



# Corporate Credit Outlook 2020

## The Big Squeeze

December 2019

*How much more value might investors squeeze out of corporate credit in 2020?*

*Muxinich & Co*

## Credit - Supported by Hunt for Yield and Strong Technicals in 2020

- We foresee a marginal improvement in corporate fundamentals in an ongoing environment of low interest rates
- Credit spreads may have room to tighten further, supported by a strong technical backdrop
- We see opportunities in EM hard currency corporates in short and regular duration bonds, US investment grade BBB rated credits and bonds at the long end of the curve due to possible flattening
- We maintain a constructive view of financials, particularly within Europe, and of corporate hybrids where we are selective due to rich valuations
- The performance of US and European loans lagged in 2019 and we believe offer some relative value opportunities in 2020
- The outperformance in BB rated bonds has created more dispersion in credit markets, which active credit specialist portfolio managers may want to exploit by moving slightly lower down the credit spectrum

## Macroeconomic Environment - The corporate credit outlook for 2020 is very dependent on the macroeconomic scenario, in our view:

- **Global Economy** - Fragile but with potential for recovery if trade tensions abate
- **Geopolitical Risk** - Always some uncertainty
- **Monetary Policy** - US has greater capacity for rate cuts than other central banks, if needed
- **Environmental, Social and Governance (ESG) Factors** - Increasing awareness and implementation
- **China** - Focus on economic health remains prominent
- **Macroeconomic Feedthrough into Credit** - Maintain a quality bias until macroeconomic recovery firms

## Fundamentals - Signs of Improvement Ahead

- We see more encouraging signs for fundamentals in 2020 and believe corporates are likely to focus on deleveraging
- From a regional standpoint, we believe there is an argument to overweight US and EM corporate credit

## Valuations - Tight, But Room for More?

- Given the macroeconomic cycle is still below its potential output level, we believe investors should avoid the lowest-quality credits, i.e. those with the weakest balance sheets
- The lack of significant compression between A and BBB rated bonds in the US market suggests there is a potential for relative spread compression in investment grade. Also opportunities in higher quality Bs versus BBs in Europe
- We believe the relative value argument may be more balanced in favour of loans over high yield bonds in 2020, as there is less to gain from long duration positioning and more focus on carry going forward

## Technicals - Underpinned by Strong Demand and Limited Supply

- We see persistent demand for positive-yielding credit
- In our view, the long end of the US investment grade credit market should benefit from non-domestic investor demand
- The supply situation may become more positive for investors; it could decline in 2020 in the US due to deleveraging within the investment grade market, while the high yield market could see more balanced supply/demand
- We also believe the reverse yankee phenomenon in European investment grade (where US companies issue on the European bond market) is likely to persist and the European Central Bank's quantitative easing programme should absorb some of the extra supply



### Erick Muller, Director of Product and Investment Strategy

Erick joined Muzinich in 2015. His responsibilities cover macro and fixed income markets strategy and product management as well as client relationships across institutions, global distribution platforms and global private banks. Erick joined Muzinich from JP Morgan AM, where he spent nearly four years as a Senior Client Portfolio Manager. Prior to that he spent over four years as Head of Fixed Income Product Management at Fidelity Worldwide Investment and before that was Global Head of Capital Market Research at Crédit Agricole CIB for eight years. Erick started his career in finance as a European economist at SG Warburg in France. He then worked as a Senior Economist at HSBC and UBS with a particular focus on the eurozone preparation and creation. Erick has an MBA in Finance - Marketing from the ESLSA Business School and a degree in Economics from the Université Panthéon Assas.

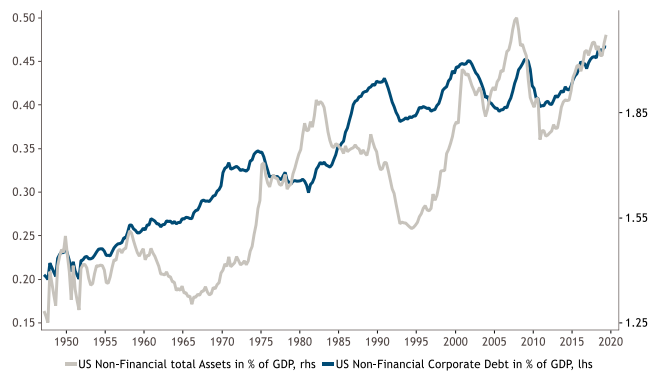
## A Less 'Traditional' Cycle

While some data points indicate we are nearing the end of the credit cycle, we continue to believe this cycle looks different to more 'traditional' ones; leverage is not elevated across the board, it is only heightened in some segments of the market.

In high yield, leverage rose in 2019 but was limited to a few sectors. It also increased in investment grade, but we believe there are signs that the situation is starting to reverse, and leverage is now falling in this segment, particularly the BBB category.<sup>1</sup>

US corporate debt as a percentage of GDP has also risen to new highs, but it is being balanced by the growth of non-financial corporate assets (Fig. 1).

Fig. 1 - US Non-Financial Corporate Debt and Assets as % of GDP



Source: Federal Reserve, Flow of Funds, Bureau of Economic Analysis, as of 30 June 2019

In our view cycles end, they do not die of old age, but this one has been lengthened by several monetary and fiscal 'defibrillations' in the form of tax/rates cuts and quantitative easing (QE). How long this will continue is open for debate, but we believe nothing suggests it will spontaneously stall in 2020.

The corporate credit outlook for 2020 is very dependent on the macroeconomic scenario as we believe corporate valuations have become inflated and do not reflect their underlying fundamentals. If corporate fundamentals and valuations diverged in 2019, we could see them re-converge in 2020 with fundamentals recovering, depending on several macroeconomic themes.

## Geopolitical Risk - Always Some Uncertainty

Geopolitical uncertainty affected economic growth in 2019 resulting in a recession in global manufacturing, which was even more severe in Europe, lower capital expenditure (capex) globally and a decline in business sentiment.<sup>2</sup> However, we believe the confirmation of a 'Phase 1' deal between the US and China could mark the start of a progressive de-escalation in global trade tensions, reducing its drag on growth.

The US presidential election may be a source of uncertainty, but we believe it should be assessed via its potential impact on global trade and may not be a negative factor. In Europe political risk has receded, although a Brexit resolution remains outstanding.

## Global Economy - Fragile But With Potential

While the global economy avoided recession in 2019, the situation remains fragile and, in our view, unlikely to resist additional deterioration in business sentiment. However, over the last few months, data releases suggest some form of recovery is happening in the manufacturing sectors of developed economies. The US manufacturing purchasing managers index (PMI) has rebounded well above the critical 50 level and the German PMI has initiated a similar move, although from a much lower base.<sup>3</sup>

We want to be constructive for 2020. However, in our view, unless trade tension uncertainty is removed, which is unlikely to happen quickly, the overall uncertainty remains high enough to prevent a large enough uptick in the cycle, which would put economic growth back at or above potential.

Historically, in our view, a 'muddle-through' scenario has not been negative for credit markets.

## Monetary Policy - US Has Greater Capacity for More Rate Cuts if Needed

While 2019's global 'monetary policy reboot' is supportive for credit, there are questions around how much further this could go in 2020. In the US, the Federal Reserve (Fed) does not appear ready to act in the first half of next year, and we believe a rate cut close to a presidential election also seems unlikely.

However, the data-dependent nature of the Fed's forward guidance suggests that an unexpected soft patch, with some negative employment consequences, would be countered by additional rate cuts. This creates an asymmetry in the US economic cycle as the Fed is the only developed market central bank to possess capacity for a significant policy response.<sup>4</sup>

In the eurozone, next year's budget proposals do not appear adequate to address the macroeconomic challenge, in our view. With sub-par growth and inflation likely again in 2020, the European Central Bank (ECB) may once more have to respond to such challenges.

Nevertheless, the market's reaction to September's easing, and the need for the new President to act with a strong consensus base, suggests no action will be taken in the near term and that the bar has been raised for future action.<sup>5</sup>

*"The corporate credit outlook for 2020 is very dependent on the macroeconomic scenario"*

## Environmental, Social and Governance (ESG) Factors - Increasing Awareness and Implementation

Following a marked increase in global protests in 2019 and rising awareness of the social and economic challenges of climate change, these themes are being woven into central bank rhetoric.<sup>6</sup> The Network for Greening the Financial System now counts over 50 central bank members all showing a willingness to address climate risks.<sup>7</sup>

The ECB has discussed incorporating ESG considerations into the selection process for its asset purchase programme, with the explicit support of green bonds.<sup>8</sup> However, any green purchase programme will have to await the completion of the European Union's (EU) green taxonomy, which has now been postponed to the end of 2022.<sup>9</sup>

Between the Madrid United Nations climate conference in December 2019 and the 2020 Glasgow conference, we anticipate an ever-more decisive response from the EU and other policymakers on climate change. We expect this will have implications for the energy, transportation and utilities sectors among others.

Increasingly powerful language in forecasts and targets of trusted bodies such as the Intergovernmental Panel on Climate Change and the International Energy Agency also suggest more drastic policy action is inevitable.<sup>10</sup> This adds to an uncertain economic outlook for the coming years and is something which we believe investors should not underestimate.

## China - Focus on Economic Health Remains Prominent

China's economic slowdown was prominent in 2019 and will likely stay at the top of the list of concerns for 2020's global growth projections.<sup>11</sup> So far, we believe this has been dealt with via a double objective: proportionate and targeted policy responses to smooth the impact of overall manufacturing capacity deleveraging while offsetting the trade war's impact.

We believe China can deliver further fiscal and monetary stimulus measures in 2020. These could include further reserve requirement ratio cuts to inject more liquidity into the banking system, further small rate cuts in key medium-term lending facility/loan prime rate references, and an uplift in special local government bond quotas to finance further fiscal effort.

A likely boost in domestic demand would also benefit other Asian countries, in our view.

## Macroeconomic Feedthrough into Credit - Maintain a Quality Bias

Taking these factors into consideration, looking ahead we believe the macroeconomic environment could be slightly more supportive for credit in 2020 than 2019, provided trade disputes continue to ease. However, this cyclical recovery may not be powerful enough to offer protection against rising corporate defaults.

We believe the reduced margin of manoeuvrability for developed market central banks regarding their interest rate policies mean the next recession will need to be fought through more debt and quantitative easing (QE). Therefore, against such a backdrop, it makes sense for investors to maintain a quality bias when investing in credit, especially within high yield.

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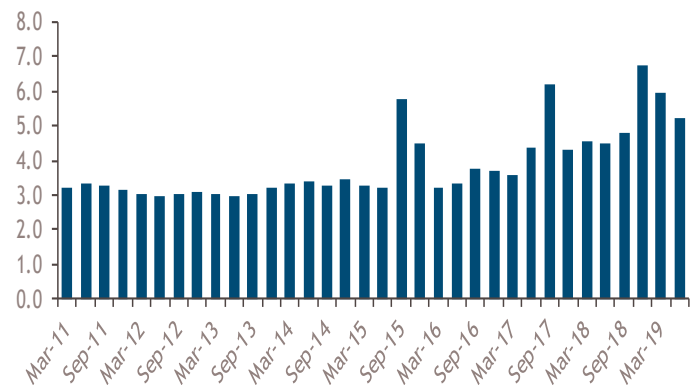
## Fundamentals - Signs of Improvement Ahead

Looking at corporate fundamentals, at first glance 2019 saw further deterioration in the US and Europe and an improvement in emerging market (EM) corporate debt (although it may now have stabilised - Fig. 7); leverage in developed markets has risen and default rates also rose slightly, while earnings growth decelerated in the US and remained negative in Europe.<sup>12</sup>

However, interest coverage remains at a comfortable level (Figs 2 & 3) thanks to lower interest rates. Therefore, while credit metrics do not appear supportive at first glance, on aggregate they are far from levels associated with crises triggers.

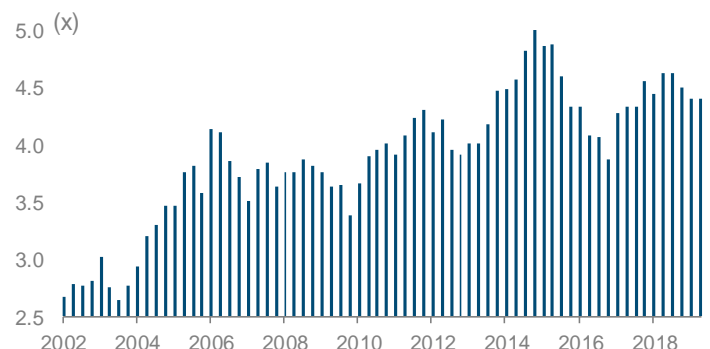
Moreover, so far defaults have been largely focused on already weak credits and have been well flagged by the market, preventing broader contagion (Fig. 4), overleaf.

Fig. 2 - European High Yield Coverage Ratio



Source: Bank of America Merrill Lynch, European High Yield Credit Strategy report - 'Quantitative Squeezing', 20 September 2019. Data as of 30 June 2019

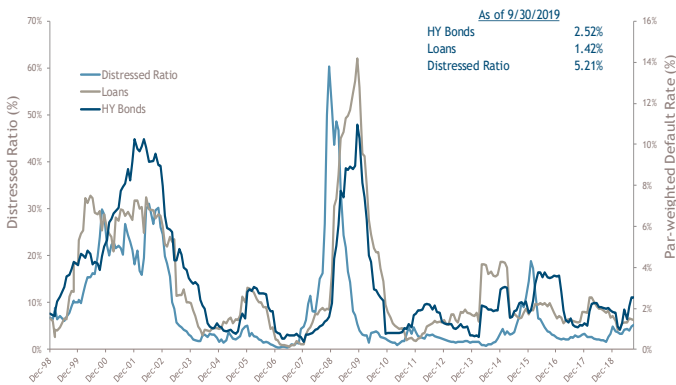
Fig. 3 - US High Yield Interest Coverage



Source: Morgan Stanley Research, Bloomberg, Capital IQ and the FTSE Fixed Income LLC. Median Fundamental Metrics, as of 30 September 2019

*“We see more encouraging signs for fundamentals in 2020”*

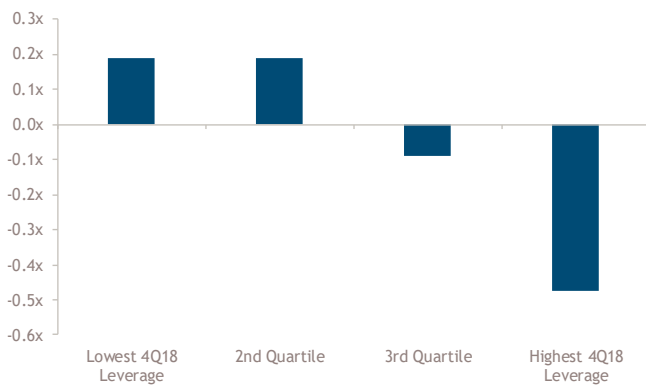
**Fig. 4 - High Yield Bond and Loan Default Rates**



Source: JP Morgan Default Monitor - High Yield and Leveraged Loan Research, published 1 October 2019. Data as of 30 September 2019

We see more encouraging signs for fundamentals in 2020. Beyond the US energy and metals and mining sectors, which face a different set of risks, we believe corporates are likely to focus on deleveraging. This has already become evident within the BBB rating category of investment grade, where companies are showing signs of taking “debt friendly” action.<sup>13</sup> Those who have already begun are being rewarded by the market, in our view, providing a positive incentive to pursue this course.

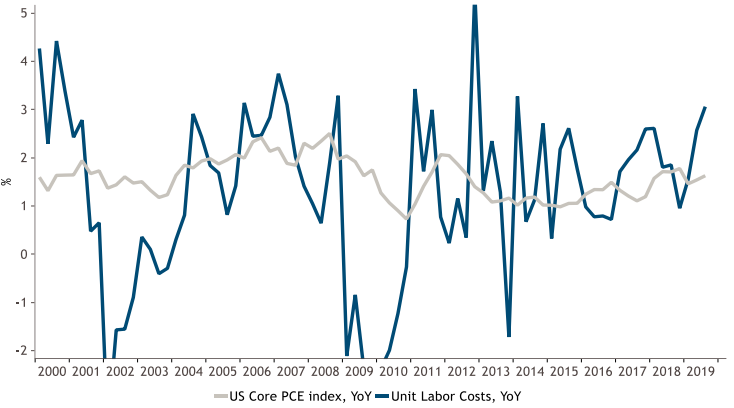
**Fig. 5 - Evolution of Leverage in US BBB Corporates**



Source: Barclays Research US IG Credit: Caught in a low yield vortex, October 2019. Data as of 30 September 2019

Some concerns remain on profit margin trends however. We see unit labour costs in the US and eurozone rising faster than consumer price measures, which undermines profit margin expectations (Fig. 6). In our view, any disappointment in turnover will likely increase pressure and require further action on debt from corporates.

**Fig. 6 - Labour Costs Rising Faster than Consumer Prices**



Source: Bureau of Labour Statistics, as of 30 September 2019

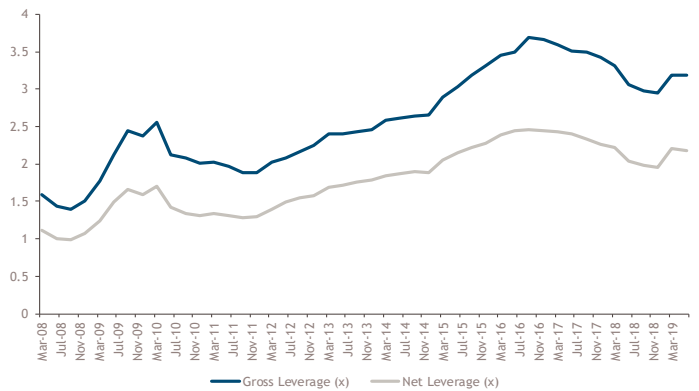
From a regional standpoint, we believe there is an argument to overweight US and EM corporate credit. First, the resilience of the US economy proved a strong argument in periods of uncertainty in 2019.

Should economic growth disappoint in 2020, we believe the US can offer a better defence, with the potential of 150bps of rate cuts at the Federal Reserve’s disposal - a magnitude unmatched by any other developed market central bank.<sup>14</sup>

An overweight position in US corporates may act as a natural hedge against any remaining global recession tail risks (due to the potential for additional Fed stimulus which would benefit US corporates).

The picture also appears brighter within EM. Fundamentals have diverged from developed ones, with deleveraging being addressed since 2016 and amid prospects of improving economic growth levels after significant disappointments in 2019 (Fig. 7).<sup>15</sup>

**Fig. 7 - EM Leverage has Stabilised**



Source: Bank of America Merrill Lynch, Monthly Emerging Market Corporate Chartbook. Data as of 30 June 2019

## Valuations - Tight, But Room for More?

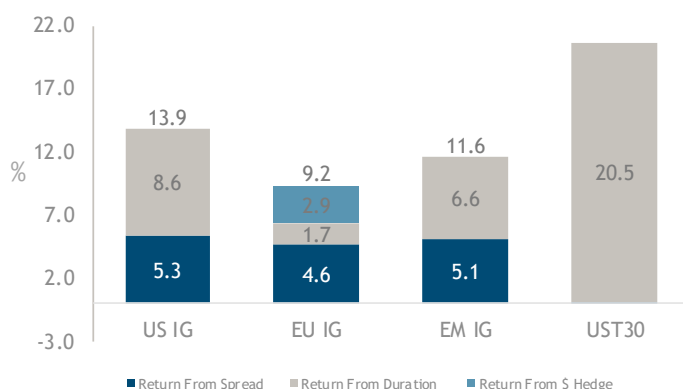
Valuations in credit markets may appear tight, but it is a similar picture for all asset classes; the increase in global liquidity (QE) over the last few years means no asset class looks cheap on a short-term horizon.<sup>16</sup>

Importantly, 2020 will not start with a valuations gap unlike January 2019 (following the sharp correction towards the end of 2018).<sup>17</sup> Incorporating additional asset purchases by the ECB is now a 2019 story, although we believe it may act as an incentive for investors to “buy-the-dips” in 2020.<sup>18</sup>

We believe monthly purchases of €20bn can offset part of the growing supply in European credit markets, although this is less powerful than it was in 2016/17.<sup>19</sup> However, €20bn a month is a small number and we believe can be increased if needed.

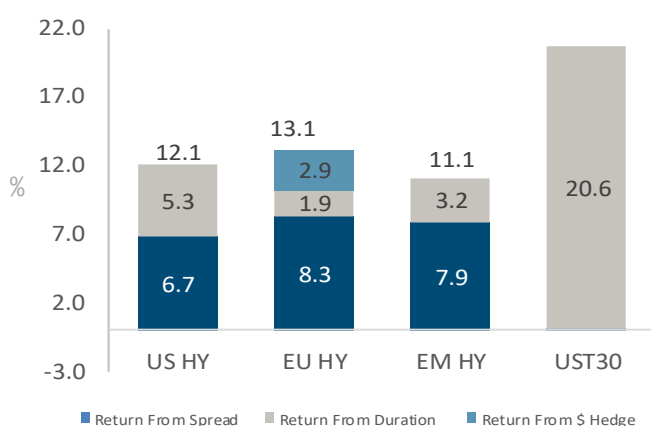
A large proportion of credit market performance in 2019 came from interest rate duration which benefited from the fall in yields (Figs 8 & 9). A repeat performance is unlikely in 2020, as we are not expecting central banks to deliver another round of similar rate cuts.

Fig. 8 - Total Return Breakdown in Investment Grade



Source: ICE BofAML. Data as of 29 November, 2019. US IG - ICE BofAML US Corporate Index (COA0), EU IG - ICE BofAML Euro Corporate Index (ER00), EM IG - ICE BofAML High Grade Emerging Markets Corporate Plus Index (EMIB), UST30 - ICE BofAML Current 30-year US Treasury Index (GA30)

Fig. 8 - Total Return Breakdown in High Yield

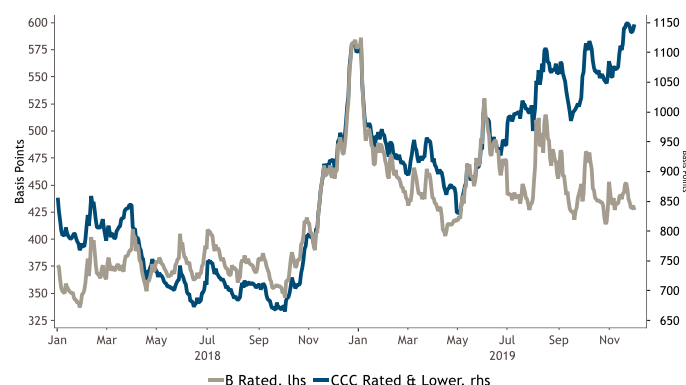


Source: ICE BofAML. Data as of 29 November, 2019. US HY - ICE BofAML US Cash Pay High Yield Index (JOA0), EU HY - ICE BofAML Euro High Yield Index (HE00), EM HY - ICE BofAML High Yield Emerging Markets Corporate Plus Index (EMHB), UST30 US 30 Year Treasury

However, further spread compression may be possible; on an historic basis, while yields are very close to historical lows, credit spreads are not.<sup>20</sup> An analysis of 5-year Z-scores indicates further compression is possible before reaching excess tightening in most credit sub-asset classes. This is because current spreads (spread to worst) have not yet reached a level where a model would no longer find any value.<sup>21</sup>

Given the macroeconomic cycle is still below its potential output level, we believe investors should avoid the lowest-quality credits - i.e. those with the weakest balance sheets. In our view, the “Big Bifurcation” which started in 2019 with radical spread decompression between bonds rated CCC and B is likely to persist (Fig. 10).

Fig. 10 - Decompression Between CCC and B Rated Bonds



Source: ICE BofA ML CCC & Lower US Cash Pay High Yield Index (H0A3), ICE BofA ML Single-B US Cash Pay High Yield Constrained (JUC1), as of 30 November 2019

Looking at the other credit segments, the lack of significant compression between A and BBB rated bonds in the US market, probably a result of excess supply in the BBB segment, suggests there is a potential for relative spread compression.<sup>22</sup>

In high yield, BB rated bonds generally outperformed Bs in 2019, supported by the high-quality bias of so-called ‘yield tourists’ i.e. investors extending their credit tolerance in the hunt for yield.<sup>23</sup>

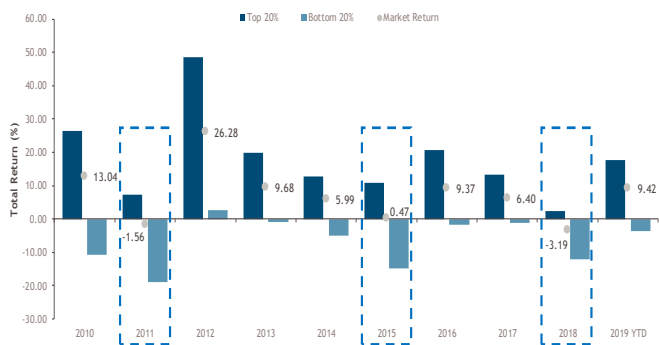
In our view, the recurrent appetite for corporate hybrids and higher-quality sub-financials issues also provided strong support for this ratings category in the European market.

Going forward, we see several factors influencing the relative value trade between BB and B rated bonds; even a mild macroeconomic recovery would help convince investors to capture some extra yield in single B rated bonds.

The relative expensiveness of European hybrid bonds may also trigger some reallocation in favour of what we believe is the current underweight in lower-quality credits. The outperformance in BB rated bonds has created more dispersion in credit markets, which active credit specialist portfolio managers may want to exploit by moving slightly lower down the credit spectrum. (Fig. 11, overleaf).

“We see several factors influencing the relative value trade between BB and B rated bonds”

**Fig. 11 - Dispersion Creates Opportunities**



Source: ICE BofAML, Muzinich & Co analysis. ICE BofAML BB-B Euro High Yield Constrained Index (HEC4). Data as of 30 November 2019

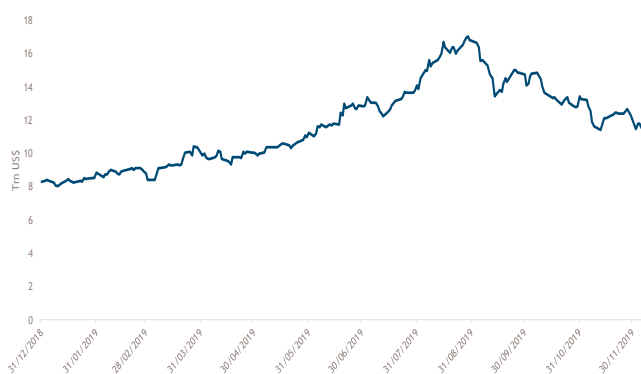
In our view, the underperformance of US loans versus bonds in 2019 reflects systematic outflows from the US retail market over the year, while CLO demand has remained strong.<sup>24</sup> In Europe, while underperformance was less severe due to the lack of a retail investor base, the market still lagged high yield.<sup>25</sup> In both markets, investors' search for interest rate duration favoured bonds over loans when gaining exposure to high yield.<sup>26</sup>

We believe the relative value argument may be more balanced in favour of loans in 2020, as there is less to gain from long duration positioning and more focus on carry going forward.

### Technicals - Underpinned by Strong Demand and Limited Supply

Technical factors were powerful in 2019, in our view, and this may continue into early 2020. In 2019, we believe the change versus 2018 came from the growing demand for credit as rates and government bond yields fell and negative-yielding assets rose (Fig. 12).

**Fig. 12 - Growth in Negative Yielding Assets**



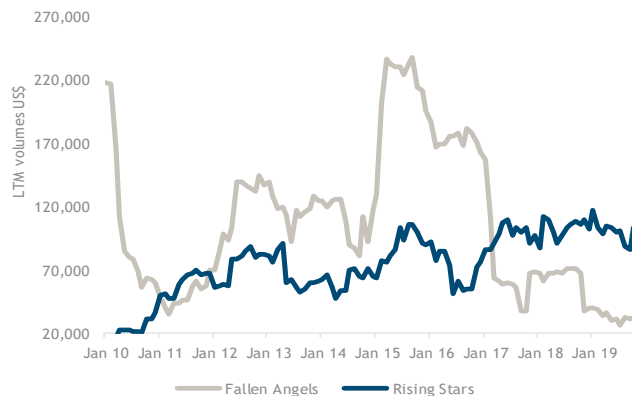
Source: Bloomberg Barclays Global Negative Yielding Debt Index, as of 5 December 2019

*“Technical factors were powerful in 2019 and this may continue into early 2020”*

This demand offset increasing supply in the investment grade market, both US and Europe.<sup>27</sup>

In Europe, a notable trend was the active primary market in reverse yankee issuers with investors benefiting from both cheap borrowing costs in euros and the re-opening of the ECB's asset purchase programme.<sup>28</sup> We also saw an increase in rising stars, where volumes surpassed fallen angels in both euro and US credit markets (Fig. 13).

**Fig. 13 - Global High Yield Fallen Angels and Rising Stars**



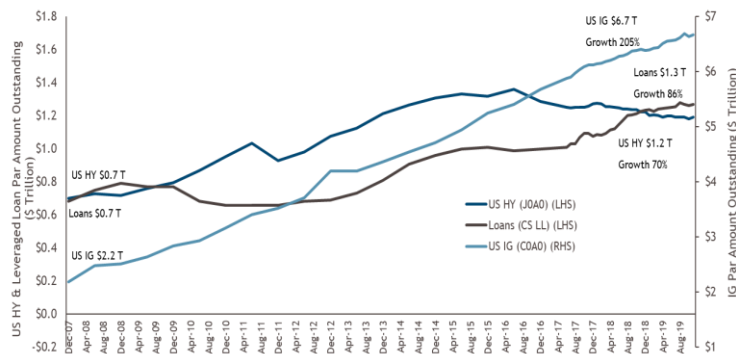
Source: BofA ML Global Research Report - “Fallen Angels/Rising Stars”, 3rd December 2019. Data as of 30 November 2019

Looking forward, we see persistent demand for positive-yielding credit. In our view, the long end of the US investment grade credit market should benefit from non-domestic investor demand, mainly euro, Swiss franc and Japanese yen-based investors struggling to find value in domestic markets.

We are also likely to see increased demand for higher-yielding assets from institutional investors; following what was an increase in their portfolio duration in 2019, investors will have little incentive to increase it further in 2020, but will still need to absorb higher-yielding assets.<sup>29</sup>

The supply situation may turn more positive for investors as it could decline in 2020 due to deleveraging within the investment grade (IG) market, while the high yield (HY) market could also continue to shrink in the US segment (Fig. 14) and stabilise in the European segment.

**Fig. 14 - The US High Yield Market is Shrinking**



Source: BofA ML Global Research HY Market Statistics. As of 31 October, 2019.

At the end of September 2019, a combination of upgrades, coupons, net demand and gross supply resulted in the US high yield market shrinking by US\$60bn.<sup>30</sup> In the European high yield market, net issuance minus coupon reinvestment amounted to €-4.6bn.<sup>31</sup>

For the European investment grade market however, we think the reverse yankee phenomenon is likely to persist as the ECB's QE programme absorbs some of the extra supply.

Cash levels were higher than average in 2019 due to uncertainty around the macroeconomic credit cycle and we believe investors may put cash to work in the event of improving sentiment.<sup>32</sup>

## Credit - Supported by Hunt for Yield and Strong Technical in 2020

There continues to be uncertainty in the macroeconomic growth cycle, although we are seeing a reduction in geopolitical risks and better China/US relations. We foresee a marginal improvement in corporate fundamentals in an ongoing environment of low interest rates.

Expected returns for corporate credit sub-asset classes may be less generous than in 2019, as we believe the boost from lower yields is unlikely to be reproduced. However, despite tight valuations, credit spreads may have room to tighten further supported by a strong technical backdrop.

We see opportunities in EM hard currency corporates in short and regular duration bonds, US investment grade BBB rated credits and bonds at the long end of the curve. We maintain a constructive view of financials, particularly within Europe, and of corporate hybrids where we are selective due to rich valuations. The performance of US and European loans lagged in 2019 and we believe offer some relative value opportunities.<sup>33</sup>

With valuations at current levels, we believe diversification and flexibility will be key for investors in navigating credit markets during what could be the final phase of the credit cycle.

*“Credit spreads may have room to tighten further supported by a strong technical backdrop”*

1. Bank of America Merrill Lynch, European High Yield Fundamentals report, as of June 30th, 2019; Morgan Stanley Research, Bloomberg, Capital IQ and the FTSE Fixed Income LLC, as of September 30th, 2019; Bank of America Merrill Lynch, BofA Merrill Lynch report “Best of BBBreed”, 30 July 2019

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12. Bank of America Merrill Lynch, European High Yield Fundamentals report. Data as of June 30th, 2019; Source: Morgan Stanley Research, Bloomberg, Capital IQ and the FTSE Fixed Income LLC. Data as of September 30th, 2019; Bank of America Merrill Lynch. Monthly Emerging Market Corporate Chartbook. Data as of April 30, 2019

13. BofA Merrill Lynch report “Best of BBBreed”, 30 July 2019

14. <https://www.federalreserve.gov/monetarypolicy/openmarket.htm>, Muzinich opinions and analysis

15. <https://tradingeconomics.com/india/gdp-growth>;

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16. ICE BofA ML Global High Yield Index (HW00), ICE BofA ML Global Corporate (GOBC), ICE BofA ML Global Corporate & High Yield (GI00), S&P 500, Dow Jones Industrial Average, Euro Stoxx 50

17. IBID

18. <https://www.marketwatch.com/story/ecb-cuts-key-rate-restarts-qe-as-it-attempts-to-revive-eurozone-economy-2019-09-12>

19. JP Morgan European Credit Outlook and Strategy, 15 November 2019

20. Yield to worst and spread to worst of ICE BofA ML BB-B US Cash Pay High Yield Index (JOA4), ICE BofA ML BBB US Corporate Index (COA4) from 01.01.2000 - 30.11.2019, yield to worst and spread to worst of ICE BofA ML BB-B Euro High Yield Constrained Index (HEC4) and ICE BofA ML BBB Euro Corporate Index (ER40)

21. Based on Muzinich analysis of ICE BofA Merrill Lynch credit indices HE00, COA0, JOA0, ER00, EMCL, as of 25 November 2019. Calculated by the index value minus the average divided by the standard deviation.

22. ICE BofA ML Difference in Spread to Worst vs Govt. of the ICE BofAML BBB US Corporate Index (COA4) vs. the ICE BofAML Single-A Corporate Index (COA3), as of 19 November 2019.

23. ICE BofA ML measure of ICE BofA ML BB Euro High Yield Index (HE10) outperforming ICE BofA ML Single-B Euro High Yield Index is a subset of the ICE BofA ML Euro High Yield Index (HE00), as of 19 November 2019.

24. Credit Suisse Leveraged Loan Index (ELLI), as of 30 November 2019, versus ICE BofA ML US Cash Pay High Yield Index (JOA0); CLO Issuance data from S&P Global Market Intelligence showing growth in quarterly issuance from Q2 2013 to Q3 2019, as of 30 September 2019.

25. Credit Suisse Western European Leverage Loan Index (CSWELLI), as of 30 November 2019 versus ICE BofA ML Euro High Yield Index (HE00), as of 30 November 2019.

26. IBID & footnote 27.

27. JP Morgan European Credit Outlook & Strategy 2020, 13 November 2019.

28. Bank of America Merrill Lynch research report - Reverse Yankees - The United States of Europe, 5 December 2019.

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30. Credit Suisse Credit Review, September 2019

31. JP Morgan European High Yield Quarterly Review. Data as of September 30, 2019

32. ICI Investment Company Institute - Money Market Fund Assets, as of 30 November 2019

33. Credit Suisse Western European Leveraged Loan Index (WELLI), Credit Suisse Leveraged Loan Index (SELLI), as of 30 November 2019



## Important Information

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## Index Descriptions

You cannot invest directly in an index, which also does not take into account trading commissions or costs. The volatility of indices may be materially different from the volatility performance of an account or fund.

**Bloomberg Barclays Global Aggregate Negative Yielding Debt Index** - The Bloomberg Barclays Global Aggregate Negative Yielding Debt Index measures the performance of approximately 2500 securities which currently carry negative yields. The index is unhedged and currently has an estimated market value of 11 trillion dollars in USD.

**COA0** - The ICE BofA ML US Corporate Index tracks the performance of US dollar denominated investment grade corporate debt publicly issued in the US domestic market. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch), at least 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity as of the rebalancing date, a fixed coupon schedule and a minimum amount outstanding of \$250 million.

**COA3** - ICE BofAML Single-A US Corporate Index is a subset of ICE BofAML US Corporate Index including all securities rated A1 through A3, inclusive.

**COA4** - The ICE BofA ML BBB US Corporate Index is a subset of the ICE BofA ML US Corporate Index (COA0) including all securities rated BBB1 through BBB3, inclusive.

**CSELLI** - CS Leveraged Loan Index - The CS Leveraged Loan Index is designed to mirror the investable universe of US dollar denominated leveraged loan market. The index is rebalanced monthly on the last business day of the month instead of daily. Qualifying loans must have a minimum outstanding balance of \$100 million for all facilities except TL A facilities (TL A facilities need a minimum outstanding balance of \$1 billion), issuers domiciled in developed countries, at least one-year long tenor, be rated "5B" or lower, fully funded and priced by a third party vendor at month-end.

**CSWELLI** - CS Western European Leveraged Loan Index - The CS Western European Leveraged Loan Index is designed to mirror the investable universe of the Western European leveraged loan market. Loans denominated in US dollar or Western European Currencies are eligible for inclusion. The index is rebalanced monthly on the last business day of the month instead of daily. Qualifying loans must have minimum outstanding balance of \$100 million (in local currency), issuers with assets located in or revenues derived from Western Europe, at least one year long tenor, be rated "5B" or lower, fully funded and priced by a third party vendor at month-end.

**Dow Jones Industrial Average** - The Dow Jones Industrial Average is a price-weighted average of 30 blue-chip stocks that are generally the leaders in their industry. It has been a widely followed indicator of the stock market since October 1, 1928.

**EMCL** - The ICE BofA ML US Emerging Markets Liquid Corporate Plus Index tracks the performance of the U.S. dollar denominated emerging markets non-sovereign debt publicly issued in the major domestic and eurobond markets. Qualifying issuers must have risk exposure to countries other than members of the FX G10, all Western European countries, and territories of the U.S. and Western European countries.

**EMHB** - The ICE BofA ML High Yield Emerging Markets Corporate Plus index is a subset of the ICE BofA ML Emerging Markets Corporate Plus Index (EMCB) including all securities rated BB1 or lower.

**EMIB** - The ICE BofA ML High Grade Emerging Markets Corporate Plus index is a subset of the ICE BofA ML Emerging Markets Corporate Plus Index (EMCB) including all securities rated AAA through BBB3, inclusive.

**ER00** - The ICE BofA ML Euro Corporate Index tracks the performance of EUR denominated investment grade corporate debt publicly issued in the eurobond or Euro member domestic markets. Qualifying securities must have an investment grade rating (based on an average of Moody's, S&P and Fitch), at least 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of EUR 250 million.

ER40 - The ICE BofA ML BBB Euro Corporate Index is a subset of the ICE BofA ML Euro Corporate Index (ER00) including all securities rated BBB1 through BBB3, inclusive.

G0BC - The ICE BofA ML Global Corporate Index tracks the performance of investment grade corporate debt publicly issued in the major domestic and eurobond markets. Qualifying securities must have an investment grade rating (based on average of Moody's, S&P and Fitch), have at least one year remaining term to final maturity as of the rebalancing date, at least 18 months to maturity at point of issuance and a fixed coupon schedule.

GA30 ICE BofAML Current 30-Year US Treasury Index - ICE BofAML Current 30-Year US Treasury Index is a one-security index comprised of the most recently issued 30-year US Treasury bond. The index is rebalanced monthly. In order to qualify for inclusion, a 30-year bond must be auctioned on or before the third business day before the last business day of the month.

GI00 - The ICE BofA ML Global Corporate & High Yield Index tracks the performance of investment grade and below investment grade corporate debt publicly issued in the major domestic and eurobond markets. Qualifying securities must be rated by either Moody's, S&P or Fitch, have at least one-year remaining term to final maturity, at least 18 months to maturity at point of issuance and a fixed coupon schedule.

HE00 - The ICE BofA ML Euro High Yield Index tracks the performance of EUR dominated below investment grade corporate debt publicly issued in the euro domestic or eurobond markets. Qualifying securities must have a below investment grade rating (based on an average of Moody's, S&P and Fitch), at least 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity, a fixed coupon schedule and a minimum amount outstanding of EUR 250 million.

HE10 - The ICE BofA ML BB Euro High Yield Index is a subset of the ICE BofA ML Euro High Yield Index (HE00) including all securities rated BB1 through BB3, inclusive.

HEC4 - The ICE BofA ML BB-B Euro High Yield Constrained Index contains all securities in the ICE BofA ML Euro High Yield Index (HE00) rated BB1 through B3, based on an average of Moody's, S&P and Fitch, but caps issuer exposure at 3%.

H0A3 - The ICE BofA ML CCC & Lower US High Yield Index is a subset of the ICE BofA ML US High Yield Index (H0A0) including all securities rated CCC1 or lower.

HW00 - The ICE BofA ML Global High Yield Index tracks the performance of USD, CAD, GBP and EUR denominated below investment grade corporate debt publicly issued in the major domestic or eurobond markets. Qualifying securities must have a below investment grade rating (based on an average of Moody's, S&P and Fitch), at least 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity as of the rebalancing date, a fixed coupon schedule and a minimum amount outstanding of USD 250 million, EUR 250 million, GBP 100 million, or CAD 100 million.

J0A0 - The ICE BofA ML US Cash Pay High Yield Index tracks the performance of US dollar denominated below investment grade corporate debt, currently in a coupon paying period that is publicly issued in the US domestic market. Qualifying securities must have a below investment grade rating (based on an average of Moody's, S&P and Fitch), at least 18 months to final maturity at the time of issuance, at least one year remaining term to final maturity as of the rebalancing date, a fixed coupon schedule and a minimum amount outstanding of \$250 million.

J0A4 - The ICE BofA ML BB-B US Cash Pay High Yield Index is a subset of the ICE BofA ML US Cash Pay High Yield Index (J0A0) including all securities rated BB1 through B3, inclusive.

JUC1 - The ICE BofA ML BB US Cash Pay High Yield Constrained Index contains all securities in the ICE BofA ML US Cash Pay High Yield Index (J0A0) that are rated BB1 through BB3, based on an average of Moody's, S&P and Fitch, but caps issuer exposure at 2%.

The "core" PCE price index is defined as personal consumption expenditures (PCE) prices excluding food and energy prices. The core PCE price index measures the prices paid by consumers for goods and services without the volatility caused by movements in food and energy prices to reveal underlying inflation trends.

S&P 500 - The Standard & Poor's 500 Index (S&P 500) is an index of 500 stocks seen as a leading indicator of US equities and a reflection of the performance of the large cap universe, made up of companies selected by economists.

SX5E - The EURO STOXX 50 Index is derived from the 19 EURO STOXX regional Supersector indices and represents the largest super-sector leaders in the Eurozone in terms of free-float market capitalization.