uk.ing.com

Padhraic Garvey, CFA

Regional Head of Research, Americas

padhraic.garvey@ing.com

James Knightley

Chief International Economist, US

james.knightley@ing.com

Tim Condon

Asia Chief Economist
+65 6232-6020

Martin van Vliet

Senior Interest Rate Strategist
+31 20 563 8801
martin.van.vliet@ing.com

Karol Pogorzelski

Senior Economist, Poland
Karol.Pogorzelski@ing.pl

Carsten Brzeski

Global Head of Macro
carsten.brzeski@ing.de

Viraj Patel

Foreign Exchange Strategist
+44 20 7767 6405
viraj.patel@ing.com

Owen Thomas

Global Head of Editorial Content
+44 (0) 207 767 5331
owen.thomas@ing.com

Bert Colijn

Chief Economist, Netherlands
bert.colijn@ing.com

Peter Vanden Houte

Chief Economist, Belgium, Luxembourg, Eurozone
peter.vandenhoute@ing.com

Benjamin Schroeder

Senior Rates Strategist
benjamin.schroeder@ing.com

Chris Turner

Global Head of Markets and Regional Head of Research for UK & CEE
chris.turner@ing.com

Gustavo Rangel

Chief Economist, LATAM
+1 646 424 6464

gustavo.rangel@ing.com

Carlo Cocuzzo

Economist, Digital Finance

+44 20 7767 5306

carlo.cocuzzo@ing.com

Russia: Hit by a double shot of sanctions

Russian assets have sold off heavily over the last 24 hours on the back of two US sanctions stories. The mood in the US Congress towards Russia certainly seems more aggressive and less predictable. Ahead of US mid-term elections in November, we expect a greater risk premium to be demanded of Russian asset markets



Russian President, Vladimir Putin, February 2018

What's the news on sanctions?

The first is the leak of the contents of a draft bill - the Defending American Security from Kremlin Aggression Act of 2018 (DESKAA) - which currently sits in the US Senate. The contents were roughly known, but the leak in the Russian Kommersant Daily provided the [full text of the bill](#) including naming eight Russian financial institutions with whom US persons would be prohibited from trading.

The leak also highlighted the threat that would prohibit US participation in new Russian sovereign debt issuance. Since Russia's annexation of Crimea in 2014, a series of US sanctions have so far avoided targeting Russian sovereign bonds, OFZs, largely because of the potential impact on US funds invested in Russia. Were the DESKAA bill to progress, it would certainly open a new chapter in the financial sanctions against Russia.

The second piece of news was the imposition of sanctions, largely on Russia's ability to buy US national security sensitive goods and technology. This followed the US State Department's finding that the Russian government had been involved in the use of chemical weapons in the Skripal attack in the UK. These sanctions can be extended if Russia does not deliver a commitment against the use of chemical weapons or does not allow UN inspectors into Russia – neither of which seems likely.

How has the Russian Rouble reacted?

In response, the rouble has sold off 4% against the dollar over the last 24 hours. Modelling the rouble is a challenging task in light of sanctions and the Finance Ministry's budget rule, which seeks to convert excess oil and gas revenues into hard currency. That said, ING's [Petr Krpata](#) has put a short-term financial fair value model together which tries to identify the amount of risk premium in the currency.

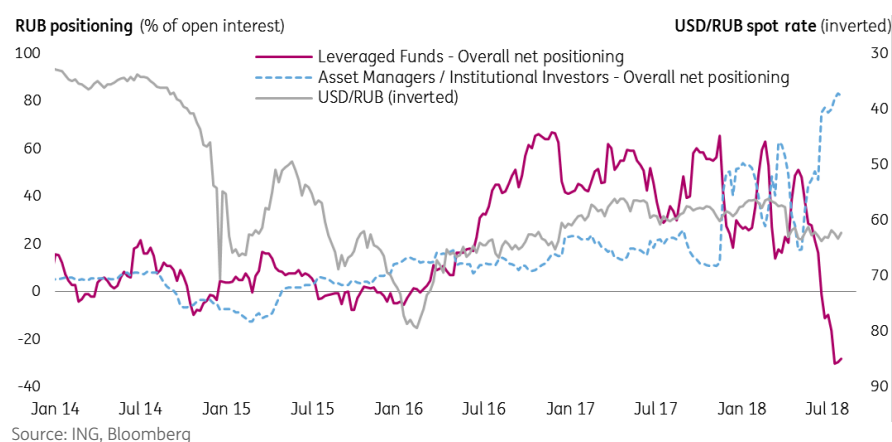
The rouble could easily fall another 2-3%

Based on the way the rouble has traded this year, the model suggests it could easily fall another 2-3% to match the risk premium seen in April when the US published secondary sanctions against Russian oligarchs and related businesses. Additionally, data put together by ING's [Viraj Patel](#) shows that asset managers are still running relatively large net long RUB positions – which could change were sanctions rhetoric to heighten over coming months.

These factors could easily send USD/RUB to the 70 area and perhaps prompt a reaction from Russian authorities either to:

- a: slow Finance Ministry purchases of FX from the budget rule or
- b: prompt a more hawkish response from the Central Bank of Russia.

Speculative positioning in the rouble: Asset Managers are long



What about the Russian bond market?

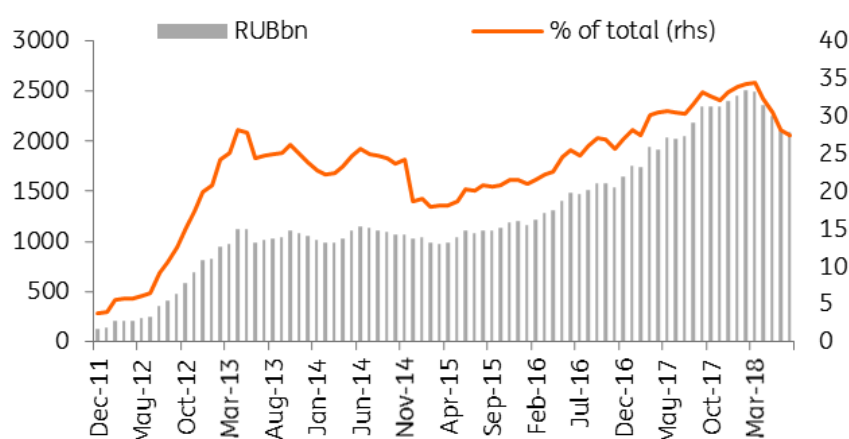
Russian 10-year sovereign OFZ yields at one point were 30-40bp higher on the sanctions news (widening 55-90bp over the last week), hitting the highest levels since March 2017), but have since retraced. Most investors we speak to continue to believe that OFZs will not be targeted with sanctions – clearly leaving room for some negative surprises were the DESKAA bill to make progress.

Most investors we speak to continue to believe that OFZs will not be targeted with sanctions

As our Moscow research team have noted, the OFZ yield curve rose 300-400bp after sanctions and lower oil prices in 2H14-1H15, but after a few months stabilised at 100-150bp over pre-spike levels. That kind of bond market sell-off would be at the extreme end of outcomes given a more balanced Russian economy than we saw in 2014. For reference, Russia's budgetary position is largely balanced now compared to the 1% of GDP deficit it was running in 2014 (3% deficit in 2015). And because of the budget rule, Russia's FX reserves are now back to US\$460bn versus the low point of US\$350bn seen in early 2015.

Non-residents owned 27.5% or around RUB2000bn (US\$32bn) of the Russian OFZ market at the end of July compared to 34.2% at the end of February 2018. Since February, non-residents' holdings in OFZ have been reduced by more than RUB400bn. Sales from non-residents were offset by strong demand from Russian local investors, banks and private pension funds. For reference foreigners sold RUB150bn worth of Russian assets in the 4Q14-1Q15 window. Additionally, non-residents hold larger shares of the US\$40bn sovereign Eurobond market and actively participate in the US\$120bn corporate Eurobond market.

Non-residents now hold 27% of the Russian OFZ market



Source: ING Moscow

Russia's sovereign risk

In the external credit markets, Russian's sovereign 5yr Credit Default Swap (CDS) and 10yr USD

denominated credit have both widened by 20bp over the last two days, with foreign investors looking to add protection and sell Russian exposure.

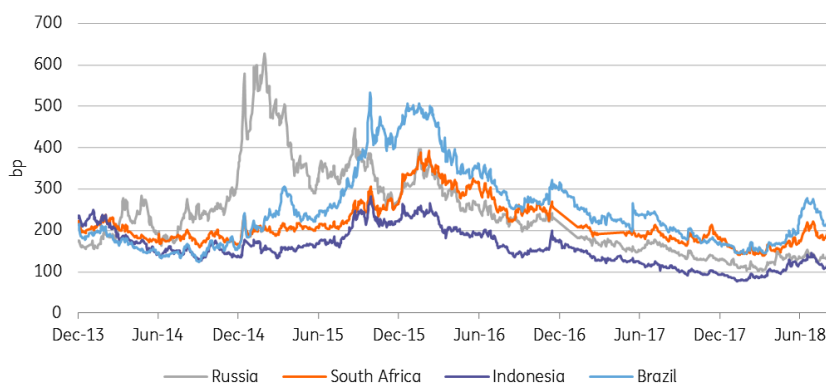
Ongoing sanctions talk will keep the pressure on

Ongoing sanctions talk will keep the pressure on but we are unlikely to see a sell-off to the extent we have seen in the second half of 2014 when Russia 5yr CDS widened from 180bp to 630bp when the first round of sanctions was introduced.

The government had planned to raise up to another \$3bn in sovereign bonds for the rest of this year. But while the budget rule has created additional demand for OFZ issuance, Russia is less reliant on tapping external markets thanks to strong external and fiscal balance sheets.

For now, we believe that spreads will stabilise around here although more concrete developments towards sanctions against sovereign debt and Russian banks could see Russia's 5yr CDS widen beyond those of South Africa - which has not been the case on a sustained level since end-2015.

Russia's sovereign CDS starting to widen



Source: ING, Bloomberg

Watch this space

We expect to hear more rather than less on US sanctions over the next few months. Of course, the DESKAA bill could be watered down over coming months to expedite progress, but it is certainly more aggressive than anything we've seen so far. For reference, the Senate returns from recess on Monday, August 13th but both Chambers of Congress are not in session until September 4th.

Expect markets to sharpen their focus on this DESKAA bill over coming months. And the congressional backlash against President Trump's meeting with President Putin in Helsinki this July would make it a seemingly impossible environment for Trump to veto such a bill were it to be passed by Congress. Needless to say, it looks like Russian assets are in for a tough few months.

Author

Chris Turner

Global Head of Markets and Regional Head of Research for UK & CEE

chris.turner@ing.com

Egor Fedorov

Senior Credit Analyst

egor.fedorov@ing.com

Article | 8 August 2018

US yield curve and recession risk - watch the shape not the slope

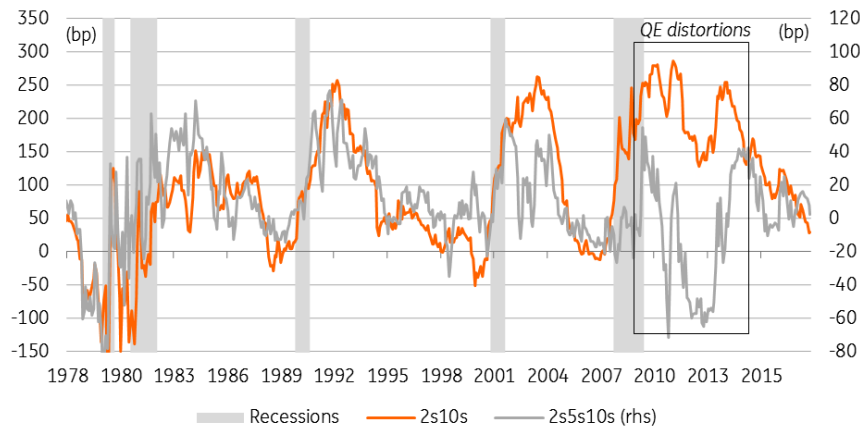
With the 2s10s yield curve on a persistent flattening trend and dipping below 25bp last month, talk about a possible downturn in 2H19/2020 has heated up. We don't think the US curve will invert anytime soon but when it does in 2019 keep an eye on 2s5s10s - the alternative bond market recession indicator



Source: Shutterstock

As we expect US 10-year Treasury yields to break back above 3% later this year, the 2s10s curve shouldn't invert anytime soon. When the curve does invert, possibly around mid-2019, a recession may not necessarily be around the corner, as the curve circumstances seem to resemble 2005/2006, when the term premium embedded in longer-dated yields was also very low. However, the message from a flat/inverted curve shouldn't be ignored, as it could hurt banks and the process of credit creation, potentially making an economic downturn self-fulfilling.

Ironically, if the Federal Reserve were to take it seriously and become reluctant to hike rates further – unlike in 1H06 when they hiked rates a further four times – it might reduce the likelihood of a near-term recession, as monetary policy probably wouldn't turn really restrictive. We closely watch the 2s5s10s (butterfly) valuations and Leading Economic Index to assess when a recession becomes truly imminent.



Source: Bloomberg, ING

The 'R' word is making inroads as 2s10s flattens relentlessly

Although lags can be long and variable, historically an inverted yield curve has been regarded as one of the best indicators of an impending recession in the US. With the 2s10s yield curve on a persistent flattening trend and dipping below 25bp last month, talk about a possible downturn in 2H19/2020 - when the effect of the fiscal stimulus will wear off - has heated up. The Fed has also interfered in the debate, [recently arguing](#) that market participants shouldn't fear the yield curve and start to look at a "near-term forward spread" (i.e. the spread between the 3-month rate six quarters forward and the 3-month spot rate), which doesn't indicate an elevated likelihood of recession as seen in figure 2.

Moreover, [as our economists have highlighted](#), the yield curve inversion does not make a recession inevitable, and there are reasons to believe the yield curve may be artificially depressed.

[The US yield curve keeps getting flatter, should we be worried?](#)

Is this time different?

Indeed, with the US 10-year rate dampened by ongoing albeit slowing, net quantitative easing in Japan and the Eurozone - by around 40 basis points on our estimates at the moment - the 2s10s curve may be flatter than it otherwise would have been. This is confirmed when comparing it to the stance of US monetary policy as measured by the difference between the real neutral rate and the real Fed funds rate: as policy is still somewhat accommodative, the curve should be some 30-50bp steeper than it currently is (Figure 3).

An alternative way of arriving at this conclusion is by looking at the subdued estimates of the term premium embedded in 10-year yields (Figure 4). Note that at the end of 2005, when the term premium was also low, the curve was even more out of whack with the policy stance. This helps explain why the Fed implemented a further four 25bp rate hikes in 1H06, after which it stopped its tightening cycle. In hindsight, though, the warning from the yield curve did *not* prove to be a false alarm. In this regard, we wonder whether a prolonged period of curve inversion, through the [effect on \(smaller\) banks](#) and credit creation, can potentially make a recession self-fulfilling.

2s5s10s – an alternative ‘recession indicator’

Rather than adjusting the term premium, as the Fed has done in an [earlier paper](#), we prefer to rely on another market indicator to gauge the recession risk – the 2s5s10s (butterfly) valuation, which basically captures the shape of the 2s10s yield curve. When 5-year is high relative to 2-year and 10-year yields, the curve is humped-shaped, and the 2s5s10s is high. For example, when 5-year yields are ‘relatively’ low, because markets price in a rate cutting cycle, 2s5s10s is low. Ignoring 2008-2014, when 2s5s10s was distorted because of the Fed's net QE policies, we find that a gross 2s5s10s valuation (long the belly, short the wings) of -20bp or lower historically entails a large risk of an impending recession.

To be sure, as the 2s5s10s (like the 2s10s) gave a wrong signal during the Asia crisis in 1998, we would also look – as a double check – at the Conference Board's *Leading Economic Index (LEI)*, which tends to drop below 0% YoY ahead of an impending recession. Encouragingly, both the 2s5s10s valuation and LEI, albeit having eased, haven't set off alarm bells yet (Figure 5).

Fig 2 2s10s vs “near-term forward spread”

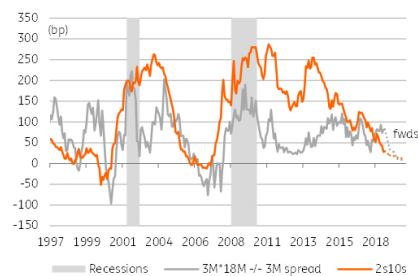


Fig 3 2s10s vs monetary policy stance

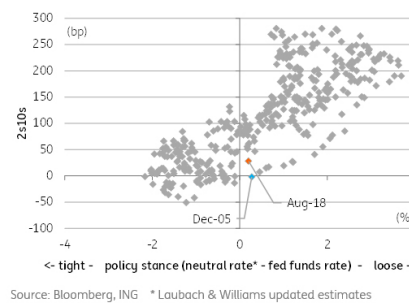


Fig 4 2s10s vs 10yr term premium estimate

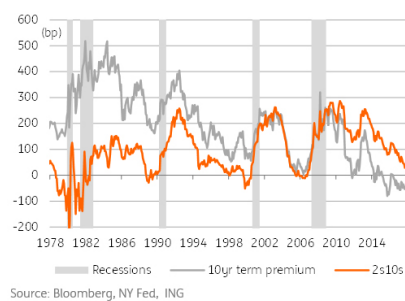
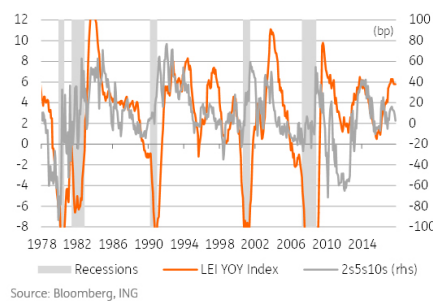


Fig 5 2s5s10s vs Conference Board's LEI



Author

Martin van Vliet

Senior Interest Rate Strategist

+31 20 563 8801

martin.van.vliet@ing.com

Benjamin Schroeder

Senior Rates Strategist

benjamin.schroeder@ing.com

Padhraic Garvey, CFA

Regional Head of Research, Americas

padhraic.garvey@ing.com

Argentina oil & gas: Unleashing its potential

The oil and gas sector in Argentina is moving in the right direction, with the liberalisation of the domestic market. A number of obstacles remain. Transitioning from a regulated to free market will always be tough, as it is a challenge finding a balance between keeping consumers content and attracting investment



In this report, we discuss the steps taken by the Argentinian government to help grow the domestic hydrocarbons industry, and how we see the production outlook evolving over the next several years.

Author

Warren Patterson

Head of Commodities Strategy

Warren.Patterson@asia.ing.com

Disclaimer

This publication has been prepared by the Economic and Financial Analysis Division of ING Bank N.V. ("ING") solely for information purposes without regard to any particular user's investment objectives, financial situation, or means. *ING forms part of ING Group (being for this purpose ING Group N.V. and its subsidiary and affiliated companies)*. The information in the publication is not an investment recommendation and it is not investment, legal or tax advice or an offer or solicitation to purchase or sell any financial instrument. Reasonable care has been taken to ensure that this publication is not untrue or misleading when published, but ING does not represent that it is accurate or complete. ING does not accept any liability for any direct, indirect or consequential loss arising from any use of this publication. Unless otherwise stated, any views, forecasts, or estimates are solely those of the author(s), as of the date of the publication and are subject to change without notice.

The distribution of this publication may be restricted by law or regulation in different jurisdictions and persons into whose possession this publication comes should inform themselves about, and observe, such restrictions.

Copyright and database rights protection exists in this report and it may not be reproduced, distributed or published by any person for any purpose without the prior express consent of ING. All rights are reserved. ING Bank N.V. is authorised by the Dutch Central Bank and supervised by the European Central Bank (ECB), the Dutch Central Bank (DNB) and the Dutch Authority for the Financial Markets (AFM). ING Bank N.V. is incorporated in the Netherlands (Trade Register no. 33031431 Amsterdam). In the United Kingdom this information is approved and/or communicated by ING Bank N.V., London Branch. ING Bank N.V., London Branch is authorised by the Prudential Regulation Authority and is subject to regulation by the Financial Conduct Authority and limited regulation by the Prudential Regulation Authority. ING Bank N.V., London branch is registered in England (Registration number BR000341) at 8-10 Moorgate, London EC2 6DA. For US Investors: Any person wishing to discuss this report or effect transactions in any security discussed herein should contact ING Financial Markets LLC, which is a member of the NYSE, FINRA and SIPC and part of ING, and which has accepted responsibility for the distribution of this report in the United States under applicable requirements.

Additional information is available on request. For more information about ING Group, please visit www.ing.com.