

Market Outlook 2020

December 2019



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Global Macro

Trade truce or trade Armageddon?

Our economic outlook for 2020 and beyond is hinged on whether the US and China reach a trade deal or not. If they fail to reach a deal, the global economy is likely to slide into a recession – the beginning of which is already started. However, we acknowledge that this is a Presidential election year in the US, and while President Trump is trying to deliver on his prior election promises (including tightening trade), he will be averse to tipping the economy into a recession at this pivotal point. He is likely to seek to get a deal done. But not too soon. Closer to the election, voters will remember him as the man who saved the US economy from the brink. However, this is a high-risk game. China is losing patience. China has already refused to acknowledge that they have reached what Trump declares is a "phase-one" of a trade deal. A fall-out from such a high-risk game could be catastrophic for the global economy. We could rule out a soft-landing in such case.

Manufacturing not services leads deceleration

The global economy has decelerated in 2019. That deceleration is rooted in trade. Trade has declined (**Figure 1**). Manufacturing – the sector most affected by the fall in traded goods – has shrunk (**Figure 2**). Services in advanced economies however remain buoyant (**Figure 2**). Most advanced economies are services based and so the manufacturing decline has not dented labour markets yet. However, we could see second-round effects of prolonged trade conflict, which no doubt will drag services along with it.

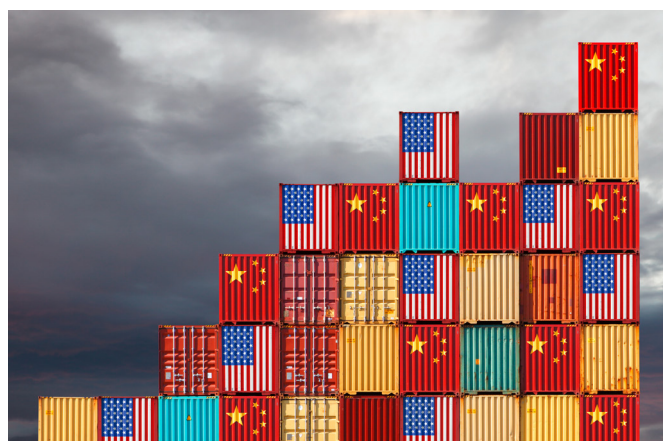
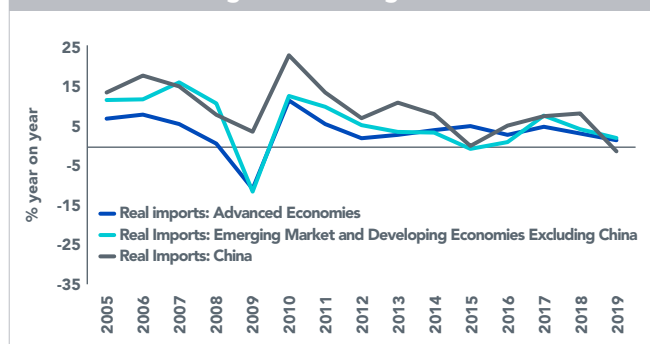
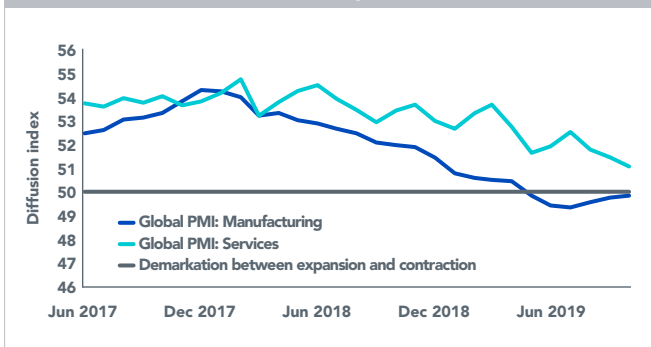


Figure 1: Real import growth is declining globally and outright contracting in China



Sources: WisdomTree, International Monetary Fund (IMF) staff estimates as of October 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

Figure 2: Contraction in manufacturing while services remain in expansion



Sources: WisdomTree, Markit Economics as of August 2019. PMI is Purchasing Managers Indices. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

With monetary policy space limited...

Policy makers have already started to act to ward off an economic recession. In advanced economies the heavy lifting so far has been done by monetary institutions. The Federal Reserve (Fed) in the US has begun to cut rates – and if trade wars continue they may carry on. Japan and large parts of Europe already have interest rates below zero and will have to rely on quantitative easing (QE) and more likely other creative tools to provide monetary stimulus. Quantitative easing has a bad reputation for asset price inflation rather than good/services inflation (playing to the adage it helps Wall Street rather than Main Street). The People’s Bank of China has loosened the policy setting (interest and reserve requirement).

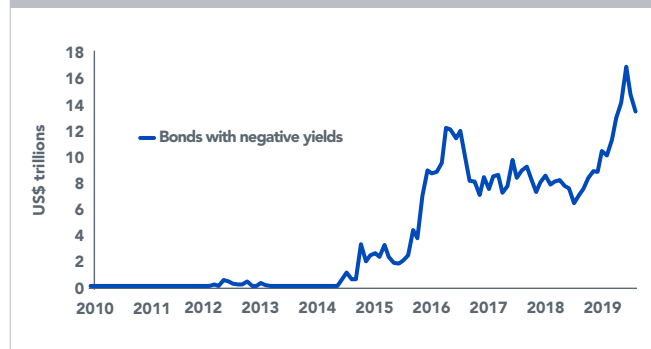
...could fiscal become the new monetary?

The European Central Bank has just hired President Lagarde, the politically astute former head of the International Monetary Fund and former Finance Minister of France. Simultaneously the European Commission has hired President Ursula Gertrud von der Leyen, the longest-serving member of Chancellor Angela Merkel’s cabinet. The combination we believe will lead to fresh, creative thinking in European institutions. With the European Central Bank (ECB) already declaring its policy space limited and needing to rely on fiscal institutions to play their part, we believe we could be inching closer to a form of Modern Monetary Theory. With Germany under acute pressure from being so trade exposed, even this fiscal hawk of a nation could change its tune. Some investors are worried that this could be highly inflationary in future years and are seeking refuge in historically safe-haven assets such as gold.

Falling policy rates shifts more debts into negative yields

More of the world’s debts have become negatively yielding. Yes, investors are paying issuers to borrow their money. In 2014 such a phenomenon was unheard of but in 2019, close to US\$14trn of such debts exist. Such is the demand for safe-haven assets that investors are willing to accept negative yield-to-maturity. In such an environment, other safe haven assets like gold – which used to be criticised for not yielding anything – look increasingly attractive.

Figure 3: Negative yielding debts close to US\$14trn

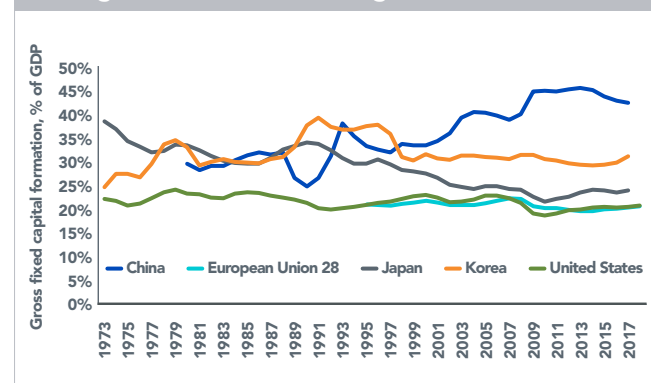


Sources: OECD, WisdomTree, EU 28 and US data to 2018, rest to 2017. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

The absence of China shock absorber

If we are indeed heading into another recession, will all monetary and fiscal authorities be firing all cylinders? After the Great Financial Crisis of 2008, in addition to monetary easing, China went on an infrastructure spending-spree. That can be seen with China’s gross-fixed capital formation as a percent of GDP jumping substantially higher in 2009, while in other industrialised countries it fell. The country accelerated its urbanisation programme, building many more roads and towns. That was a boon for global commodity markets and the global economy alike.

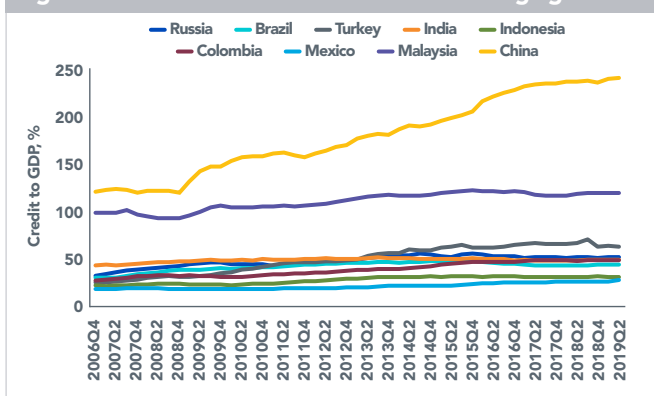
Figure 4: China’s white-knight moment in 2008



Sources: OECD, WisdomTree, EU 28 and US data to 2018, rest to 2017. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

We doubt we will see a repeat of this. China is too laden in debt this time. In fact, China’s response so far to economic weakening has been muted by the conflicting desire to cut back on financing (especially through the shadow banks that were so effective at credit dissemination over the past decade).

Figure 5: China has outsized debts for an emerging market



Sources: WisdomTree, IMF, International Financial Statistics (IFS), data available as of November 2019. **Historical performance is not an indication of future performance and any investments may go down in value.** Credit is other depository corporations' claims on the private sector (from IFS), except in the case of Brazil, for which private sector credit is from the Monetary Policy and Financial System Credit Operations published by Banco Central do Brasil, and China, for which credit is total social financing after adjusting for local government debt swaps.

China's willingness to adopt the role of global shock-absorber is now wafer thin. After the Great Financial Crisis, it maintained a policy of currency appreciation. Now China is letting its currency slide in line with fundamentals (see our FX outlook). Indeed, we would not rule out other countries pursuing a more beggar-thy-neighbour policy of currency depreciation.

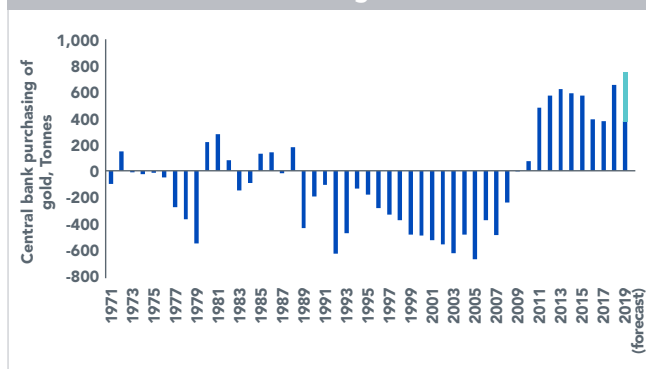
Risks are tipped to the downside, but what if a trade deal is struck early?

We focus on the downside risks because the Presidential election is far into the year (3 November 2020). We believe plenty of economic damage could be done before then if trade friction remains until late into the year. However, if a trade deal is struck early, we could get an extension of a rally in cyclical assets such as equities that we have witnessed over the past 5 years. Oil and industrial metals which have been undervalued for some time could rebound.

Policy normalisation could be back on the agenda. Central banks would be keen to re-build the policy space that they have lost.

But we wonder if international trust will ever be fully restored. Emerging markets, who often feel like the victim of US policy decisions may remain hesitant to go back to status quo. We know that many emerging central banks have been diversifying their reserve assets away from the US dollar and towards gold for example.

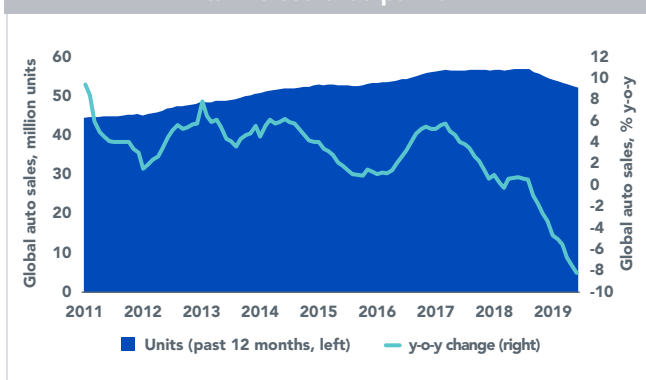
Figure 6: Emerging Markets central banks' US dollar distrust benefits gold demand



Source: World Gold Council, Metal Focus, GFMS, WisdomTree, data available as of November 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

Also, a deal between US and China does not mean a global deal. After "successfully" driving trade deals with Canada, Mexico and then China (if a deal is done), the US is very likely to focus on Europe. It has already threatened to place tariffs on European car imports. The US is the most important export market for European cars, accounting for 29% of the value of all exported cars from the EU. By comparison, US-based companies are delivering 19% of their car export value to Europe. To put trade volumes into perspective, it is worth noting that the global auto trade amounts to 8% of global trade, which is significantly larger than US-China trade flows at 3%. A global tit-for-tat car trade war could thus be very damaging.

Figure 7: Auto sales already under pressure; more tariffs could be painful



Sources: WisdomTree, IMF, Economist Intelligence Unit; International Organization of Motor Vehicle Manufacturers. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

In WisdomTree Europe's inaugural outlooks we hope to navigate you through some of the trends we anticipate for the major asset classes: commodities, foreign exchange, equities, fixed income and cryptocurrencies. As we highlight in this macro introduction, there are large uncertainties around trade, which could vastly change the outcomes during the course of the year. As always, we will keep you updated via blogs, webinars and strategy papers as global dynamics continue each twist and turn.

Commodities

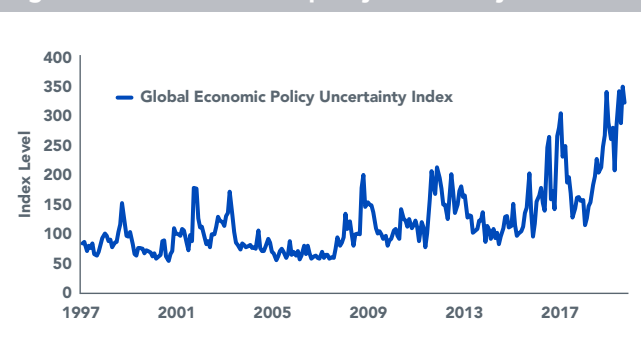
Gold shines amid global macro uncertainties

- + We expect gold to continue to shine in the year ahead given elevated levels of macroeconomic and policy uncertainty keeping investors' demand for historically safe haven assets high.
- + Oil markets have been fixated on the destruction of demand growth this year on account of trade wars. We believe a reasonable level of geopolitical risk premium has been missing from oil prices and expect it to be priced in gradually in the year ahead.
- + Environmental regulation has had, and will continue to have, a direct impact on commodity prices as policy makers are becoming increasingly cognisant of implementing environment-friendly policies.

Gold gets the gold medal: A world marred by trade wars and negative interest rates

The trade dispute between US and China could continue to be a headwind for broad commodities for most of next year. Policy uncertainty, as measured by the Global Economic Policy Uncertainty Index (see **Figure 8**), is at very elevated levels with the escalation in the spat between the two countries since the start of last year being an important driver. While we remain cautious about a meaningful resolution on this front in the coming months, we expect there to be some respite in trade attrition as we approach the US presidential election in November 2020. If that is indeed the case, and some form of trade settlement is agreed between the two countries, it would prove fruitful to both industrial metals and agricultural commodities, which have taken a direct hit from trade tariffs, as well as oil if a trade deal translates into a more optimistic global economic outlook.

Figure 8: Global economic policy uncertainty is elevated

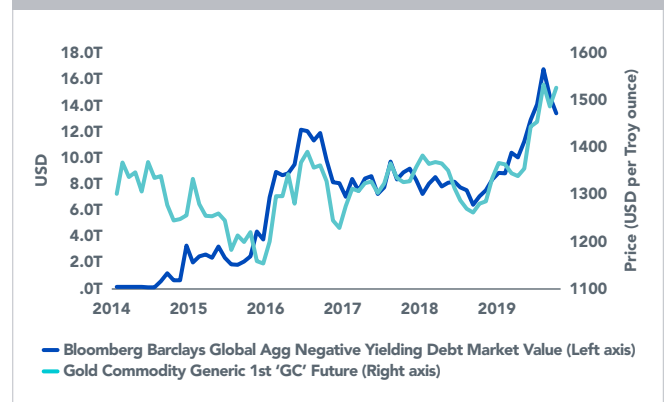


Sources: WisdomTree, policyuncertainty.com. Data as at 30 September 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

But they say gold makes the ugly beautiful. As the outlook for the global economy remains humdrum and trade disputes remain unresolved, gold as a safe-haven asset will continue to be an investor favourite. Gold's appeal is exacerbated in a world where investors pay governments to borrow their money, i.e. negative interest rates. Among antifragile assets,

gold's non-existent yield is more attractive than negative yields on government bonds. With monetary policy from central banks likely to remain accommodative next year, we are unlikely to witness a meaningful decline in the amount of negative yielding debt. This will continue to be supportive of gold (see **Figure 9**). Even central banks, particularly those in emerging markets, have recently been increasing their gold reserves to hedge their exposure to fiat currencies. The wide appeal and lure of gold is therefore here to stay.

Figure 9: Gold's appeal in a world of negative interest rates



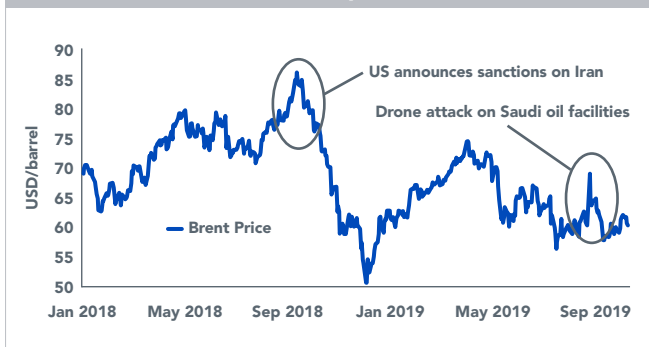
Sources: Bloomberg, WisdomTree. Data as at 31 October 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

The missing geopolitical risk premium

On 16 September this year, Brent prices spiked 12% following a drone attack on Saudi oil facilities igniting fears of a sustained supply shock. The rally was wiped out quickly when supply concerns were quashed by Saudi authorities who reassured markets that the damage had been contained and the situation was under control. But why did the price of oil move so significantly and return to lower levels again so quickly? In our view, this is because a reasonable level of geopolitical risk premium has not been priced into oil by markets since the start of Q2 this year. Brent was trading around \$85/barrel back in October 2018 when the US first announced its sanctions on Iran (see **Figure 10**). Since then, markets have been fixated on decelerating oil demand growth taking little heed of potential supply disruptions from the sensitive geopolitical situation in the Middle East. It is for this reason that a geopolitical 'event' such as the attack on Saudi oil facilities suddenly raised supply concerns and had such a profound impact on prices. Once Saudi authorities assured markets that the extent of the damage was much less than initially anticipated, complacency returned in markets and prices fell again.

Even though material supply disruption, such as that caused potentially by the Strait of Hormuz becoming inaccessible to a third of global oil volume which currently flows through it, is not part of our central scenario, we believe investors need to demand a higher risk premium to reflect the heightened tensions in the region. We expect this to happen over the next year drawing the price of Brent to a fairer range of \$70-\$75/barrel.

Figure 10: Geopolitical risk premium has vanished from oil prices



Sources: WisdomTree, Bloomberg. Data as at 31 October 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

Monetary (and fiscal?) policy to the rescue

Commodities are likely to find support from accommodative monetary policy next year. Low to negative interest rates will not only help gold as a haven asset but, if policy stimulus translates into improved growth in the real economy, the broader commodities complex can be expected to benefit.

Governments also typically introduce fiscal measures to induce growth when the economy is slow. It is possible that promises of fiscal support are made as we approach the US presidential election in November 2020. Similarly, China appears prepared to employ both monetary and fiscal measures to manage the growth slowdown. China's fiscal stimulus in 2008 played an important role in driving commodity demand and consequently commodity prices.

While a major economic crisis is not a central scenario in our outlook for next year, and thus the scale of fiscal stimulus is unlikely to match what was injected in 2008, we believe low rates will encourage governments to borrow to facilitate more fiscal accommodation. China is already committed to its belt and road initiative which aims to develop communication and connectivity across continents with planned infrastructure projects in excess of \$1 trillion between 2017 and 2027. These projects aim to bridge a global infrastructure gap and will keep the demand for base metals and energy alive. Other countries may follow suit giving commodities a much-needed demand boost.

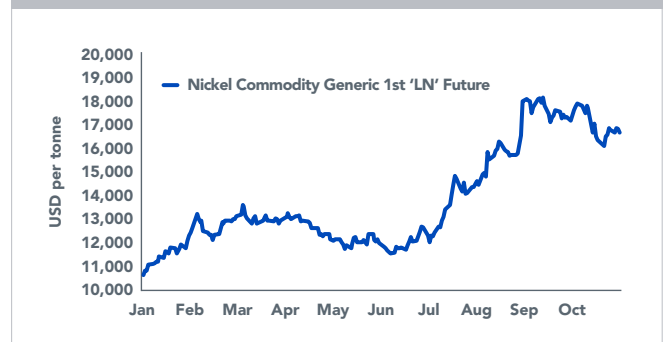
The impact of environmental regulation

Changes in environmental regulation are not only expected to impact the dynamics of commodity markets in the long run, e.g. the shift towards electric cars, but are also having a direct and immediate impact on commodity prices. This theme is likely to remain relevant in the coming year as governments and regulators endeavour to engage more actively in devising policies to protect the environment.

Philippines, which is the second largest producer of nickel ore in the world behind Indonesia, closed half of its mines in the first half of 2019 due to maintenance or environmental reasons. The country's Department of Environment and Natural Resources suspended the operations of several mines

when audits revealed that they were breaching environmental regulations. This capped the growth in the supply of nickel, which is an integral component of electric vehicle batteries. Nickel's price rally this year, driven primarily by Indonesia's decision to stop nickel ore exports from January 2020 (two years earlier than expected) to process more at home, has been further supported by actions taken by Philippines (see **Figure 11**).

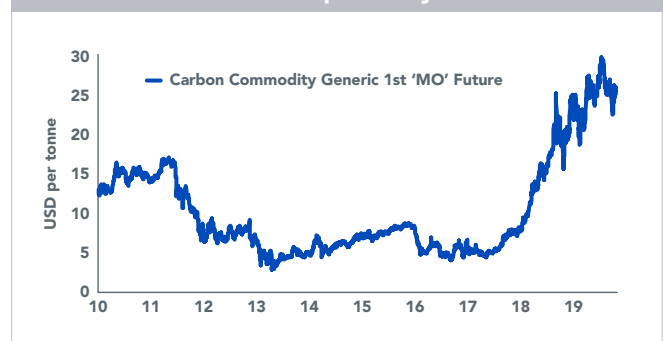
Figure 11: Year-to-date rally in Nickel prices



Sources: WisdomTree, Bloomberg. Data as at 31 October 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

Carbon has been another beneficiary of environmental regulation since last year experiencing a strong price rally (see **Figure 12**). Under the EU Emissions Trading System, businesses are required to obtain allowances for their carbon related emissions. The EU has been pushing up the price of these carbon allowances since last year in a bid to encourage businesses to switch to cleaner sources of energy.

Figure 12: EU regulation has strongly supported the carbon price rally



Sources: WisdomTree, Bloomberg. Data as at 31 October 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

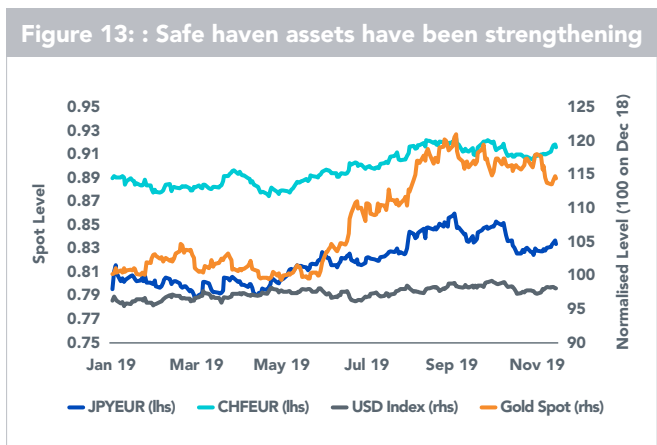
Currencies

Haven currencies in vogue as global economy decelerates

- + Haven currencies are likely to maintain their strength in 2020.
- + Renminbi (CNY) and Euro (EUR) beaten by trade woes.
- + WisdomTree’s currency score highlights US dollar (USD) as a strong currency all around but points to some Commodity currencies like New Zealand Dollars (NZD) or Norwegian Krone (NOK) as potential surprises on the upside.

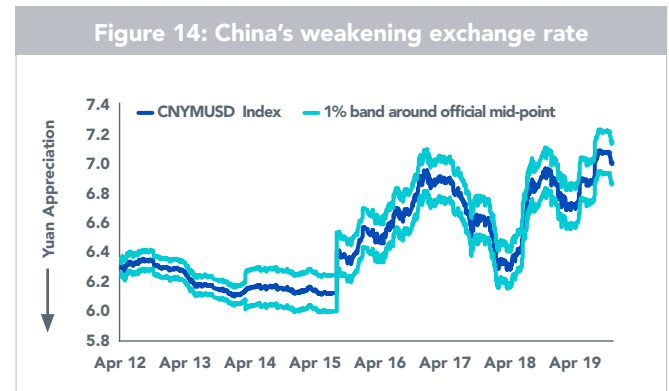
2019 review and 2020 outlook based on macroeconomic trends

The past year has been characterised by heightened demand for historically safe-haven currencies. The US dollar, Japanese Yen (JPY), Swiss Franc (CHF) - and even the pseudo-currency - gold have all appreciated. The fact that gold and US dollar have both risen is a telling sign of investor anxiety.



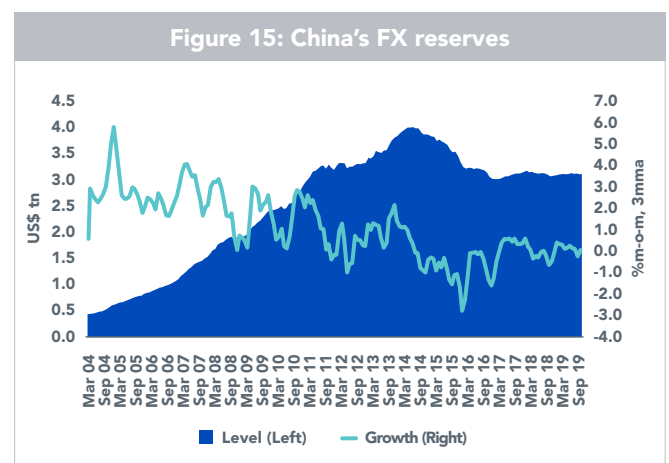
Sources: WisdomTree, Bloomberg. As of 15 November 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

With trade wars at the fulcrum of market dynamics in the past year, in hindsight it is unsurprising that the renminbi (CNY) has depreciated by -2.75%. The prospect of weaker economic outcomes emanating from trade protectionism and bloating domestic debts lead us to believe that was an inevitable outcome. What surprises us, however, is that the Chinese authorities have allowed the currency to slide as much as it has. In 2015, the market punished China for the sharp currency depreciation. In 2019, gradual depreciation has been more widely accepted.



Note: On 16 April 2012, band set to 1% around the official mid-point. Sources: WisdomTree, Bloomberg. As of 15 November 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

If we enter a global recession in 2020, we believe that China’s response will be different to 2008, when despite softening exports, China maintained currency appreciation. The nation played the role of a global shock-absorber and we are doubtful China is willing to play that role again. We doubt China will want to burn foreign exchange (FX) reserves artificially propping up its currency and will enjoy a dose of competitive devaluation to lean against the wind of trade protectionism.



Sources: WisdomTree, Bloomberg. As of 30 October 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

The euro – also under the cross hairs of US trade policy – has been weak in the past year and we expect weakness to continue if the US follows through with promises of tightening trade, especially in the auto sector.

As we note in our introduction, if trade wars are settled amicably, then these trends could reverse safe haven currencies could fall out of vogue and the trade-beaten renminbi and euro may appreciate.

Outlook based on score card heatmap

At WisdomTree, we have developed a score card heatmap for freely trading currencies pairs (i.e. excludes renminbi, etc). The scorecard is applicable in risk-on periods. In our inaugural outlook we explain the concepts driving the scores. In future outlooks we will focus more on the outcomes.

Behind the heatmap

When it comes to exchange rates behaviours over time, practitioners tend to identify two distinct regimes: risk-on and risk-off. During risk off periods, "Risk-off" currencies such as US dollar, the Japanese yen and the Swiss franc tend to strengthen against G10 and Emerging Market currencies ("Risk-on" currencies). During such episodes, correlations of all risk-on currencies increase significantly, and this pattern predominantly drives the market.

Outside those risk-off events (De Bock R. and De Carvalho Filho I., 2013), each currency pair behave more in line with its own fundamentals. In order to summarize and classify such fundamentals, we are introducing a scoring system based on 6 indicators: Carry, Momentum, Value, Consensus, Curve Steepness and Curve Change.

Carry

Carry Trading is defined as investing in a high interest rate currency and while funding the investment in a low interest rate currency. A bullish signal is therefore given if the base currency of the pair is a higher yielding currency. Carry is a very well documented premium in FX markets (Bilson, 1981) and (Fama, 1984).

Momentum

Momentum, the relation between an asset's return and its recent relative performance history, is one of the most studied market phenomena. Its existence and persistence have been observed across asset classes and in FX in particular (Asness, C.S. and Moskowitz, T.J. and Pedersen, L.H., 2012). A bullish signal is given if the 12-month performance 1 month removed is high.

Value

The Value signal is based on the notion of fair value which in FX translates into Purchasing Power Parity ("PPP"), i.e. the concept that the exchange rate between two countries should equalise the costs of goods. Such level tends to give an anchor to the FX pair and therefore a bullish signal is given if the current spot price is below the PPP induced level (with the view that currencies trend back to PPP values over time).

Consensus

The signal is based on the relative positioning of the spot level for the relevant pair and the Bloomberg consensus forecast price at the end of the next quarter for the same pair. A bullish signal is given if the pair is undervalued (spot is lower) than the consensus. This allows us to anchor our framework around the market consensus for the pair.

Curve Skewness

Any variables that affect the sovereign yield curves has the potential to predict the foreign exchange risk premiums. Carry, as mentioned, is of course the most used, but Term Spreads or Curve Steepness (10Y vs 1M) has also been shown to somewhat predict returns (Ang, A. and Chen, J.S. 2010). A bullish signal is given when steepness of the base currency curve is lower than the one from the foreign currency.

Curve Change

Similarly, to Curve Steepness, changes at the short end of the yield curve (i.e. short-term interest rates) are also fair predictors of FX markets (Ang, A. and Chen, J.S. 2010). A bullish signal is given if the short-term interest rate of the base currency has moved more positively than the foreign currency in the pair.

Figure 16: Our FX scoring system based on 6 indicators

| | Spot | Ytd Performance | Carry | Momentum | Value | Consensus | Curve Change | Curve Skewness |
|--------|--------|-----------------|-------|----------|--------|-----------|--------------|----------------|
| EURUSD | 1.12 | -2.8% | -2.3% | -3.9% | 4.7% | -0.5% | 0.2% | 0.7% |
| GBPUSD | 1.29 | 1.2% | -1.1% | -3.3% | 2.4% | -3.1% | 0.2% | 0.3% |
| USDJPY | 108.85 | -0.8% | 2.1% | -4.5% | -23.1% | -3.1% | -0.4% | -0.4% |
| AUDUSD | 0.69 | -2.1% | -1.0% | -5.0% | -2.1% | -2.9% | 0.2% | 0.6% |
| NZDUSD | 0.64 | -4.9% | -0.8% | -4.4% | -7.7% | -1.4% | -0.1% | 0.5% |
| USDCAD | 1.32 | -3.5% | 0.2% | 1.0% | -9.1% | 0.3% | -0.1% | -0.4% |
| EURCHF | 1.10 | -2.1% | 0.2% | -4.6% | 12.8% | -0.4% | -0.1% | 0.0% |
| EURSEK | 10.77 | 6.1% | -0.2% | 3.0% | -34.6% | 0.0% | 0.0% | -0.2% |
| EURNOK | 10.24 | 3.4% | -2.1% | 3.9% | -20.3% | -3.1% | -0.2% | 0.3% |

Sources: WisdomTree, Bloomberg. As of 30 September 2019. British Pound (GBP), Swedish Krona (SEK). **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

The table above provides the results of the score card for 9 relevant pairs. Any cells highlighted in green indicates a bullish signal for the base currency (i.e. the currency on the left-hand side of the pair) against the foreign currency (i.e. the currency on the right-hand side of the pair) and respectively any red cell indicates a bearish signal. Taking USDEUR as an example:

- + Carry is bullish for USD as short-term rate is higher by 2.5% i.e. USD to strengthen against EUR (EURUSD would go down).
- + PPP levels are lower than the current spot so that provides bearish signals i.e. EUR to strengthen against USD (EURUSD would go up). Consensus is pretty flat.
- + Price Momentum is of course strongly bullish for USD (see 2019 review, EURUSD would go down).
- + USD curve is flatter than EUR sovereign curve which also provides a bullish signal for the USD.

Takeaways from the scorecard

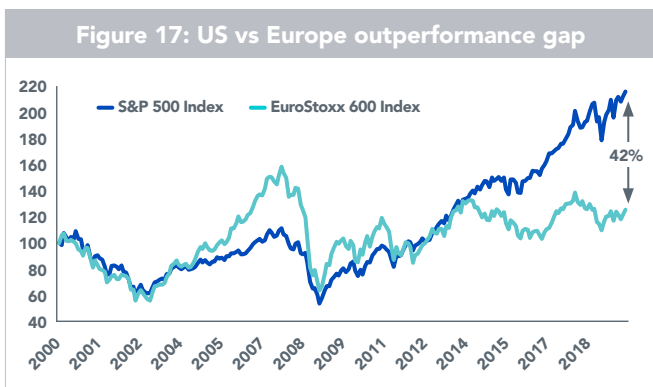
- + USD is likely to see strength even in a risk on environment against most of G10 currencies.
- + Australian dollar (AUD), a commodity currency, is likely to suffer. Australian dollars has been depreciating for some time against most of G10 and most of the signal are not supportive.
- + Most European currencies show some weaknesses except from the NOK which benefits from being pretty cheap at the moment following a tough year performance wise.
- + Overall, in a risk on environment, commodity currencies like Canadian Dollars (CAD) and NOK would be positioned to surprise. However, they are also the first one to suffer in an environment prone to panic market moves.

Equities

Europe’s recovery is losing steam

- + European equities have failed to catch up with US equities owing to rising external political and trade related headwinds coupled with weaker profit margins.
- + While Germany is Europe’s biggest laggard, it also offers the biggest scope for fiscal policy which is needed to revive growth.
- + European equity valuations are relatively cheap at present, balance sheets are healthy and dividend yields are attractive supporting further upside in less crowded value stocks versus growth stocks.

European equity markets have been a victim of a confluence of external and internal headwinds – global trade tensions, the slowdown in the Chinese economy, structural changes in the auto industry and ongoing Brexit related uncertainty. Since 2013, European equity markets have underperformed US equity markets with the outperformance gap extending to its widest level since 2000. Value stocks account for a higher weight in Europe compared to the US which has a higher tilt to growth stocks. Since the great financial crisis, growth stocks have surpassed value stocks by a strong margin which also accounts for Europe’s lack of performance. The European single currency is now trading at its weakest level versus the US dollar since May 2017 however European exporters have not benefited from any competitive advantage. In the first ten months of 2019 Eurozone domiciled equity linked Exchange Traded Funds (ETFs) have witnessed outflows worth US\$8.1bn, underpinning the severity of pessimism towards European equities. Owing to the cautious outlook, defensive sectors of the European economy have become overcrowded compared to cyclical sectors. Europe can only stage a turnaround if we see a combination of improved global trade negotiations, recovery of value stocks coupled with meaningful fiscal stimulus.



Sources: Bloomberg, WisdomTree. As of 31 October 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

Weakness in manufacturing spilling over to services sector

The deterioration of European economic data has shown no signs of abating. The flash Eurozone manufacturing purchasing managers index (PMI) fell to its worst level in nearly seven years with the reading at 45.6 in September down from 47 in August. Weakness was also observed in the services sector where flash eurozone services PMI fell to an eight-month low. This is a worrying sign, because downturns are often spotted first in the manufacturing sector before transmitting to the services sector as manufacturing tends to respond more quickly to changing demand conditions. A further decline in the employment component of the composite PMI, which fell to levels in line with stagnating employment and modestly rising unemployment was another sign of the weakness spreading to domestic demand.



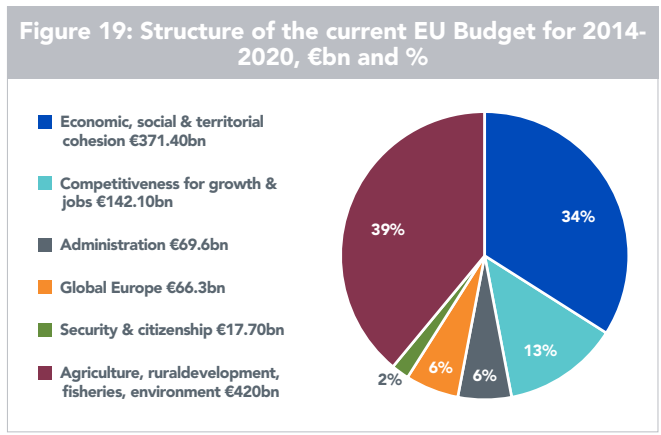
Sources: WisdomTree, Bloomberg. As of 31 October 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly in an index.**

Europe’s laggard – Germany

Europe’s largest economy, Germany has been hit the hardest by trade and Chinese slowdown related headwinds, as exports make up 47% of its GDP. This became apparent from the recent decline in the manufacturing PMI level to 41.4 in September from 43.5, marking its worst reading in more than a decade. Germany accounts for a large proportion of auto production and the introduction of new European Union emission tests also contributed to a loss in momentum to the sector. The fact that Germany has a continent-wide supply chain that accounts for 29% of Eurozone GDP raises the probability of Germany’s slide into recession negatively impacting other Western European economies. To make matters worse, the World Trade Organisation (WTO) has authorised the US to impose tariffs on nearly US\$7.5bn of European aviation and luxury goods due to illegal state aid provided to European aircraft maker Airbus SE. If the Trump administration presses ahead with tariffs, it is likely to trigger retaliatory measures from the EU and further sour trade tensions between the two nations. On 20 September, the German government announced a €54Bn climate spending package aimed at reaching the 2030 emissions reduction target. This is expected to be financed from existing surpluses in the energy and climate fund implying a minor net fiscal boost of less than 1.6% of GDP.

Monetary and fiscal policy must go hand in hand

On September 12, the European Central Bank (ECB) unleashed a substantial easing package that included – a 10 basis point (bp) reduction in the deposit rate; restart of net purchases under its asset purchase programme (APP) at a monthly pace of €20bn; more generous targeted longer-term refinancing operations (TLTRO III) and launched a two-tiered deposit rate to mitigate the cost of negative interest rates for banks. However monetary policy alone cannot fix Europe’s problems. Europe’s chief problem is not one of lack of access to capital for companies or high cost of capital, but rather one of deficient external and internal demand. Due to external shocks such as trade wars, Brexit and China’s slowdown, global demand conditions remain weak. Owing to this, fiscal policy in Europe which remains tighter than it needs to be, must do more in order to support internal demand conditions. Former ECB President Mario Draghi also echoed these thoughts at his last ECB press conference, where he emphasised that it was time for fiscal policy to pick up the baton from monetary easing as growth and inflation targets are unlikely to be achieved without the role of fiscal policy. The current multi annual financial framework covers the years 2014-2020 and has an envelope of €1,087bn or 1% of EU GDP.



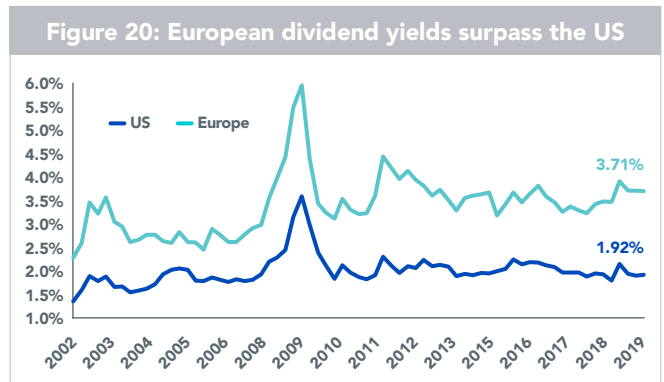
Sources: WisdomTree, EU Commission, Reflection Paper on the Future of EU Finances. As of 28 June 2017. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

Preparations for the European Union’s (EU) new 2021-2027 budget are well under way. A new Multiannual Financial Framework (MFF) for the period of 2021-2027 was proposed by the European Commission (EC), targeting a budget of roughly €1.3trn across a broad range of different policy priorities of the European Union. The newly proposed MFF aims at strengthening the social dimension of the Union. For next year, the EC will continue to implement the programmes approved under the MFF 2014-2020, while it promotes the adoption of the proposed MFF 2021-2027.

Valuations remain in Europe’s favour

European valuations have historically been trading at a discount to the US. According to cyclically adjusted Price to Earnings ratio (CAPE) European equities (CAPE at 18.35x) are trading at a 10.6% discount compared to US equities (CAPE at 20.54x). Historically European companies have also paid out

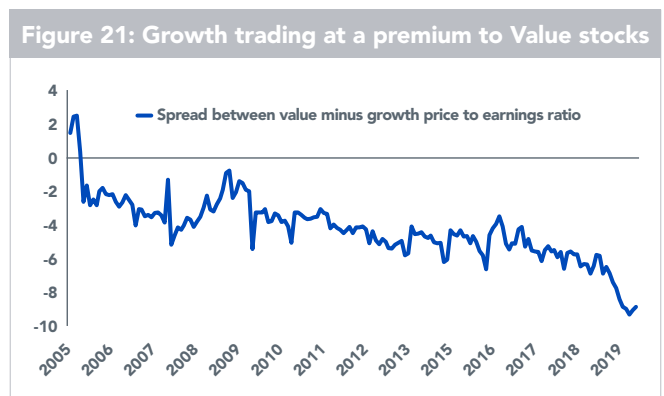
a greater share of their earnings to shareholders in dividends compared to the US. Higher dividend yields in Europe at 3.71% compared to US equities at 1.92% enhance the case for investing in European equities especially at a time when nearly US\$14trillion of global debt is negative yielding.



Sources: Bloomberg, WisdomTree. As of 30 September 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

Overcrowding in segments of European markets

The cautious outlook held by investors has resulted in overcrowding in certain segments of the European markets, namely – growth, large cap and internationally exposed stocks. The price to earnings (p/e) ratio of value compared to growth stocks are trading at its lowest level since 2005.



Sources: Bloomberg, WisdomTree. As of 31 October 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

Despite offering a 6% premium on the dividend yield, European small cap stocks trade at a 5% p/e discount to large caps compared to the long run average. While internationally exposed European stocks have outperformed their domestic peers by 44% since 2007.

Fixed Income

Slowing growth expectations could be a driver of bond yields

- + Yields are likely to remain low for an extended period given a combination of slowing global growth and muted inflation.
- + Longer duration bonds can help provide a cushion against uncertain equity markets.
- + Tactical allocations within credit for income enhancement and diversification as investors need to find income in diverse ways.

Performance review for the year

Fixed income asset classes have generally performed well in 2019 as investor flows into government bonds rose sharply due to increasing concerns around slowing global growth, trade wars and Brexit. As demand for historically safe-haven assets increased, government bond yields moved lower driving many European government bonds into negative yield territory. Meanwhile investors requirements for higher yielding bonds have provided support for risk assets. This year, fixed income Exchange Traded Funds (ETFs) in Europe have garnered \$40.22 billion year-to-date to 4 October 2019, accounting for nearly 53% of all Exchange Traded Product (ETP) flows with fixed income ETF flows globally hitting a new milestone in the second quarter of the year.

Fixed income asset classes that stood out

US investment grade corporate bonds outperformed most major fixed-income assets, up 15.22% year-to-date to 12 November 2019. One of their best returns in nearly a decade as investors sought for high-quality yield in a negative yield landscape. By the same token, European government bonds which started the year at very low yields, surprised investors with nearly 10% return for the same period.

One fixed income asset class that has provided double digit returns, considering this timeframe, in comparison to its equity counterpart is additional Tier 1 contingent convertible bonds (AT1 CoCos) as referenced in Figure 22. Regulatory requirements such as Basel III in addition to other measures have pushed European banks to improve their capital reserves and as such the European banking system in 2019 is much better capitalised than it was prior to the last financial crisis. AT1 CoCos do not sit on major European benchmarks and can offer diversification benefits to other risk assets which has raised their profile among the investor community.

Figure 22: Calendar year returns of select fixed income and equity indices

| Name | Currency | YTD 2019 | Yearly Returns | | | | |
|-----------------------|----------|----------|----------------|--------|--------|--------|--------|
| | | | 2018 | 2017 | 2016 | 2015 | 2014 |
| EUR Treasury Enhanced | EUR | 9.74% | 0.67% | 1.19% | 4.05% | 2.17% | 17.24% |
| EUR Treasury | EUR | 7.25% | 0.98% | 0.17% | 3.23% | 1.65% | 13.13% |
| EUR Agg Enhanced | EUR | 9.50% | -0.31% | 2.00% | 4.63% | 0.51% | 15.41% |
| EUR Agg | EUR | 6.33% | 0.41% | 0.68% | 3.32% | 1.00% | 11.10% |
| EUR IG | EUR | 6.99% | -0.99% | 1.53% | 4.12% | -0.40% | 6.80% |
| USD IG | USD | 15.22% | -3.67% | 7.29% | 6.37% | -0.74% | 8.66% |
| EUR HY | EUR | 7.96% | -3.37% | 4.82% | 8.14% | -0.25% | 4.03% |
| USD HY | USD | 12.40% | -1.48% | 6.32% | 15.31% | -5.03% | 2.13% |
| AT1 CoCos | USD | 14.11% | -6.40% | 22.76% | 2.82% | 3.26% | -0.08% |
| EM Debt HC | USD | 11.71% | -4.61% | 9.32% | 10.19% | 1.23% | 5.53% |
| STOXX 600 Banks | EUR | 11.32% | -25.37% | 11.73% | -2.83% | -0.40% | -0.04% |

Sources: Bloomberg YTD data as of 12 November 2019. All returns are in their base currency (specified in the table) and include backtested data. Data is from the start to the end of each specified calendar year. All fixed income indices are total return indices, all equity indices are net total return indices. **Historical performance is not an indication of future performance and any investments may go down in value.**

Low yields for longer

We believe that in 2020 policy rates will follow a similar pattern to 2019 with the US Federal Reserve (Fed) catching up to market expectations of lower policy rates despite its current rate projections via 'dot-plots' looking more hawkish. With economic data remaining one of the leading indicators of future policy moves, weaker data being led by Europe is likely to pull yields lower in 2020. If we consider nominals yields across the US yield curve today in comparison to nearly a decade ago, rates during this market cycle have normalised at much lower levels than prior to the 2008 crisis.

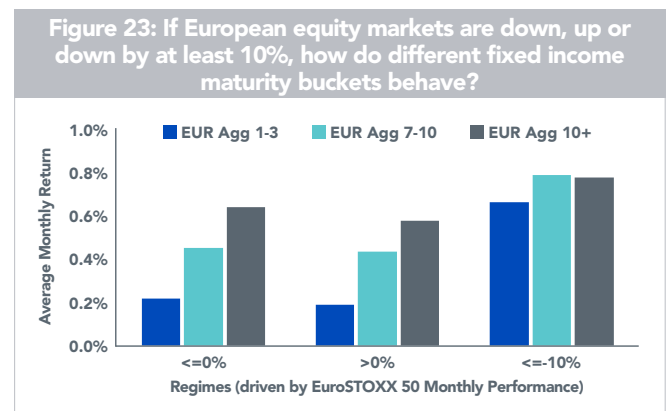
In the US, UK and Europe, the overall shape of the three respective yield curves currently appear relatively flat and are reflecting much lower expectations of future growth and inflation. As at the end of 2007, long term government bond yields of 30 years were just below 4.5% in the US, slightly above 4.0% in the UK, and similarly hovering above 4.5% in Germany. Fast forward to 15 November 2019 and there has been a stark divergence in 30-year government bond yields across these three regions with German bund yields near 0%, UK Gilt yields just above 1% and even US Treasury yields around 2%. The growth recovery experienced in developed markets since the last financial crisis has been milder than prior ones.

Europe is in an unconventional policy space and the new quantitative easing programme will likely drag long-end yields lower and be supportive of risk assets. We generally expect long end yields to remain constrained unless key European countries can launch substantial fiscal stimulus that could impact future growth and inflation expectations. With the broader economic implications of Brexit and the 2020 US presidential election on the horizon, the economic landscape of both economies will likely be largely influenced by the outcomes of these events.

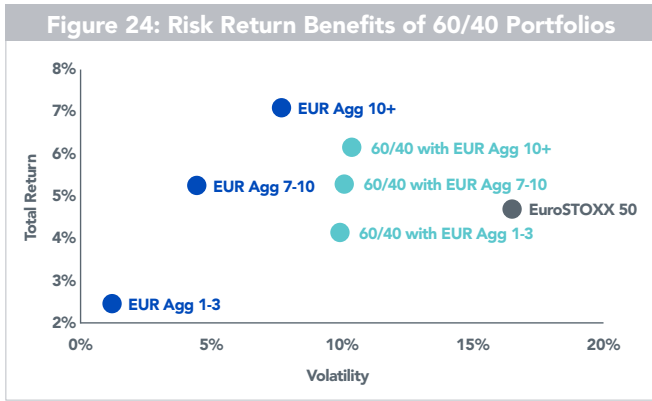
Consider longer duration

In an environment where some investors are starting to scale back on equity risk potentially by risk budgeting across their portfolios, an allocation to a diversified basket of fixed income asset classes could help improve the risk-return profile of investor portfolios. We believe taking long duration exposure within fixed income allocations could be a useful diversification tool that can help provide resilience in investor portfolios against a correction in equity markets.

Higher duration fixed income assets have historically exhibited on average a profile of higher volatility and higher long-term returns. However, during sharp equity downturns, on average duration tends to provide stronger positive performance than shorter duration fixed income exposure.



Sources: Bloomberg. Period from 30 November 2002 to 31 October 2019. Based on monthly returns and includes backtested data. All indices are total return. **Historical performance is not an indication of future performance and any investments may go down in value.**



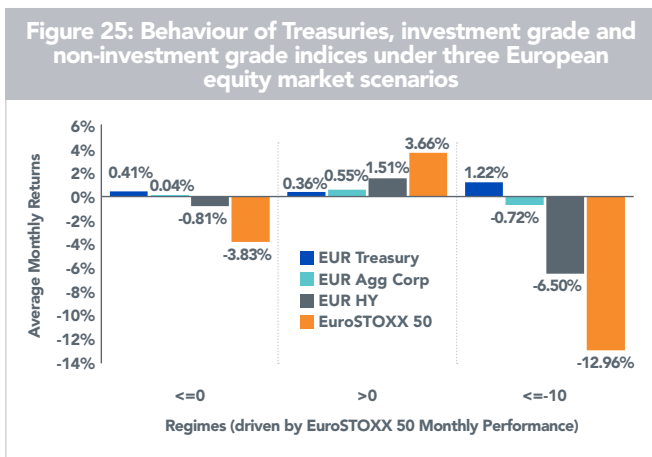
Sources: Bloomberg. Period from 30 November 2002 to 31 October 2019. Based on monthly returns and includes backtested data. All indices are total return. **Historical performance is not an indication of future performance and any investments may go down in value.**

In a multi-asset portfolio context, over the course of a full economic cycle, higher duration assets tend to increase the Sharpe ratio of the portfolio as illustrated in Figure 24. This is assuming a portfolio with 60% allocation to bonds and 40% allocation to equities meanwhile using indices with different maturity profiles for the fixed income portion of the portfolio. In these hypothetical scenarios, the portfolio's Sharpe ratio was highest when the allocation to bonds was to the longest maturity bucket.

Tactical allocations within Credit

While the option-adjusted spreads of investment grade and high yield bonds have generally tightened since the December 2018 market correction, the current macro environment of lower rates for longer will likely continue to provide support for corporate bonds that offer yield enhancement. As slower growth begins to impact corporate balance sheets, fundamentals will likely be a greater driver of outperformance for corporate bonds.

One unique dynamic about corporate bonds which will continue to drive demand within client portfolios, is the diversification benefits that corporates bonds could add to a portfolio with exposure to bonds with greater duration. This is the case as historically Treasuries and Corporate bonds have provided return diversification especially when equity markets are down as referenced in Figure 25.

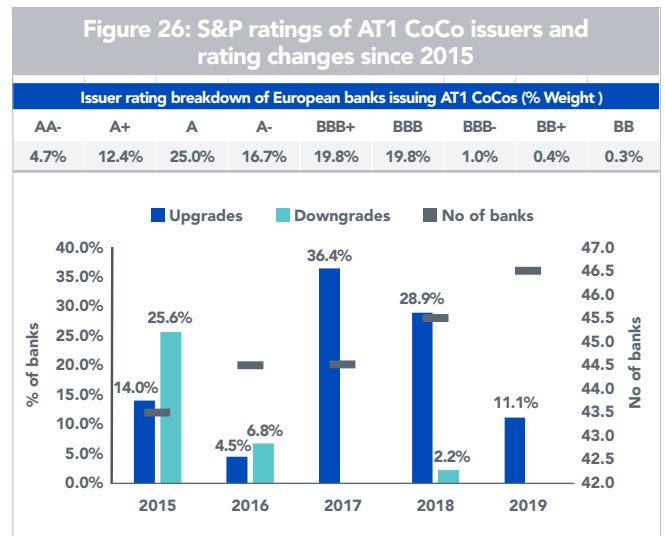


Sources: Bloomberg. Period from 30 July 2004 to 31 October 2019. Based on monthly returns and includes backtested data. All indices are total return. **Historical performance is not an indication of future performance and any investments may go down in value.**

Investors in corporate bonds may experience episodes of volatility throughout 2020. While heightened market uncertainty has caused investors to be more reactive with their risk exposures, demand for credit is likely to continue as European government bond yields are unlikely to provide the income enhancement many investors are seeking.

Within credit, AT1 CoCos remain an interesting asset class as issuers of AT1 CoCos, typically European banks, generally have an investment grade rating. The fundamental credit quality of the European banking sector has remained relatively stable in 2019.

If we consider the issuer ratings reported by Standard & Poor's (S&P) of the European banks that issue AT1 CoCos, the trend has indicated towards more rating upgrades than downgrades since 2017 reflecting better issuer fundamentals. Furthermore, the ECB asset purchases will likely have a beneficial effect on the funding costs for banks and thus counter some of the adverse aspects of negative rates on the banking system. AT1 CoCos, which sit at the bottom of the banks' capital structure just above the bank equity, offer a yield enhancement relative to more senior bank debt. However, investors need to consider the features inherent in AT1 CoCos and determine if the risk-reward profile is in line with their overall portfolio objectives. Given the economic backdrop, we believe this is one of the fixed income asset classes which could continue doing well into 2020.



Sources: WisdomTree, Bloomberg. Period from 31 December 2014 to 31 October 2019. Credit rating distribution is as of 31 October 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

For index definitions, please refer to page 15.

Cryptocurrencies

Market remains driven by prospect of institutional investments

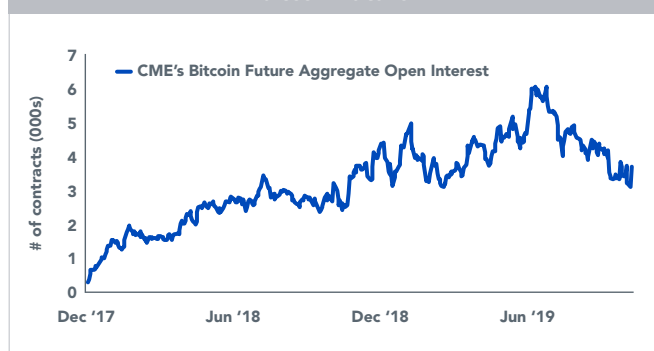
- + 2019 saw the end of the Crypto Winter, with a sharp rebound beginning at the end of Q1.
- + The rally was largely underpinned by hopes to see institutional money flow into the market.
- + However, the rally was short lived as the catalyst investors were looking for did not materialise, putting a break to the bounce.
- + Looking forward, we expect the market to continue its trend of self-regulation, a necessary condition to a significant wider adoption.

Institutional adoption signals failed to materialise in 2019; what potential for 2020?

As 2019 draws to a close, we look back and reflect on what an eventful year it has been in the crypto space. After a disastrous 2018, the crypto bear market – often referred to as the Crypto Winter – came to an end at the end of the first quarter. The prospect of a US-listed Bitcoin Exchange Traded Fund (ETF), the launch of the Bakkt physically settled regulated futures contracts and improved custody solutions were some of the factors that fuelled hopes of higher demand for the asset class from institutional investors. But to date, those catalysts have failed to materialise in a meaningful way.

First, the long-awaited Bakkt futures contract, which launched in September, did not manage to gather momentum. This instrument has been expected to solve some of the potential issues arising with cash-settled futures. But volume has remained very low since the launch. Furthermore, the CME future is experiencing a decline in open interest, following a quite consistent rise since its launch.

Figure 27: Open interest has been rising for CME's bitcoin future



Sources: WisdomTree, Bloomberg. From 15 December 2017 to 23 October 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

Whether market participants are trying to assess the robustness of the Bakkt offering, or whether the demand is still not there for physically settled futures remains to be seen. But a pickup in trading activity on those contracts could very well be a positive catalyst for Bitcoin's price in the coming year. Other signs of infrastructure development also have the potential to move the market, one of which will be the launch of Bitcoin options by the CME, scheduled for early 2020.

Then, some crypto Exchange Traded Products (ETPs) have been brought to market in Europe, but no Bitcoin ETF proposal has managed to go through the SEC's approval process in the US, and most have been either rejected or withdrawn. Market manipulation, liquidity and money laundering were highlighted as key concerns by the regulator.

The very nature of decentralised currencies makes it extremely difficult for regulators to enforce any kind of control. It will be essential for this market to be able to self-regulate, and show efforts to try and achieve a healthier state. Initiatives like the one undertaken by the Blockchain Transparency Institute (BTI), which analyses exchanges trading activity to detect and denounce wash trade accounts on crypto exchanges, are a step in the right direction. As enthusiasts are eager to see the democratisation of cryptocurrencies, we expect these types of initiatives to flourish in the near future. This would in turn pave the way for ETFs to be brought to market.

Libra faces significant headwind

Facebook's cryptocurrency project is certainly polarising the opinion in the community. But whether one likes its philosophy or not, it holds the advantage of drawing the attention of governments and regulating bodies, and to ignite the cryptocurrency debate in the ruling spheres of our society.

Despite the immense structural gap between Libra and other decentralised cryptocurrencies, we can very much look at this debate as a barometer for the mood and level of crypto education in the regulatory and legislative circles.

The reception has been cold, to say the least. The project has suffered from a serious backlash from both governments and regulators across the world. The primary concern stems from the lack of trust in Facebook. Mark Zuckerberg hearing in front of the Congress on the 23rd of October particularly highlighted the level of distrust lawmakers have in the company. In addition, it fails to convince on concerns such as users' data and privacy, Anti-money laundering (AML) and Know your customer (KYC), threats to sovereignty, undermining of central banks policy, lending control etc. The project is also losing some of its most prominent partners such as Visa, Mastercard, eBay, PayPal and others.

Looking forward, Libra is highly unlikely to be on target with its aggressive timeline, and we do not believe it will launch its "cryptocurrency" in 2020. Although this story may raise concerns about the potential regulatory hurdle that Bitcoin and others might face, we actually view Libra's troubles as a positive for decentralised cryptocurrencies. In our view, Libra represents competition to decentralised blockchain-based payments systems, as Facebook firepower has the potential to propel Libra to wide global adoption. This could slow the organic growth of the purer crypto currencies as the point of

difference to users of Libra would have been lessened; the adoption curve is steeper for substitute products than for original ones.

Potential market mover ahead: Bitcoin's third halving

Bitcoin's halving, which should happen somewhere in April or May next year, is one of the most anticipated events for 2020.

What's "halving"? Bitcoin supply is finite, and predefined in time. Each time a miner validates a block, on average every ten minutes, some fresh new Bitcoins are minted and granted to the successful miner as a reward. Every 210,000 blocks, or approximately four years, that reward is halved, and consequently the supply of new Bitcoin diminishes. Next year, new Bitcoin issuance will go from 12.5 bitcoins for each block to 6.25.

Why is that relevant? Halving impacts the economics of Bitcoin. First, it reduces the pace of new supply. At press time, this corresponds to a cut in supply of \$47.3 million per week at current prices, i.e. \$7,500 per bitcoin. This is significantly more than the supply cut from the first two halvings, which occurred in 2012 and 2016, respectively. Those two previous halvings both coincided with a strong positive price actions, as slowing new supply concurred with rising demand. This ties into the potential for further institutional adoption we discussed earlier. If institutional investors flows were to materialise more significantly in 2020, it would come at a time when new supply is reduced, putting upward pressure on Bitcoin's price.

Second, it will impact the profitability of mining activity. *Ceteris paribus*, less reward equals less profits for miners. Barring any price appreciation, some miners will be facing negative margins and will have to exit the activity. This in turn can affect the network's hash rate, although previous halvings did not lead to a sustained diminution in hash power. Hence, the coming year will see mining activity – one essential component of the Bitcoin system – try and find a new equilibrium.

It is worth noting that halving the reward does not systematically results in sustained positive price action, as many other powerful factors impact price. The Litecoin halving back in August this year is a prime example, as Litecoin experience a significant collapse from its 2019, pre-halving high at more than \$140, back to a current level at around \$50.

Figure 28: Litecoin underperforms despite halving



Sources: WisdomTree, Bloomberg. From 31 December 2018 to 23 October 2019. **Historical performance is not an indication of future performance and any investments may go down in value. You cannot invest directly within an index.**

Still, we do believe that halving, taken in isolation, should be a factor supporting a higher price. The event will be closely watched by the crypto trading community, and should bring some volatility to the market, providing trading opportunities along the way.

Economic and Political Calendar

| DECEMBER 2019 | | |
|---------------|----------|---------------------------------------|
| December 5 | Austria | OPEC Conference |
| December 6 | Austria | OPEC and non-OPEC ministerial Meeting |
| December 11 | US | Federal Reserve Meeting |
| December 12 | Eurozone | ECB Meeting |
| December 19 | Japan | Bank of Japan Meeting |

| JANUARY 2020 | | |
|---------------|-------------|-------------------------------------|
| January 21-24 | Switzerland | World Economic Forum Annual Meeting |
| January 21 | Japan | Bank of Japan Meeting |
| January 23 | Eurozone | ECB Meeting |
| January 29 | US | Federal Reserve Meeting |

| FEBRUARY 2020 | | |
|---------------|------|------------------------------|
| February | Iran | Iran Parliamentary elections |

| MARCH 2020 | | |
|------------|----------|----------------------------------|
| March 3 | US | Super Tuesday |
| March 5 | China | China National People's Congress |
| March 12 | Eurozone | ECB Meeting |
| March 18 | US | Federal Reserve Meeting |
| March 19 | Japan | Bank of Japan Meeting |

| APRIL 2020 | | |
|------------|----------|-------------------------|
| April 13 | | IMF Spring Meeting |
| April 28 | Japan | Bank of Japan Meeting |
| April 29 | US | Federal Reserve Meeting |
| April 30 | Eurozone | ECB Meeting |

| MAY 2020 | | |
|-----------|----|-------------------------------|
| May | | UN Metal Study Group Meetings |
| May 19-20 | UK | LPPM Platinum Week |

| JUNE 2020 | | |
|-----------|----------|---------------------------------------|
| June | UK | BP Statistical Review of World Energy |
| June 4 | Eurozone | ECB Meeting |
| June 10 | US | Federal Reserve Meeting |
| June 16 | Japan | Bank of Japan Meeting |

| JULY 2020 | | |
|------------|----------|--------------------------------|
| July 13-16 | US | Democratic National Convention |
| July 16 | Eurozone | ECB Meeting |
| July 22 | Japan | Bank of Japan Meeting |
| July 29 | US | Federal Reserve Meeting |

| AUGUST 2020 | | |
|--------------|----|--------------------------------|
| August 24-27 | US | Republican National Convention |

| SEPTEMBER 2020 | | |
|----------------|----------|-------------------------|
| September 10 | Eurozone | ECB Meeting |
| September 16 | US | Federal Reserve Meeting |
| September 17 | Japan | Bank of Japan Meeting |

| OCTOBER 2020 | | |
|--------------|----------|-------------------------------|
| October | | UN Metal Study Group Meetings |
| October | UK | London Metal Exchange Week |
| October 12 | | IMF Autumn Meeting |
| October 29 | Eurozone | ECB Meeting |
| October 29 | Japan | Bank of Japan Meeting |

| NOVEMBER 2020 | | |
|---------------|----|---|
| November | | International Energy Agency |
| November 3 | US | US Presidential and Legislative Elections |
| November 5 | US | Federal Reserve Meeting |

| DECEMBER 2020 | | |
|---------------|----------|-------------------------|
| December 10 | Eurozone | ECB Meeting |
| December 16 | US | Federal Reserve Meeting |
| December 18 | Japan | Bank of Japan Meeting |

All dates are correct at the time of writing and subject to change.

Footnotes for figures 22 through 26

Figure 22

Indices represented include **EUR Treasury Enhanced** represented by the **Bloomberg Barclays Euro Treasury Enhanced Yield Bond Index, ticker I33855EU - Performance includes backtested data (Index launched in April 2018 with history backfilled to Nov 2002)**, **EUR Treasury** represented by the Bloomberg Barclays EuroAgg Treasury Total return Index Value Unhedged EUR ticker: LEATTREU, **Euro Aggregate (Agg) Enhanced Yield** represented by the Bloomberg Barclays Euro Aggregate Enhanced Yield Bond Index, ticker I33852EU - **Performance includes backtested data (Index launched in April 2018 with history backfilled to Nov 2002)**, **EUR Agg** represented by the **Bloomberg Barclays EurAgg Total Return Index Value Unhedged EUR, ticker LBEATREU, EUR IG** represented by the iBoxx EUR Liquid Corporates Large Cap Index, ticker IBXXELAT, **USD IG** represented by the iBoxx USD Liquid Investment Grade Index, ticker IBOXIG, **EUR HY** represented by the iBoxx EUR Liquid High Yield Index, ticker IBOXXMJA, **USD HY** represented by the iBoxx USD Liquid High Yield Index, ticker IBOXHY, **AT1 CoCos** represented by the the iBoxx Contingent Convertible Liquid Developed Europe AT1 Index (USD Unhedged), ticker: IBXXCCL1 - **Performance includes backtested data (Index launched on 09 March 2018 with history backfilled to 31 December 2013)**, **EM debt HC** represented by the J.P. Morgan EMBI Global Index, ticker JPEIGLBL, and **STOXX 600 Banks** represented by the **STOXX Europe 600 Banks Index, ticker SX7R.**

Figure 23

Indices include **EUR Agg 1-3** represented by the Bloomberg Barclays Euro-Aggregate Treasury 1-3 Year Total Return Index, ticker LE13TREU, **EUR Agg 7-10** represented by the Bloomberg Barclays Euro-Aggregate Treasury 7-10 Year Total Return Index, ticker LE71TREU, **EUR Agg 10+** represented by the Bloomberg Barclays Euro-Aggregate Treasury 10+ Year Total Return Index, ticker LE10TREU, **50 EuroSTOXX 50** represented by the EuroSTOXX 50 Index, ticker SX5T.

Figure 24

Indices include **EUR Agg 1-3** represented by the Bloomberg Barclays Euro-Aggregate Treasury 1-3 Year Total Return Index, ticker LE13TREU, **EUR Agg 7-10** represented by the Bloomberg Barclays Euro-Aggregate Treasury 7-10 Year Total Return Index, ticker LE71TREU, **EUR Agg 10+** represented by the Bloomberg Barclays Euro-Aggregate Treasury 10+ Year Total Return Index, ticker LE10TREU, **50 EuroSTOXX 50** represented by the EuroSTOXX 50 Index, ticker SX5T.

Figure 25

Indices include **EUR Treasury** represented by the Bloomberg Barclays EuroAgg Treasury Total return Index Value Unhedged EUR ticker: LEATTREU, **EUR Agg Corp** represented by the Bloomberg Barclays EUR Aggregate Corporate Total Return Index, ticker LECPTREU, **EUR HY** represented by the Bloomberg Barclays Liquidity Screened Euro HY Index TR Index Value Unhedged EUR, ticker: BEHLTREU, **EuroSTOXX 50** represented by the EuroSTOXX 50 Index, ticker SX5T.

Figure 26

The universe of banks is represented by the banks from European countries within the iBoxx GBP Contingent Convertible Index, iBoxx EUR Contingent Convertible Index and iBoxx USD Contingent Convertible Index as of 30 September 2019. Banks that do not have historical rating data available for 2 consecutive quarters in Bloomberg as of a given quarter end are disregarded in the aggregate figures for that quarter. Rating is the S&P long-term local currency issuer credit rating reported by Bloomberg. Upgrade is an improvement in the rating as of a given quarter end as compared to a previous quarter end. Downgrade is a deterioration in the rating as of a given quarter end as compared to the previous quarter end. Rating upgrades/downgrades are based on quarterly data within each given year. No of banks is the maximum number of banks per quarter in a given year with existing ratings data from Bloomberg. % of banks is the percent of banks experiencing either upgrade or downgrade as compared to the No of banks in that given year.

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