Private Bank

Bond Market Monthly

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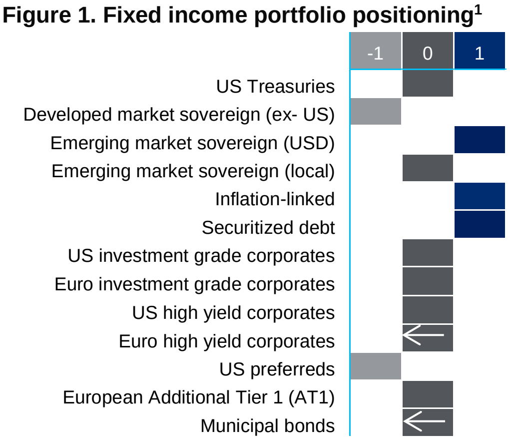
Nobody puts bonds in the corner

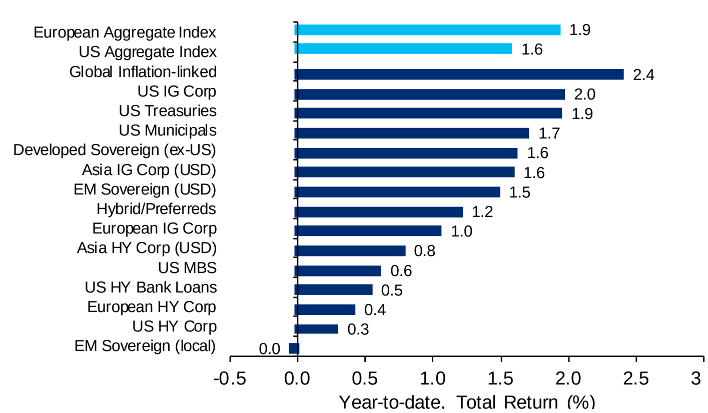
- Equity and fixed income markets are clearly telling two different stories. Equities seem to reflect a strong consumer, the de-escalation of trade threats and a solid earnings outlook. While bond markets reflect negative interest rate policies, central bank asset purchases, weak manufacturing, and concerns over the economic impact of the Chinese coronavirus. Over the last 6 months, global equities have gained 13%, while global bond yields remain relatively unchanged.
- Though the US economy appears on solid ground, the US Treasury (UST) market has been forced to follow global affairs - See January Quadrant – No Gain Without Pain. However, if we follow the path of the 2003 SARS crisis, market reactions around the coronavirus could prove temporary. This would imply a reversal of flight-to-quality flows, with interest rates moving higher once again.
- Lower UST yields have benefitted higher quality bonds. After an exceptional 2019 for US investment grade corporates, momentum has spilled over into the New Year. Valuations are expensive, especially in shorter maturities, but value remains in longer-dated bonds. US municipals (for US investors) have become historically expensive, especially in shorter-dated bonds. In some instances, taxable corporates make more sense. We revise down our muni view to neutral from overweight.
- US and European high yield bank loans have started 2020 well, with both regions outperforming their respective high yield bond markets. We maintain our conviction in bank loans, as yields are higher than HY bonds, price volatility is lower and negative media attention is overstated. We also continue to favor non-agency residential mortgage-backed securities, though we are becoming more wary about historically high valuations in US and European preferred stock markets.

Figure 1. Fixed income portfolio positioning[1]



Source: CPB as of February 7, 2020. -1=Underweight, 0=Neutral, 1=Overweight. 1) Views on positioning are to be used within a portfolio context and can be either short-term (1-3 months) or long-term (12-18 months). Overweight implies a positive view, while underweight implies a negative view. A neutral view implies our confidence is neither positive nor negative.

Figure 2. Market performance, year-to-date (local currency, %)



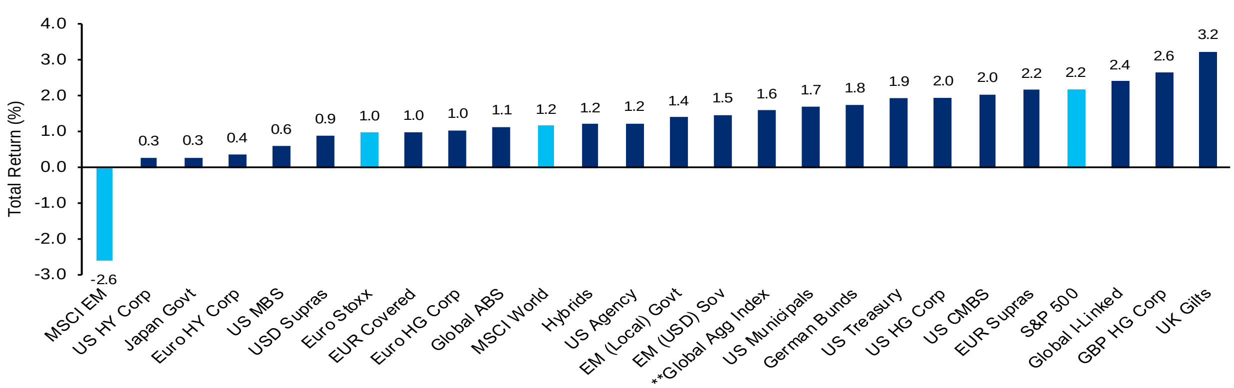
Source: Bloomberg Barclays Indices; Merrill Lynch as of February 7, 2020. Light blue indicates total return on benchmark indices. Dark blue indicates total return on sub-indices. Past performance is no guarantee of future results. Real results may vary. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only.

Market performance views and recommendations[1]

Sectors	Positioning[2]	Focus comments/recommendations
US Treasuries	Neutral	The Fed's monthly purchases of T-Bills are likely to keep short-rates anchored, while a rebound in US manufacturing should pressure long rates higher and curves steeper; Geopolitics, coronavirus impacts and lower global yields can limit an extensive rise
Developed market sovereigns (ex-US)	Underweight	ECB asset purchases is likely to keep rates low while having a positive impact on euro spreads; However, we continue to avoid negative yielding bonds that offer zero protection when interest rates move higher
Emerging market debt	External – Overweight Local – Neutral	**External debt:** USD EM still offers some of the best relative value in global fixed income; We stress the importance of global diversification when investing in EM, as idiosyncratic events occur from time to time (i.e. Argentina) **Local bonds:** Yields have fallen to lowest levels on record, and EM FX has weakened; Persistent USD strength may continue to weigh on unhedged returns
Inflation-linked debt	Overweight	10yr US inflation breakevens spreads have tightened to begin the year, though remain fairly valued; While rising inflation isn't an imminent threat, TIPS offer an opportunity to hedge against trade wars and the potential impact on US consumer prices
Securitized debt	Overweight	**US agency MBS:** The drop in rates and rise in mortgage refis has fueled agency MBS underperformance versus UST; Yields and spreads remain attractive when compared to similarly rated US IG corporate bonds **Non-agency RMBS/ABS:** Non-agency RMBS displays lower correlations to rates and equity and comparable yields to US IG or high quality HY; Offers exposure to the US household sector where leverage is near all-time lows
High grade corporates	US IG – Neutral Euro IG – Neutral	**US IG:** Credit spreads have remained firm despite overall market volatility this year, with high quality/long duration outperforming ; For investors overweight cash, we still favor extending duration to intermediate maturities, as spreads curves are steep **Euro IG:** ECB corporate bond purchases are expected to support tight spreads, though anemically low yields pose greater risks; Favor UK IG corps as Brexit uncertainty fades
High yield bonds/loans	US HY – Neutral Euro HY – Neutral	**US HY:** HY bonds look rich, though single-B's appear cheap to BB's; Continue to favor loans who have higher yields and have outperformed bonds this year, at they typically do around increased volatility in markets **Euro HY:** The technical support from ECB purchases is largely priced in, though yields are still highest in the region; More attractive opportunities can be found in UK HY as fading Brexit uncertainty and wide spreads provide a good entry point
Hybrid debt securities[3]	US prefs. – Underweight Euro AT1's – Neutral	**US prefs:** Spreads are tight and yields are at historical lows; Still, technical pressure from the lack of supply should keep valuations supported; Best value in new issues **Euro AT1's:** Valuations in USD European AT1s still offer decent relative value though valuations have risen; Technicals and low regional yields implies further improvement
Municipal bonds	Neutral	Strong demand has driven tax-exempt ratios to extremely rich levels, particularly inside 10 years; Valuations up to 5 years favor taxable munis or corporates; Ratios improve as you move along the curve, with best value between 10-15 years to maturity.

Source: Citi Private Bank Global Fixed Income Strategy as of February 7, 2020. 1) Views are in the context of a fixed-income only portfolio; 2) Views on positioning are to be used within a portfolio context and can be either short-term (1-3 months) or long-term (12-18 months). Overweight implies a positive view, while underweight implies a negative view. A neutral view implies our confidence is neither positive nor negative; 3) Hybrids are securities that generally combine both debt and equity characteristics, and can include preferred stock, fixed-to-floating rate bonds or other convertible debt.

Figure 3. Global fixed income and select equity index returns, year-to-date (local currency, %)

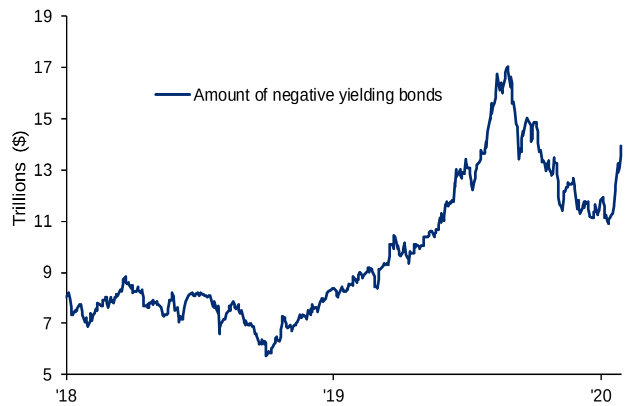


Source: Bloomberg Barclays Indices, Merrill Lynch, MSCI as of February 6, 2020. Light blue indicates an equity index. Global returns shown in hedged USD terms. "**Global Agg Index" is benchmark global fixed income index. Indices are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment. Index returns do not include any expenses, fees or sales charges, which would lower performance. Past performance is no guarantee of future results. Real results may vary.

Asset class update: US rates and central bank policy

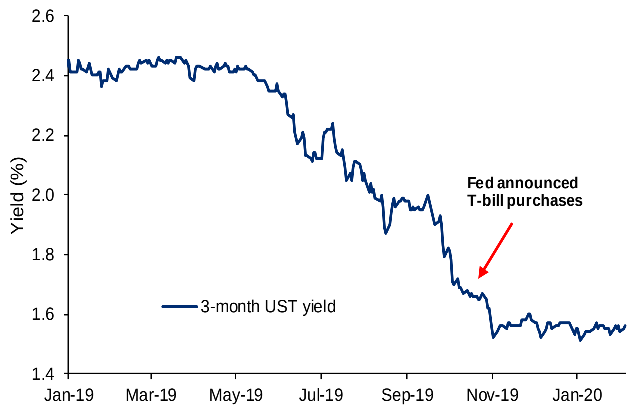
US rates and Fed policy

Figure 4. The universe of negative yielders has grown by $3T



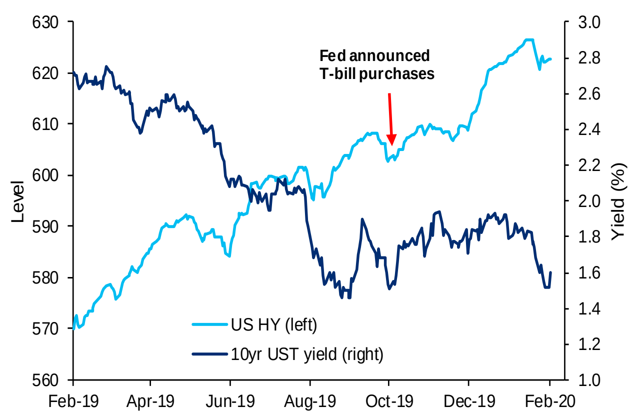
Source: Bloomberg as of February 6, 2020.

Figure 5. 3-month T-Bill yield is anchored by Fed purchases



Source: FactSet as of February 6, 2020.

Figure 6. Easy Fed policy has induced stronger credit



Source: FactSet, Bloomberg Barclays Indices as of February 6, 2020.

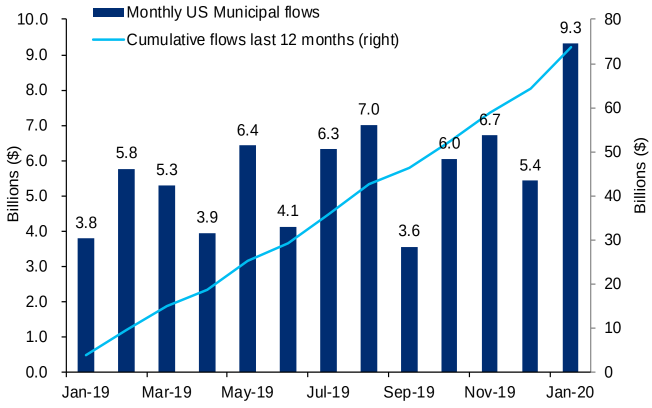
- **Fed Funds:** Citi Private Bank strategy does not currently expect the Fed to adjust policy rates in 2020. After cutting three times in 2019, the current outlook appears consistent with maintaining its range of 1.5% - 1.75% on Fed Funds. In our view, the likelihood of a US recession over the coming 12-18 months remains low. See CPB's Outlook 2020 – Staying positive in a negative yield world.
- However, the hurdle for the Fed to reduce policy rates further is a lot lower than its capacity to hike. This was made clear last year by Fed Chairman Powell that the committee would prefer to let inflation rise above its 2.0% target, and remain there for an extended period, before raising rates again. Conversely, any significant shock to the US economy could open the door to more easing. Either way, short-term US rates are likely to remain low (including US LIBOR).
- **10-year Treasury yields:** Strong consumption, healthy labor and housing markets continue to signal a constructive economic outlook. In our view, elevated consumer demand and reduced trade concerns should ultimately create some normalization in a weak US manufacturing sector. Altogether, 2020 GDP growth should modestly improve above 2.0%. If all goes perfectly, we could see 10-year UST yields moving back towards 2.0% later this year. See our 2020 US rates update– State of vertigo.
- Unfortunately, the UST market does not have the luxury to focus only on domestic affairs. A significant short-term negative economic impact from the China coronavirus epidemic may continue to weigh on Treasury yields. Of course, this has occurred at a time when optimism toward a cyclical recovery in China had been building. This was highlighted in the latest Global Strategy Bulletin – Wuhan Virus in Context.
- However, if we follow the path of the 2003 Severe Acute Respiratory Syndrome (SARS) crisis, current market reactions could prove temporary. This would imply a reversal of flight-to-quality flows, with interest rates moving higher. This should be a consideration for unhedged borrowers with exposures to floating-rate liabilities.
- Aside from the coronavirus, US rates will still need to cope with $13 trillion of negative yielding bonds that exist across Europe and Japan **(Fig. 4)**. With negative interest rate policies in these regions likely to persist, a persistent reach for yields can limit the extent to how high US yields can rise. Other factors such as the Fed's balance sheet (see below), US politics or other geopolitical issues (i.e., US/Iran conflict) could be other sources of future volatility. In turn, creating headwinds for long-term US yields.
- **Fed balance sheet:** With the intention to raise the level of bank reserves (and soften volatility in short-term funding markets), the Fed has been buying $60 billion of US T-Bills per month since October. We expect this to continue at least into the second quarter, with any reduction in T-Bill purchases being gradual. These purchases are likely to keep the short-end anchored **(Fig. 5)**. Separately, the Fed will continue to reinvest maturing UST debt and agency mortgage-backed securities from past quantitative easing programs back into UST notes and bonds.
- That said, any downward adjustment to T-Bill purchases could be a catalyst for higher market volatility. In our view, Fed balance sheet expansion has coincided with steeper US yield curves and stronger equity and credit markets **(Fig. 6)**. One could assume a pullback in Fed purchases may also coincide with a pullback in risk assets.

Past performance is no guarantee of future results. Real results may vary.

Asset class update: US municipal bonds & securitized debt

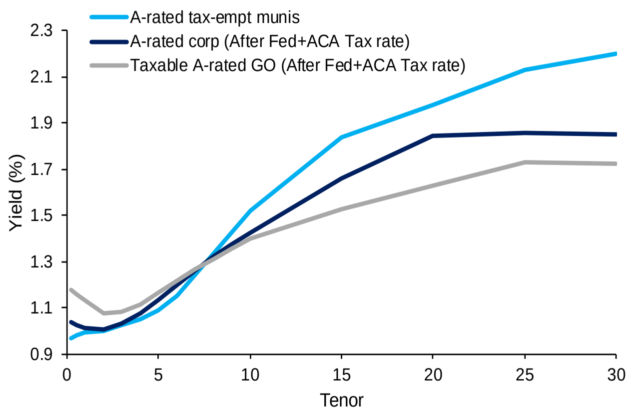
US municipals

Figure 7. Flows into muni bonds have remained strong



Source: Lipper Flows as of February 6, 2020.

Figure 8. Taxables look more attractive within 5 years

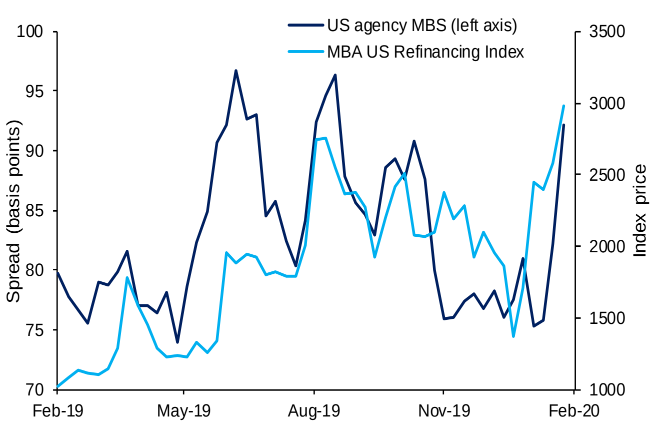


Source: Bloomberg as of February 6, 2020.

- **Market update:** The demand for US municipals continues to accelerate, as January flows rose 140% versus last year **(Fig. 7)**. Prior to January, the pace of weekly fund flows had still been extraordinary, averaging over $1 billion for all of 2019. Flows tend to follow performance (which are positive), but the need for tax-exempt munis post the Tax Cuts and Jobs Act of 2017 had grown immensely for high income earners. In turn, credit spreads have tightened significantly and muni yields (relative to UST) have reached expensive levels. Especially in maturities within 10 years.
- We have been overweight US munis since June 2019 on higher yield ratios and expectations for persistent demand. Today, 5-year AAA yield ratios at 60% are at historical lows. In many instances, taxable corporate bonds offer better value **(Fig. 8)**. Even when compared to munis issued within high tax states. In our view, historically expensive valuations leaves munis exposed to a backup in UST yields.
- As such, we move back to a neutral position from overweight. As highlighted in the latest Muni Watch, we would be very happy if forward returns matched the current yield to worst (~1.5%) for the remainder of the year. This would bring full year returns near 3.0%.
- **Relative value:** From a tactical perspective, lower-rated munis are likely to be better supported if UST yields rise. That said, average BBB-rated muni spreads of +60bp are near its tightest levels of the last 10 years. While wider spreads may partially buffer a short-term rise in US rates, these valuations do not compensate for longer-term credit risks. We would prefer to keep a high quality bias, and wait for better opportunities to add risk.
- The US muni curve is virtually flat through 5 years, with yield ratios less than 60%. In this part of the curve (< 5yrs), we favor taxable IG corporates or taxable munis (depending on liquidity needs). Ratios improve as you move along the curve, with best value between 10-15 years to maturity.

Securitized debt

Figure 9. US agency MBS spreads have widened with refis



Source: Bloomberg Barclays Indices as of February 6, 2020.

- **US agency MBS:** Spreads in US agency mortgage-back securities (MBS) gapped wider in January, as coronavirus fears drove Treasury yields lower and refinancing risk higher**.** Indeed, the Mortgage Banker Association Refinance Index spiked to its highest levels since 2013, instilling fear over a pick-up in new supply **(Fig. 9)**. Additionally, the Federal Reserve is shrinking their holdings of agency MBS, which has fallen $400 billion over the last two years.
- Lower UST yields have still fueled market gains, though US MBS has underperformed like-duration Treasuries by 60bp YTD (0.6% vs. 1.3%, respectively). However, index spreads at +90bp look attractive. Especially when compared to similar rated IG corporates.
- **Non-agency MBS:** Like many global fixed income markets, valuations in non-agency residential MBS have risen. Average yields are now near 3.5%. However, a strong US consumer and the continued rise in home prices (albeit slowing) supports our positive view. Yields remain competitive with IG corporates, or even high quality high yield bonds. More important, non-agency MBS tends to be inherently less volatile. This behavior creates one of the most attractive risk-adjusted profiles in fixed income or equity markets.

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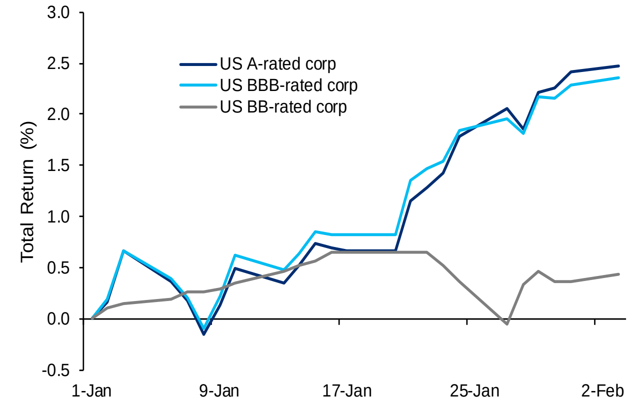
Asset class update: Corporate credit

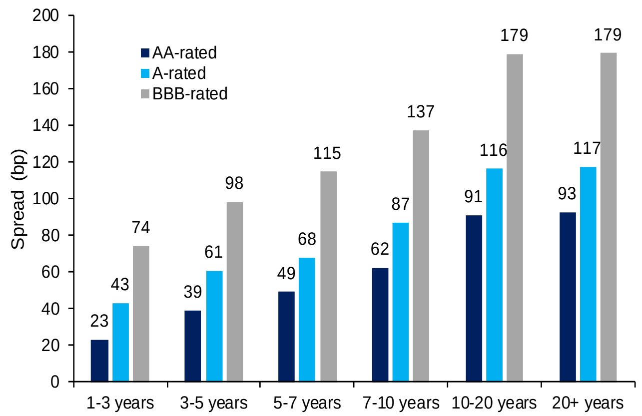
US investment grade (IG) corporates

Figure 10. Higher quality corporates have outperformed YTD



Source: Bloomberg Barclays Indices as of February 6, 2020.

Figure 11. Best values in intermediate maturities

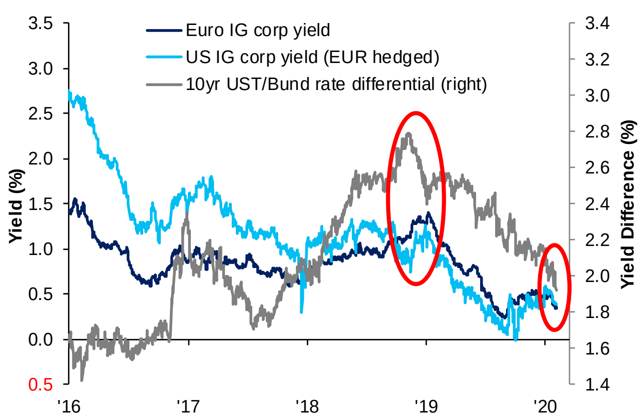


Source: Bloomberg as of February 6, 2020.

- After an exceptional 2019 for US IG corporates, the positive momentum has spilled over into the New Year. Lower Treasury yields has weighed on credit markets, pushing IG benchmark yields down to a historical low of 2.58%. Corporate index spreads have widened back towards 100bp over the last few weeks, though the appetite for high quality yield continues to be supportive. In all, US IG has managed to gain over 2.3% in the month of January.
- Similar to last year, IG corporate performance has been led by long duration. Bonds maturing beyond 10-years have gained 4.5% YTD. However, the aforementioned spread volatility has benefitted higher quality bonds **(Fig. 10)**. Indeed, A-rated IG has returned 2.9%, outperforming BBB-rated issuers by 40bp. As fears surrounding the China coronavirus fade, we are likely to see US yields move higher. In this scenario, we believe BBBs would outperform.
- Despite our expectations for higher yields, we are not shy about building portfolios with longer duration exposures. Investors are rewarded with wider spreads, as you move further along the yield curve. At the same time, short-dated IG is arguably the most overvalued, with spreads near historical tights. We find best values in the intermediate part of the curve **(Fig. 11)**.
- As noted in our Q1 2020 US credit sector deck, US financials were poised to outperform on a manufacturing rebound and re-steepening of the UST yield curve. Basic materials and energy sectors were also expected to benefit from stable oil prices, improving risk sentiment and a recovering global economy. Unfortunately, the coronavirus out of China created a setback for these sectors.
- In our view, the economic and market impact from the coronavirus will be short-lived. In addition, we would expect the yield curve to re-steepen as these concerns fade. Improvements in both US growth and manufacturing keeps us overweight both financials and energy.

European corporate bonds

Figure 12. Hedging costs fall along with rate differentials



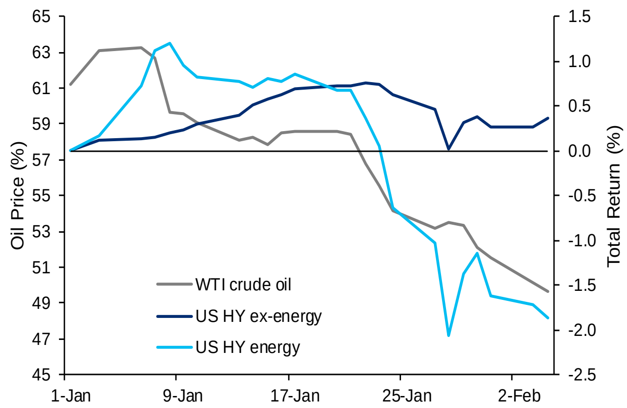
Source: Bloomberg Barclays Indices, Bloomberg as of February 6, 2020.

- **UK IG:** We expressed a strong conviction in UK IG corporates back in October 2019 (see Brexit, a little popcorn, and a box of UK corporates). The victory of the pro-business Conservative Party in the UK general election has helped lift sentiment and further strengthen our confidence in sterling-linked assets (see Europe Strategy report). Over the last 3 months, UK IG spreads have tightened 25bp, generating a 4.0% total return. Outperforming both the US and Euro markets by 50bp and 300bp, respectively.
- At +120bp, UK IG spreads remain relatively wide versus the US and Eurozone. Reduced domestic political uncertainty should continue to support demand in a market where investors have been largely underexposed. While appetites have improved, it is important to note that the tradeable universe is relatively small. Sterling-denominated IG is less than 5% of the global IG market. Still, in a world where value in fixed income is hard to come by, we would expect UK IG spreads to improve further versus their peers.
- **Euro IG:** Low/negative yields in the Eurozone has limited IG performance for some time. With little coupon to contribute, euro IG has returned 60% less over the last 12 months than US dollar IG (6.3% vs. 14.7%, respectively). Though euro IG index spreads are wider than US dollar markets (duration-adjusted), average yields of 0.35% are 7.5x lower.
- Fundamentals and ECB bond purchases keeps us neutral Euro IG, with spreads largely reflecting central bank support. Wide US/Euro rate differentials had benefitted hedging strategies, creating some intrinsic value in euro IG. However, these differentials have narrowed significantly, lessening the opportunity **(Fig. 12)**.

Asset class update: Global high yield bonds & loans

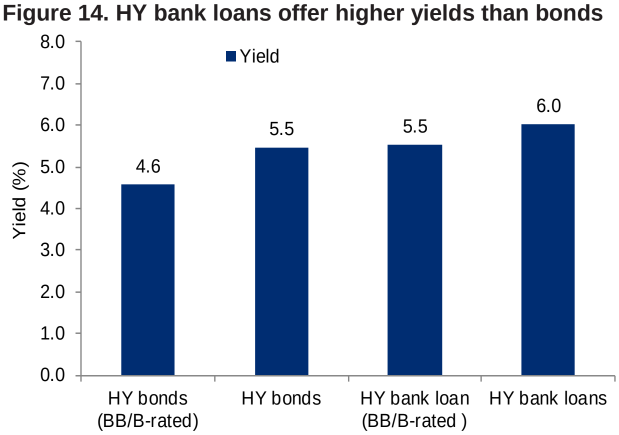
Global high yield (HY) bonds & loans

Figure 13. Lower oil has weighed on the HY energy sector



Source: Bloomberg Barclays Indices as of February 6, 2020.

Figure 14. HY bank loans offer higher yields than bonds



Source: Bloomberg Barclays Indices, S&P as of February 6, 2020.

Figure 15. Asia HY bonds offer value but under pressure

Source: JP Morgan Indices as of February 6, 2020.

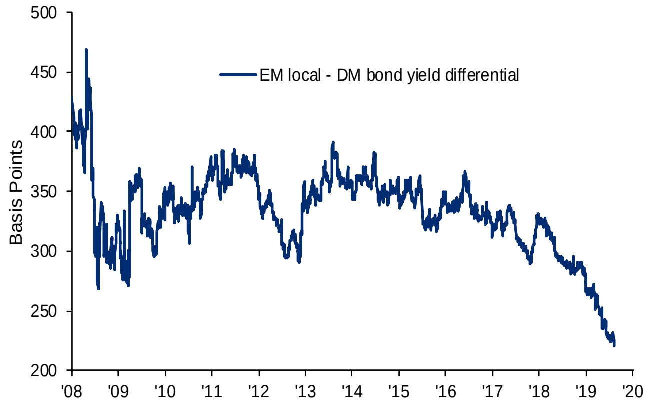
- **Global HY bonds:** It has been an up/down start to 2020 for US HY bond markets. After rising alongside equity markets through the first few weeks of January, China virus-related volatility drove valuations sharply lower. HY benchmark spreads have gapped out 60bp to 380bp, as yields moved back towards 5.5%. The net effect is a HY bond benchmark that has produced a near zero return YTD.
- The large concentration of energy-related sectors in the US (12% of benchmark) has played a significant role on index performance. With crude oil prices down 20%, energy spreads have moved back towards +750bp (yields 9.0%), with the sector losing 1.85%. Excluding energy, US HY bonds have gained 35bp **(Fig. 13)**.
- European HY has fared better, as the market has little exposure to energy markets. Still, euro HY bond spreads widened 50bp in sympathy to the broader risk-off sentiment. Sterling HY has fared slightly better, with index spreads wider by 10bp.
- **Outlook:** We remain constructive on global HY bond markets for 2020, which is consistent with our modestly optimistic outlook for the New Year. Central bank accommodation is likely to persist, keeping yields low and creating a favorable environment for issuers. Indeed, 70% of total new issue volume in 2019 was to refinance maturing bonds or existing maturities. As a result, less than 3% of the US and European HY markets are expected to mature in 2020.
- Despite recent widening, HY bond valuations remain expensive. As such, return expectations for 2020 should be moderated. Spreads may experience periods of volatility, but largely remain tight. Default rates are expected to move slightly higher, but well below average. We expect coupon-like returns in the US between 4 - 5%. ECB asset purchases are largely priced and we revise our view to neutral. We expect 2-3% returns in euro HY this year.
- **HY bank loans:** US and European bank loans have fared much better to start 2020, with both markets gaining 50-60bp. Though risk assets have pulled back on coronavirus related fears, US loan prices managed to fall by only $0.50, with European loans declining by $0.10. Conversely, HY bond prices dropped by over 1 point.
- We maintain our conviction in HY bank loans, as yields are higher than HY bonds, and price volatility is lower. US LIBOR spreads of +435bp generates yields near 6.0%, or 50bp higher than US HY bonds. In Europe, average loan spreads equates to yields near 5.0% or 200bp higher than bonds **(Fig. 14)**.
- We expect HY bank loans to generate similar returns to HY bonds, between 4-5%. While the ability for an issuer to refinance an existing loan can limit price upside as risk appetites grow, this trait becomes more favorable when appetites decrease.
- **Implementation and relative value:** Though we remain constructive on HY, the overall quality of the loan market has moved lower and more risky CLO issuance has increased. This keeps our bias favoring higher rated issuers. Relative value still favors Single-B's over Double-B's, and we continue to avoid CCC's.
- More attractive opportunities can be found in the UK, where probabilities of a "no deal" Brexit have fallen significantly (see our October 2019 report on UK corporates). Upon a Brexit deal, we would expect sterling-denominated spreads to compress versus European and US HY issuers.
- After tightening 100bp since December, Asia (USD) HY bond spreads have been under pressure from the rising coronavirus outbreak. Spreads are likely to remain volatile, but we remain constructive **(Fig. 15)**. Unfortunately, the virus impact to the Chinese economy will likely be negative. However, a meaningful policy reaction should help mitigate a more significant slowdown.

Past performance is no guarantee of future results. Real results may vary.

Asset class update: Emerging markets & preferred stocks

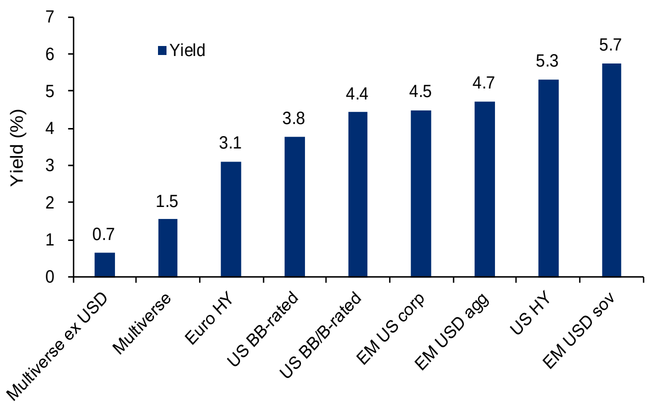
Emerging markets (EM)

Figure 16. Local EM yields have compressed vs developed



Source: Bloomberg Barclays Indices as of February 6, 2020.

Figure 17. USD EM presents best value in a low yield world

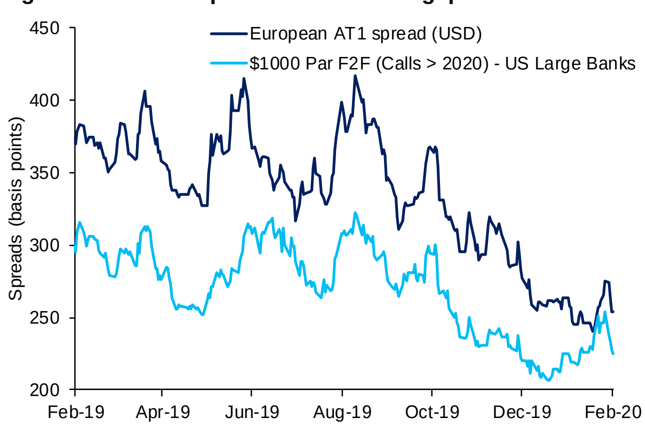


Source: Bloomberg Barclays Indices as of February 6, 2020.

- **Global EM update:** The start of 2020 for EM debt has been mixed. External US dollar (USD) denominated EM bonds have benefitted from lower UST rates and only minor spread widening, with global benchmarks producing returns of 1.7% YTD. On the other hand, China coronavirus fears pushed local yields lower but weakened EM FX markets. For unhedged investors, local EM bond indices are slightly negative YTD, led by Brazil (-4.0%) and South Africa (-3.8%).
- **Local EM markets:** The average yield for EM local markets is now 3.5%. All regions either have set new lows, or have reached historical low levels. At the same time, the yield differentials between EM and developed markets has narrowed to record lows **(Fig. 16)**.
- In many EM countries, future returns (unhedged) will likely be dictated by movements in FX, rather than rates. For now, we maintain our neutral view. However, macro concerns surrounding the China coronavirus may keep the US dollar elevated, with risks to local yields biased to the downside (especially in Asia). As these concerns fade, we could see confidence return to EM FX, with nominal yields likely to remain low (or move lower). Real yields in Indonesia, Malaysia, Mexico and South Africa look attractive.
- **External EM markets:** USD EM debt has been relatively stable YTD, despite the virus-related rise in market volatility. Global index spreads were only marginally wider in January (currently +285bp), while lower UST yields contributed positively to overall EM performance and longer duration exposures.
- Like most other fixed income markets, USD EM yields are low. Indeed, the recent rally has brought EM benchmark yields (~4.7%) to their lowest levels since 2013. Spreads are also near their tightest levels since 2014. Though valuations have become more expensive, USD EM bonds still provide value in a low yield world **(Fig. 17)**. It remains notable that improved current accounts and lower reliance on external funding has improved the fundamental outlook for EM.
- We maintain our overweight, and expect external EM markets to outperform developed market bonds in 2020.We prefer USD EM markets to local rates. We also favor a globally diversified approach when implementing EM exposures in portfolios. This includes having some exposure to cheaper, higher beta countries/regions. Indeed, when held over long periods, diverse EM portfolios have very attractive risk-adjusted returns.

Preferreds (US & European)

Figure 18. US/Euro preferred valuation gap has narrowed



Source: Bloomberg, Credit Suisse as of February 6, 2020.

- **US preferreds:** We revised down our view on US preferreds last November to underweight, after spreads reached historical lows. Average spreads around +200bp are roughly unchanged since. However, yields continue to fall. Today, the average yield on US fixed-to-floating rate preferreds is a historically low 3.5%. This has helped produce a 1.8% total return YTD.
- With expensive valuations just getting more expensive, we find it hard to get excited. A low yield environment and favorable technicals continue to support the asset class. Recent new issues from major banks were met with significant demand and already trading at a premium in the secondary market. Unless supply rises significantly (unlikely), or fundamentals deteriorate (again, unlikely), a meaningful rise in interest rates should be the only concern. However, even if yields rise, this may just be met with even stronger demand.
- **European preferreds:** We favored European preferreds over the US due to a much better value proposition. However, the valuation gap between these two markets has narrowed significantly **(Fig. 18)**. Similar to the US, euro preferred spreads are tight and yields have dropped, gaining 1.8% YTD. We remain neutral for now, as technical pressures are likely to be persistent, keeping spreads tight. Average yields (in USD) above 4.0% still offer value, though euro contingent convertible yields dropping below 2.5% are raising eyebrows.

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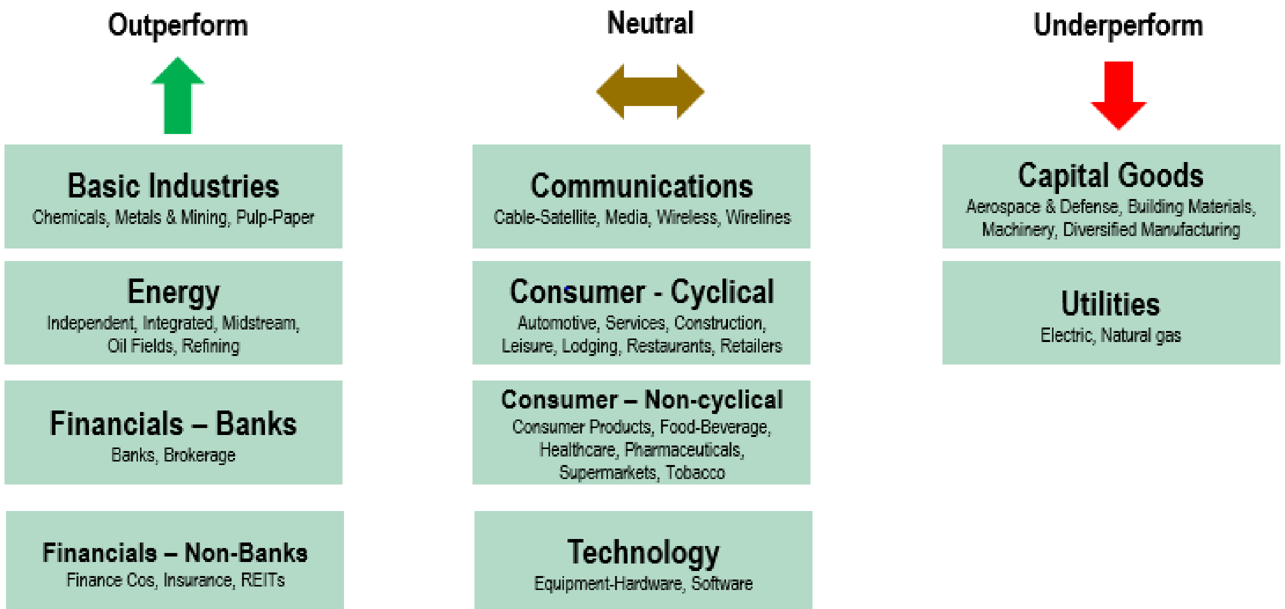
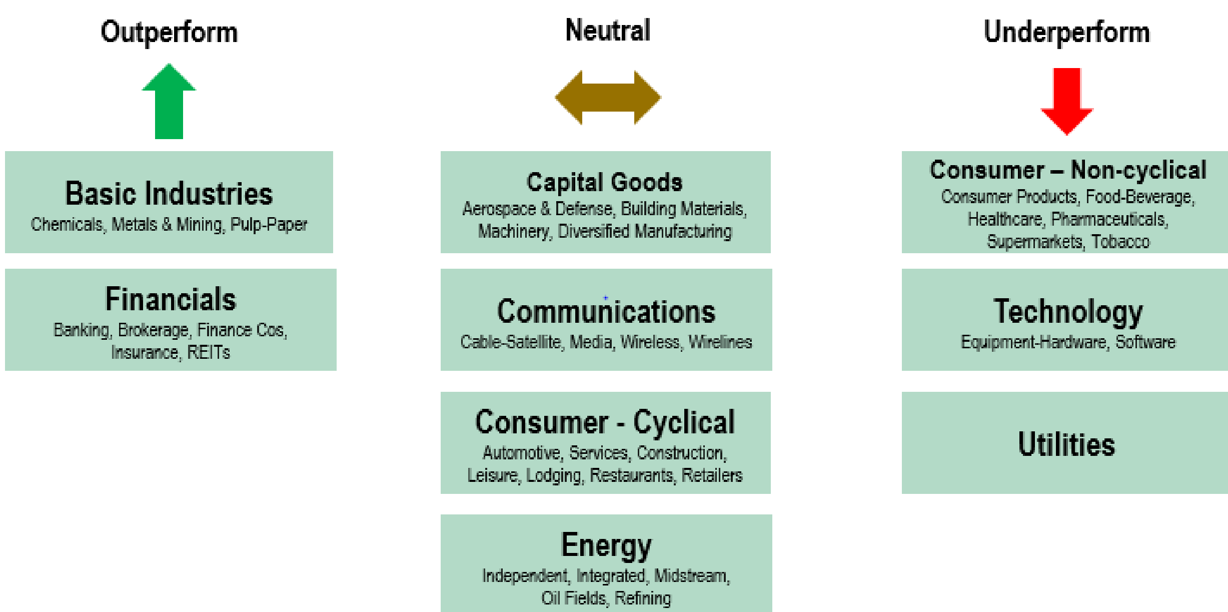
Corporate sector views – US markets

Figure 19. US Investment Grade Corporates – Summary of sector views
See our Q120 US Credit Sector Views report for further details



Source: Citi Private Bank Global Fixed Income Strategy, Bloomberg Barclays US Intermediate Corporate Bond Index as of February 5, 2020. The expressions of opinion are not intended to be a forecast of future events or a guarantee of future results. Arrows imply our expectations of sector performance versus the Bloomberg Barclays US Intermediate Corporate Bond Index. Up arrow = outperform, Sideways arrow = market perform, Down arrow = underperform

Figure 20. US High Yield Corporates – Summary of sector views
See our Q120 US Credit Sector Views report for further details

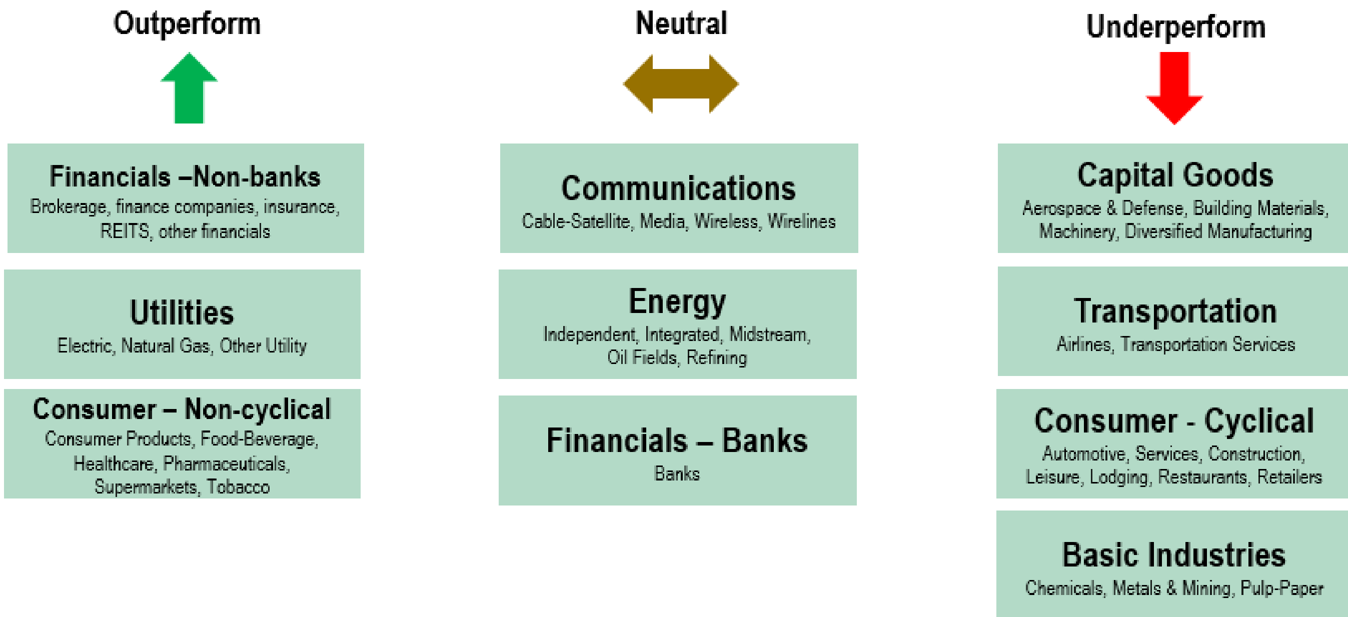


Source: Citi Private Bank Global Fixed Income Strategy, Bloomberg Barclays US Corporate High Yield Bond Index as of February 5, 2020. The expressions of opinion are not intended to be a forecast of future events or a guarantee of future results. Arrows imply our expectations of sector performance versus the Bloomberg Barclays US Corporate High Yield Bond Index. Up arrow = outperform, Sideways arrow = market perform, Down arrow = underperform

Corporate sector views – European markets

Figure 21. EMEA Investment Grade Corporates – Summary of sector views

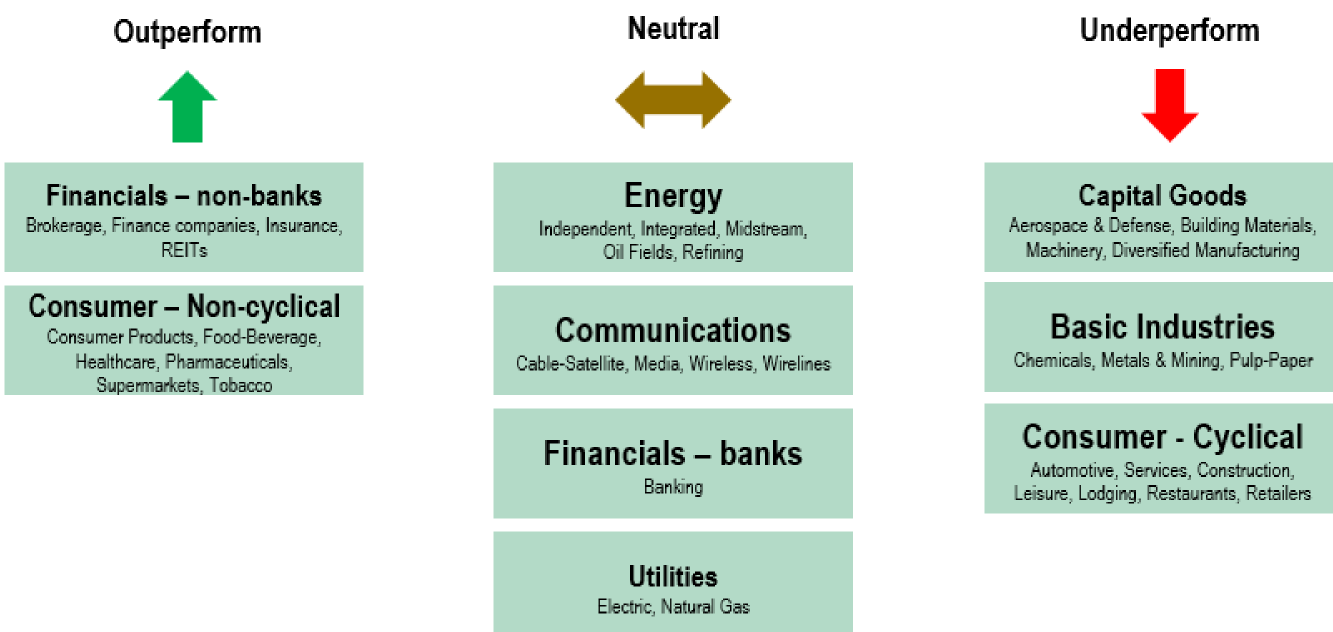
See our 4Q19 EMEA Credit Sector Views report for further details



Source: Citi Private Bank Global Fixed Income Strategy, Bloomberg Barclays Euro-Aggregate Corporate Statistics Index as of October 2019. The expressions of opinion are not intended to be a forecast of future events or a guarantee of future results. Arrows imply our expectations of sector performance versus the Bloomberg Barclays Euro-Aggregate Corporate Statistics Index. Up arrow = outperform, Sideways arrow = market perform, Down arrow = underperform

Figure 22. EMEA High Yield Corporates – Summary of sector views

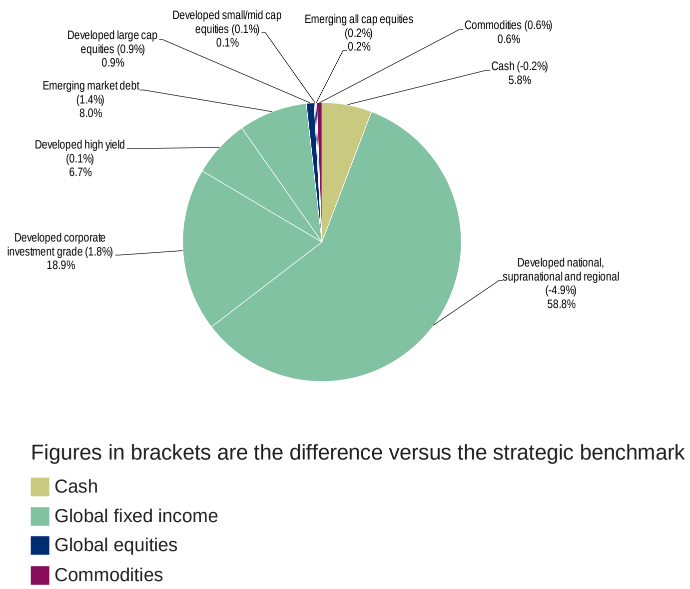
See our 4Q19 EMEA Credit Sector Views report for further details



Source: Citi Private Bank Global Fixed Income Strategy, Bloomberg Barclays Euro High Yield Corporate Bond Index as of October, 2019. The expressions of opinion are not intended to be a forecast of future events or a guarantee of future results. Arrows imply our expectations of sector performance versus the Bloomberg Barclays Euro High Yield Corporate Bond Index. Up arrow = outperform, Sideways arrow = market perform, Down arrow = underperform

Global Investment Committee (GIC) Fixed Income Tactical Asset Allocation

Figure 23. GIC fixed income allocation – Risk Level 1*



Source: Citi Private Bank Global Investment Committee, January 29, 2020.

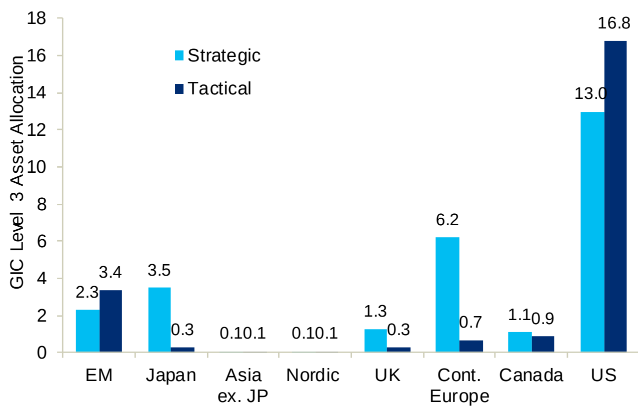
Core Positions

- Within fixed income, global developed government debt has a large underweight postion at -4.9% driven by underweights in Europe and Japan. However, the GIC has a large overweight to US Treasury debt (+4.3%).
- Developed investment grade corporates has one of our largest overweights at +1.8% followed by emerging market debt at +1.4%. We are roughly neutral global high yield.
- Within emerging market debt, Asia and LatAm have an overweight position while EMEA is slightly underweight. This includes external and local curency bonds.

* Risk level 1 is designed for investors who have a preference for capital preservation and relative safety over the potential for a return on investment. These investors prefer to hold cash, time deposits and/or lower risk fixed income instruments.

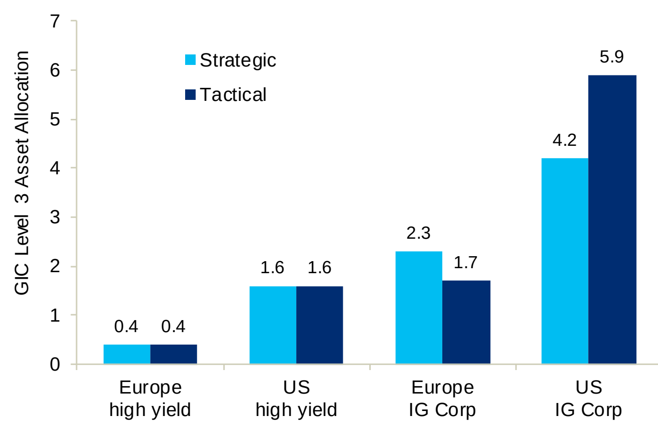
Strategic = benchmark; tactical = the Citi Private Bank Global Investment Committee's current view; and active = the difference between strategic and tactical.

Figure 24. Fixed income sovereign tactical allocation (Level 3)**



Source: Citi Private Bank Global Investment Committee, January 29, 2020.

Figure 25. Fixed income credit tactical allocation (Level 3)**



Source: Citi Private Bank Global Investment Committee, January 29, 2020.

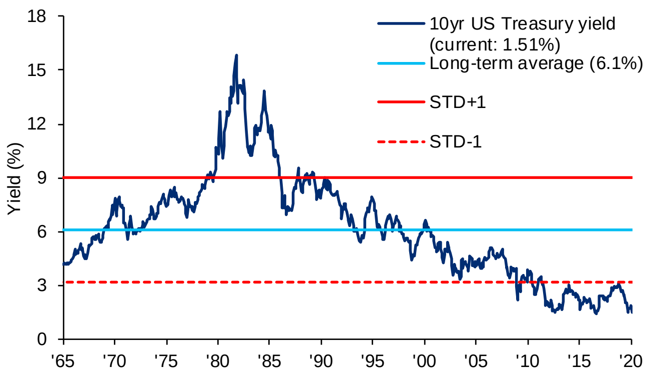
**Risk Level 3 is designed for investors with a blended objective who require a mix of assets and seek a balance between investments that offer income and those positioned for a potentially higher return on investment. Risk Level 3 may be appropriate for investors willing to subject their portfolio to additional risk for potential growth in addition to a level of income reflective of his/her stated risk tolerance.

Strategic = benchmark; tactical = the Citi Private Bank Global Investment Committee's current view; and active = the difference between strategic and tactical.

Opinions expressed herein may differ from the opinions expressed by other businesses or affiliates of Citigroup, Inc., and are not intended to be a forecast of future events, a guarantee of future results or investment advice, and are subject to change based on market and other conditions. In any case, past performance is no guarantee of future results, and future results may not meet our expectations due to a variety of economic, market and other factors. Further, any projections of potential risk or return are illustrative and should not be taken as limitations of the maximum possible loss or gain.

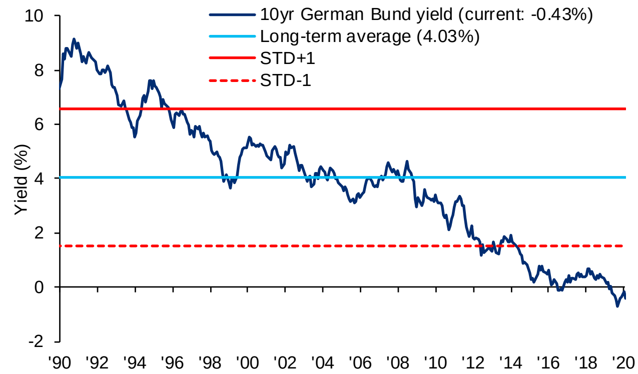
Long-term historical government bond yields

Figure 26. US government bond yield



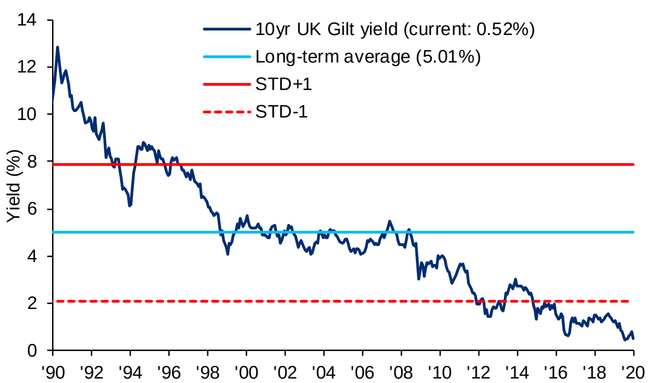
Source: Bloomberg.

Figure 27. German government bond yield



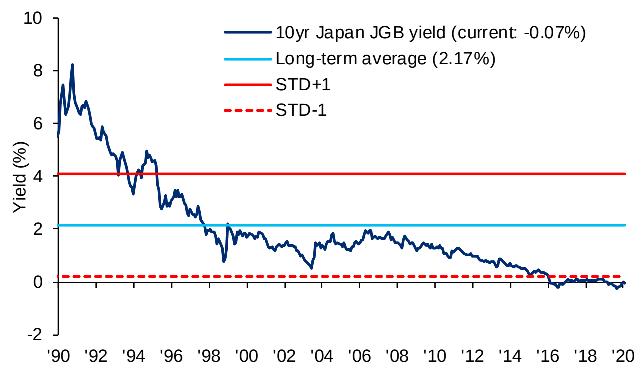
Source: Bloomberg.

Figure 28. UK government bond yield



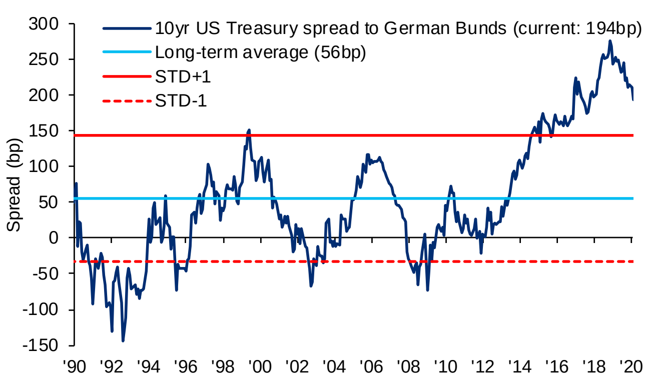
Source: Bloomberg.

Figure 29. Japan government bond yield



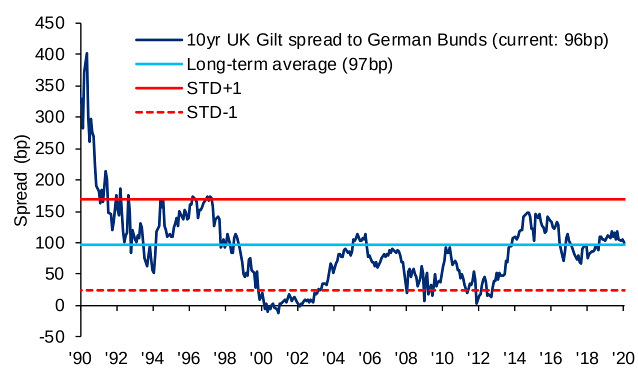
Source: Bloomberg.

Figure 30. 10yr US Treasury spread to German Bunds



Source: Bloomberg.

Figure 31. 10yr UK Gilt spread to German Bunds

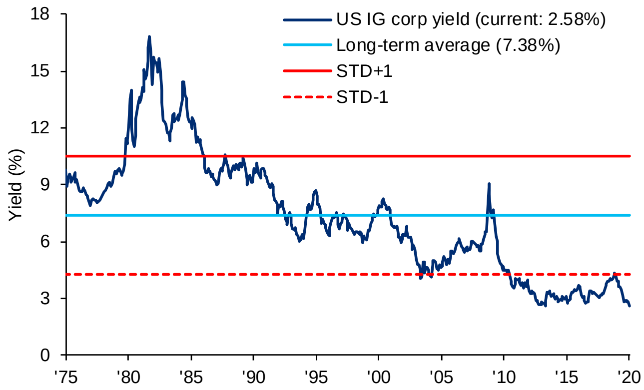


Source: Bloomberg.

Figures as of February 3, 2020. Note: STD+1= Plus one standard deviation from the average, STD-1= Minus one standard deviation from the average. Past performance is no guarantee of future returns. Real results may vary.

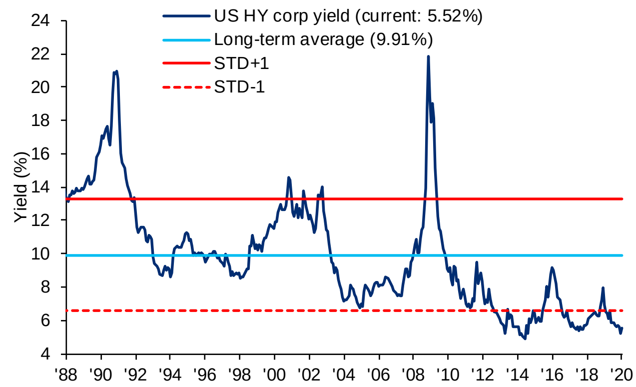
Long-term historical corporate bond yields

Figure 32. US investment grade corporate yield



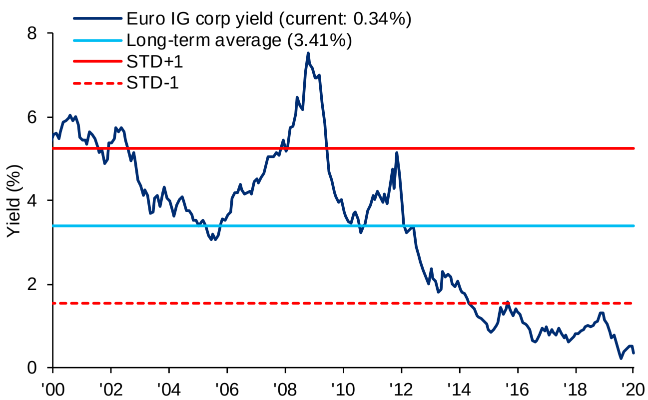
Source: Bloomberg Barclays Indices.

Figure 33. US high yield corporate yield



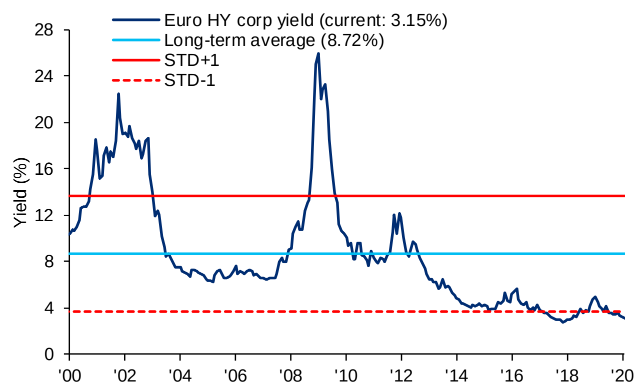
Source: Bloomberg Barclays Indices.

Figure 34. European investment grade corporate yield



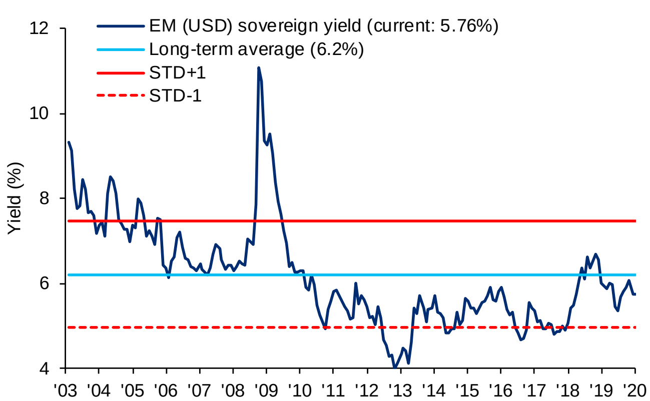
Source: Bloomberg Barclays Indices.

Figure 35. European high yield corporate yield



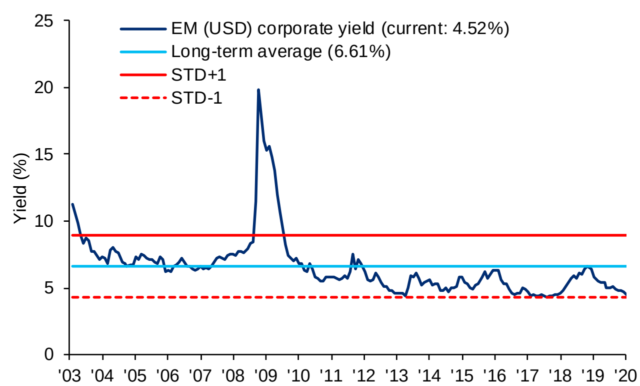
Source: Bloomberg Barclays Indices.

Figure 36. EM (USD) sovereign yield



Source: Bloomberg Barclays Indices.

Figure 37. EM (USD) corporate yield

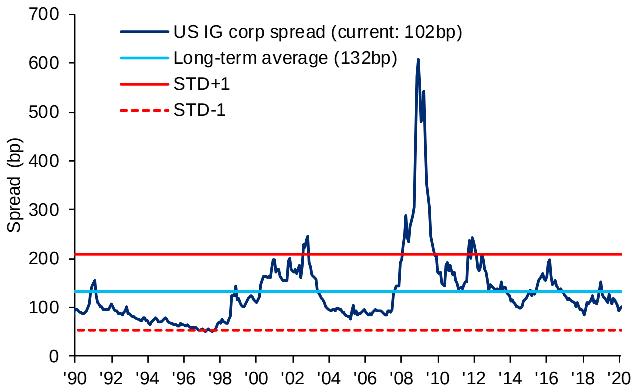


Source: Bloomberg Barclays Indices.

Figures as of February 3, 2020. Note: STD+1= Plus one standard deviation from the average, STD-1= Minus one standard deviation from the average. Past performance is no guarantee of future returns. Real results may vary.

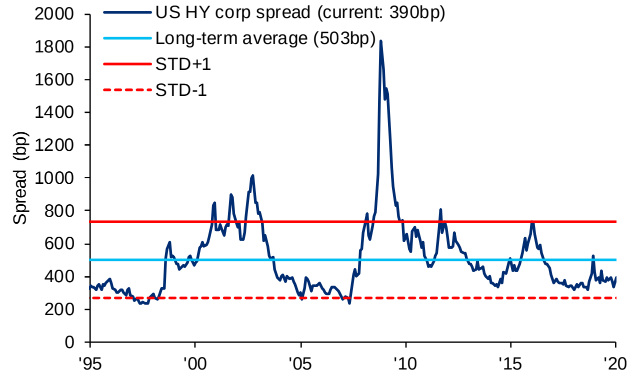
Long-term historical corporate bond spreads

Figure 38. US investment grade corporate spread



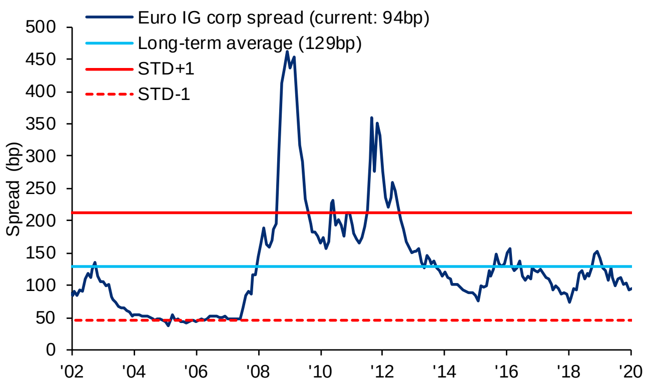
Source: Bloomberg Barclays Indices.

Figure 39. US high yield corporate spread



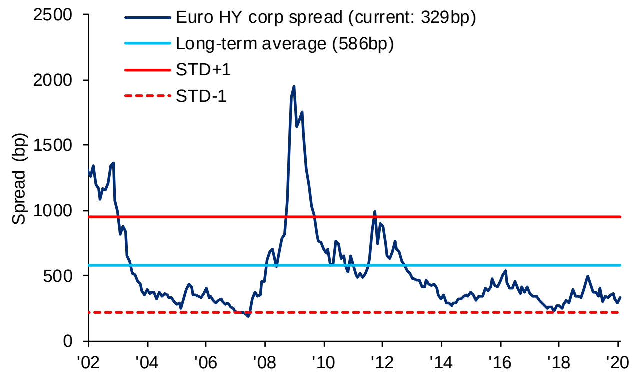
Source: Bloomberg Barclays Indices.

Figure 40. European investment grade corporate spread



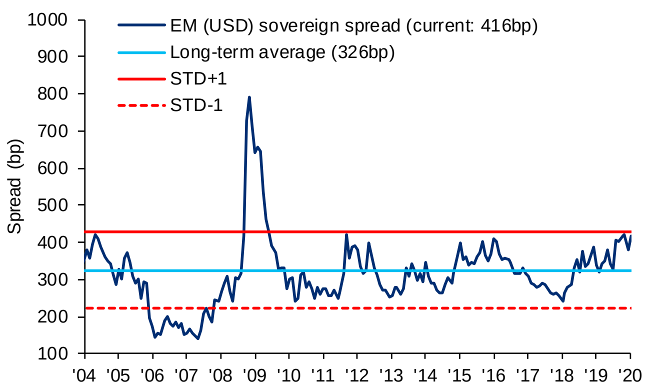
Source: Bloomberg Barclays Indices.

Figure 41. European high yield corporate spread



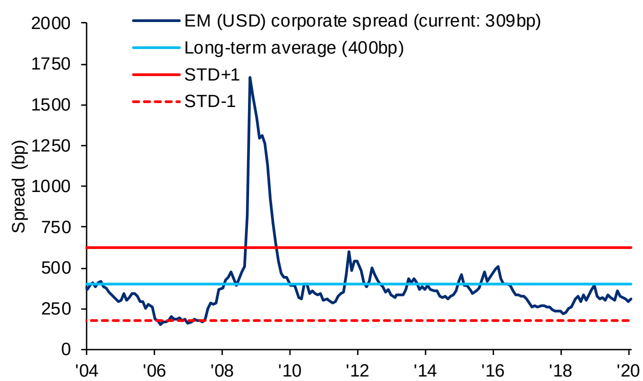
Source: Bloomberg Barclays Indices.

Figure 42. EM (USD) sovereign spread



Source: Bloomberg Barclays Indices.

Figure 43. EM (USD) corporate spread

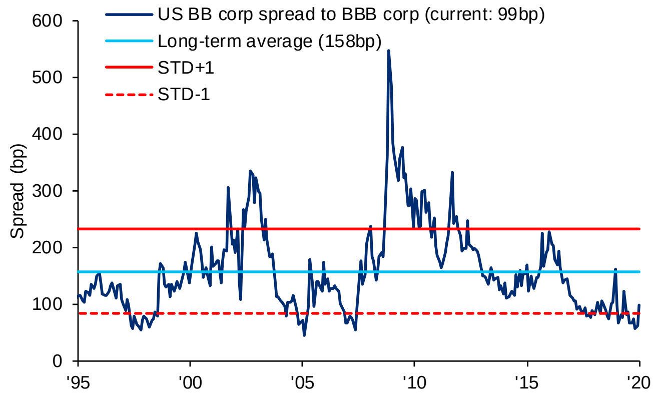


Source: Bloomberg Barclays Indices.

Figures as of February 3, 2020. Note: STD+1= Plus one standard deviation from the average, STD-1= Minus one standard deviation from the average. Past performance is no guarantee of future returns. Real results may vary.

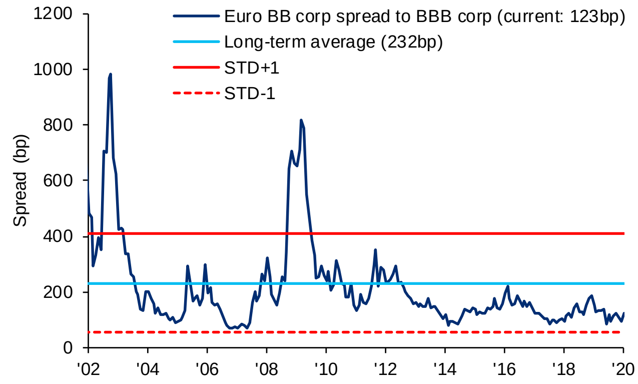
Long-term historical corporate bond spread comparisons

Figure 44. US BB corp spread to BBB corp



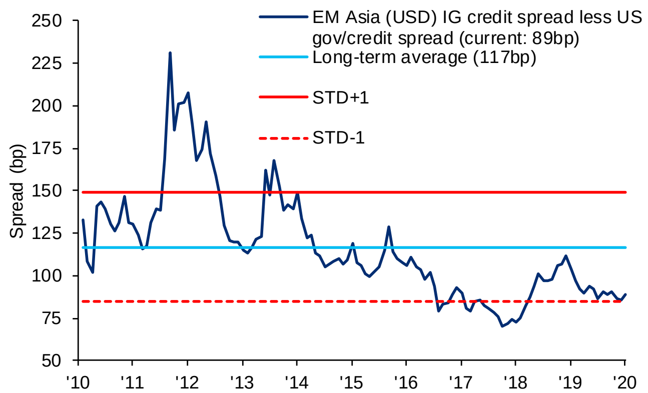
Source: Bloomberg Barclays Indices.

Figure 45. Euro BB corp spread to BBB corp



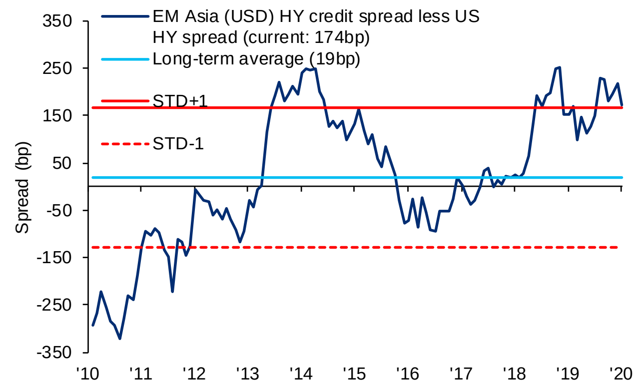
Source: Bloomberg Barclays Indices.

Figure 46. EM Asia (USD) IG credit spread to US Gov/Credit



Source: Bloomberg Barclays Indices.

Figure 47. EM Asia (USD) HY credit spread to US HY

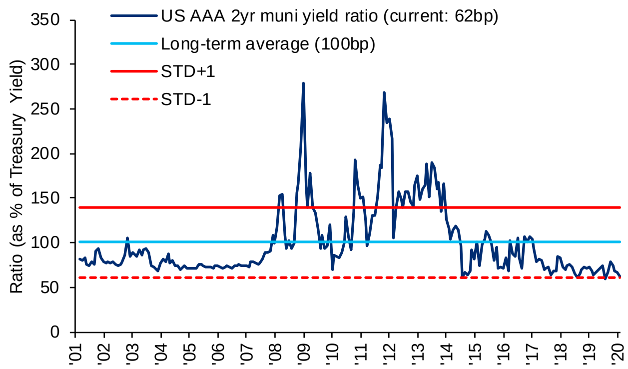


Source: Bloomberg Barclays Indices.

Figures as of February 3, 2020. Note: STD+1= Plus one standard deviation from the average, STD-1= Minus one standard deviation from the average. Past performance is no guarantee of future returns. Real results may vary.

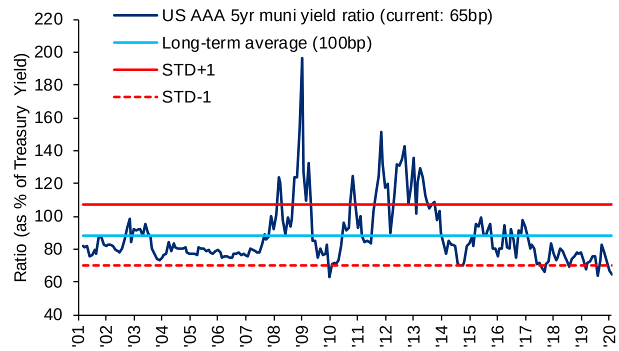
Long-term historical municipal bond yield ratios vs US Treasuries

Figure 48. US AAA-rated 2yr muni yield ratio



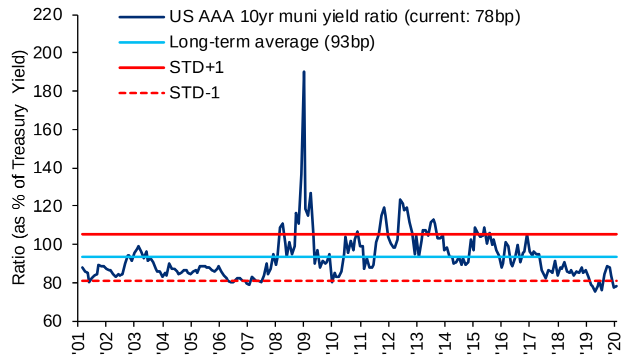
Source: Bloomberg.

Figure 49. US AAA-rated 5yr muni yield ratio



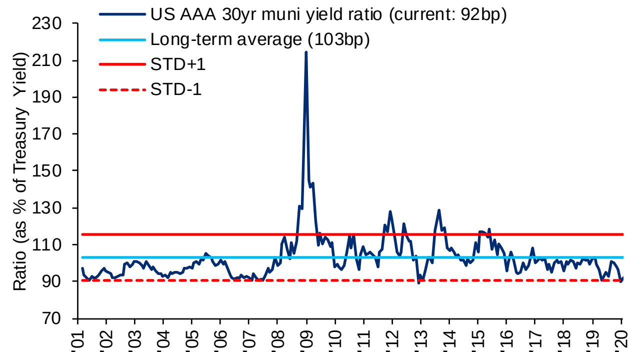
Source: Bloomberg.

Figure 50. US AAA-rated 10yr muni yield ratio



Source: Bloomberg.

Figure 51. US AAA-rated 30yr muni yield ratio



Source: Bloomberg.

Figures as February 3, 2020. Note: STD+1= Plus one standard deviation from the average, STD-1= Minus one standard deviation from the average. Past performance is no guarantee of future returns. Real results may vary.

Fixed income market returns

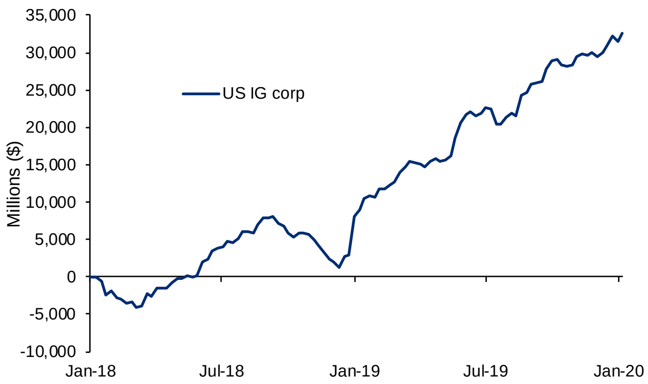
Figure 52. Fixed Income index returns (local currency, %)

Index	YTD	Last 12m	Last 3m	Last 1m	Yield	Duration
Broad Aggregate Indices						
Global Agg (local currency)	1.6	7.9	1.5	1.0		
US Agg Bond	1.6	9.5	2.2	1.0	2.09	5.91
European Agg	1.8	7.1	0.9	1.2	0.05	7.35
Developed Sovereign Debt						
Global (local currency)	1.8	7.3	1.3	1.2	0.79	8.56
US Treasury	1.9	8.7	2.1	1.2	1.49	6.63
US Agency	1.2	7.0	1.5	0.8	1.68	4.06
German Bunds	1.7	4.1	0.7	1.0	-0.49	8.35
UK Gilts	3.7	10.1	2.8	2.0	0.75	14.55
Japan JGBs	0.3	1.7	-0.4	0.3	0.03	11.61
Portugal	1.6	8.9	0.4	1.1	7.03	2.82
Italy	3.0	14.3	1.1	2.6	0.64	7.38
Ireland	2.1	7.9	1.6	1.3	-0.14	9.28
Spain	1.4	8.9	0.5	0.8	0.14	8.24
Inflation-linked Sovereign Debt						
Global I-Linked (local currency)	2.4	9.8	2.4	1.0	-1.12	12.41
US I-Linked	1.4	8.9	2.2	0.4	1.72	5.53
US Municipals						
US Municipals	1.7	8.6	2.5	1.3	1.50	5.18
Emerging Markets						
EM (Hard Currency) Sovereign	1.5	10.1	3.8	1.5	5.75	7.95
EM LatAm	1.0	5.7	4.5	1.0	8.10	9.11
EM Asia	1.9	13.8	3.0	1.6	3.16	7.78
EM EMEA	1.8	13.4	3.7	1.9	4.42	7.45
EM (Local) Govt, hedged USD	1.4	8.8	2.1	1.2	3.53	6.91
EM LatAm	1.3	9.5	1.2	1.2	5.79	4.83
EM Asia	1.5	7.1	2.5	1.3	3.50	7.54
EM EMEA	1.1	8.5	1.8	1.0	5.30	5.28
Securitized debt						
US MBS	0.6	6.4	1.2	0.4	2.32	2.77
US CMBS	2.0	9.6	2.2	1.4	2.16	5.30
US ABS	0.8	5.0	1.2	0.7	1.75	2.15
High Grade Corporate Debt						
USD Corporates	2.0	14.0	3.5	1.3	2.64	8.07
EUR Corporates	1.0	5.9	0.8	0.6	0.36	5.29
GBP Corporates	2.6	11.7	3.5	1.8	1.86	8.50
High Yield Corporate Debt						
USD High Yield	0.3	9.1	2.3	0.1	5.41	3.06
EUR High Yield	0.4	9.1	1.9	0.2	3.14	4.26
Asia (USD)High Yield	0.8	9.6	1.9	0.2	7.03	2.82
S&P/LSTA Leveraged Loan	0.5	6.3	2.7	0.4		
Hybrid debt						
S&P US Variable Rate Preferred Index (F2F)	2.2	14.6	3.8	0.9		
S&P US Fixed Rate Preferred Index	1.7	12.6	3.5	1.0		

Source: The Yield Book, Bloomberg Barclays Indices, S&P as of February 6, 2020. Past performance is no guarantee of future results. Real results may vary.

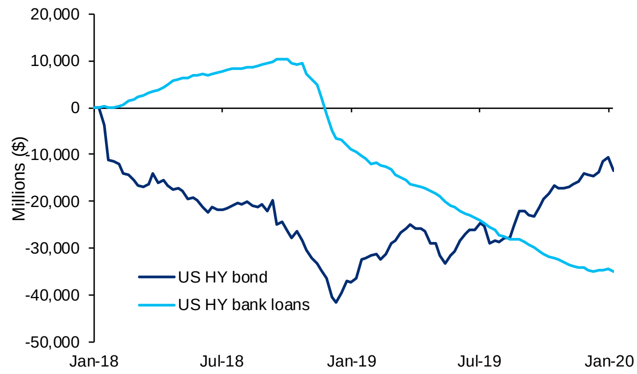
Bond fund cumulative weekly flows

Figure 53. Cumulative fund flows – US IG corp



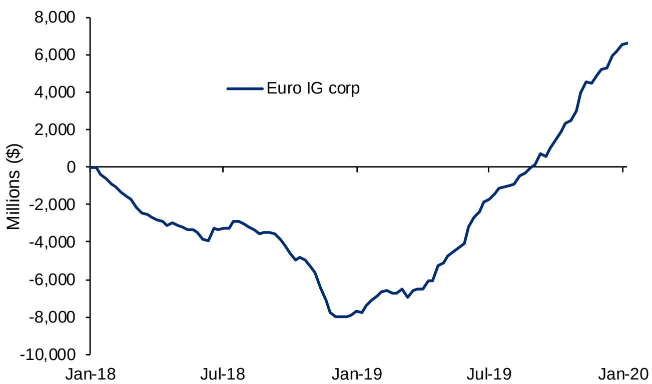
Source: EPFR.

Figure 54. Cumulative fund flows – US HY bond vs loans



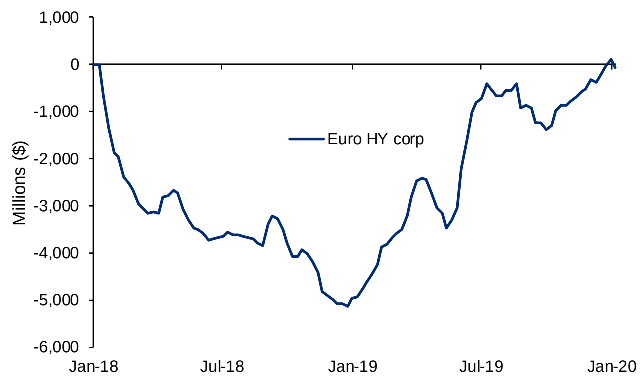
Source: EPFR.

Figure 55. Cumulative fund flows – Euro IG corp



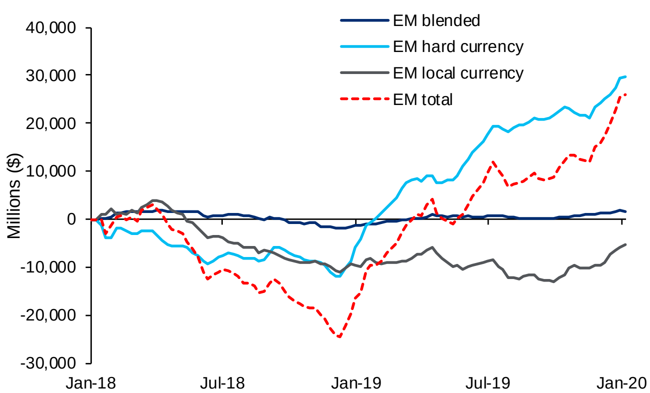
Source: EPFR.

Figure 56. Cumulative fund flows – Euro HY corp



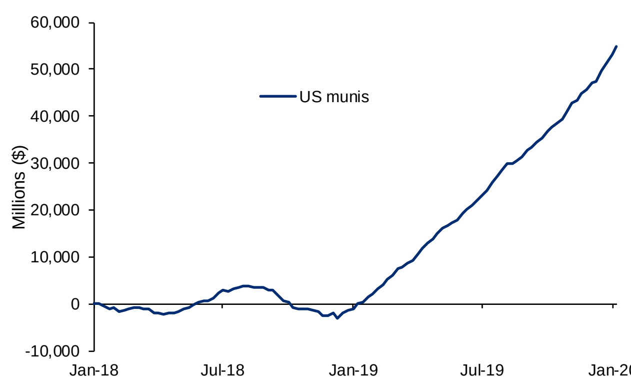
Source: EPFR.

Figure 57. Cumulative fund flows – EM, by currency



Source: EPFR.

Figure 58. Cumulative fund flows – US munis



Source: EPFR.

Figures as of February 1, 2020.

Notes

Notes

Notes

Market definitions

Asset classes	Benchmarked against
Global equities	MSCI All Country World Index, which represents 48 developed and emerging equity markets. Index components are weighted by market capitalization.
Global bonds	Bloomberg Barclays Multiverse (Hedged) Index, which contains the government -related portion of the Multiverse Index, and accounts for approximately 14% of the larger index.
Hedge funds	HFRX Global Hedge Fund Index, which is designed to be representative of the overall composition of the hedge fund universe. It comprises all eligible hedge fund strategies; including but not limited to convertible arbitrage, distressed securities, equity hedge, equity market neutral, event driven, macro, merger arbitrage and relative value arbitrage. The strategies are asset-weighted based on the distribution of assets in the hedge fund industry.
Commodities	Dow Jones-UBS Commodity Index, which is composed of futures contracts on physical commodities traded on US exchanges, with the exception of aluminium, nickel and zinc, which trade on the London Metal Exchange (LME). The major commodity sectors are represented including energy, petroleum, precious metals, industrial metals, grains, livestock, softs, agriculture and ex-energy.

Equities	
Developed market large cap	MSCI World Large Cap Index, which is free-float adjusted and weighted by market capitalization. The index is designed to measure the equity market performance of the large cap stocks in 23 developed markets. Large cap is defined as stocks representing roughly 70% of each market's capitalization.
US	Standard & Poor's 500 Index, which is a capitalization -weighted index that includes a representative sample of 500 leading companies in leading industries of the US economy. Although the S&P 500 focuses on the large cap segment of the market, with over 80% coverage of US equities, it is also an ideal proxy for the total market.
Europe ex UK	MSCI Europe ex UK Large Cap Index, which is free-float adjusted and weighted by market capitalization. The index is designed to measure large cap stock performance in each of Europe's developed markets, except for the UK.
UK	MSCI UK Large Cap Index, which is free-float adjusted and weighted by market capitalization. The index is designed to measure large cap stock performance in the UK.
Japan	MSCI Japan Large Cap Index, which is free-float adjusted and weighted by market capitalization. The index is designed to measure large cap stock performance in Japan.
Asia Pacific ex Japan	MSCI Asia Pacific ex Japan Large Cap Index, which is free-float adjusted and weighted by market capitalization. The index is designed to measure the performance of large cap stocks in Australia, Hong Kong, New Zealand and Singapore.
Developed market small and mid-cap	MSCI World Small Cap Index, which is a capitalization-weighted index that measures small cap stock performance in 23 developed equity markets.
Emerging market	MSCI Emerging Markets Index, which is free-float adjusted and weighted by market capitalization. The index is designed to measure equity market performance of 22 emerging markets.

Bonds	
Global Aggregate Index	Bloomberg Barclays Global Aggregate Index is a flagship measure of global investment grade debt from twenty-four local currency markets. This multi-currency benchmark includes treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers.
US Aggregate Bond Index	Bloomberg Barclays US Aggregate Bond Index is a broad-based flagship benchmark that measures the investment grade, US dollar-denominated, fixed-rate taxable bond market. The index includes Treasuries, government-related and corporate securities, MBS (agency fixed-rate and hybrid ARM pass-throughs), ABS and CMBS (agency and non-agency).
Pan-European Aggregate Index	Bloomberg Barclays Pan-European Aggregate Index tracks fixed-rate, investment-grade securities issued in the following European currencies: Euro, British pounds, Norwegian krone, Danish krone, Swedish krona, Czech koruna, Hungarian forint, Polish zloty, and Slovakian koruna. Inclusion is based on the currency of the issue, and not the domicile of the issuer. The principal asset classes in the index are Treasuries, Government-Related, Corporate and Securitised, which include Pfandbriefe, other covered bonds and asset-backed securities.
Developed sovereign	Citi World Government Bond Index (WGBI), which consists of the major global investment grade government bond markets and is composed of sovereign debt, denominated in the domestic currency. To join the WGBI, the market must satisfy size, credit and barriers-to-entry requirements. In order to ensure that the WGBI remains an investment grade benchmark, a minimum credit quality of BBB–/Baa3 by either S&P or Moody's is imposed. The index is rebalanced monthly.
Emerging sovereign	Citi Emerging Market Sovereign Bond Index (ESBI), which includes Brady bonds and US dollar -denominated emerging market sovereign debt issued in the global, Yankee and Eurodollar markets, excluding loans. It is composed of debt in Africa, Asia, Europe and Latin America. We classify an emerging market as a sovereign with a maximum foreign debt rating of BBB+/Baa1 by S&P or Moody's. Defaulted issues are excluded.
Inflation-Linked	Citi World Inflation-Linked Securities Index (WorldILSI) coverage includes the United States, Japan, France, Germany, Greece, Italy, Sweden, and the United Kingdom. It measures the returns of the inflation-linked bonds with fixed-rate coupon payments that are linked to an inflation index.
Supranationals	Citi World Broad Investment Grade Index (WBIG)—Government Related, which is a subsector of the WBIG. The index includes fixed rate investment grade agency, supranational and regional government debt, denominated in the domestic currency. The index is rebalanced monthly.
Securitized	

	Citi World Broad Investment Grade Index (WBIG)—Securitized, which is a subsector of the WBIG. The index includes global investment grade collateralized debt denominated in the domestic currency, including mortgage - backed securities, covered bonds (Pfandbriefe) and asset -backed securities. The index is rebalanced monthly.
Corporate investment grade	Citi World Broad Investment Grade Index (WBIG)—Corporate, which is a subsector of the WBIG. The index includes fixed rate global investment grade corporate debt within the finance, industrial and utility sectors, denominated in the domestic currency. The index is rebalanced monthly.
Mortgage Backed Security	Mortgage Backed Security (MBS) is a type of asset-backed security that is secured by a mortgage or collection of mortgages. The mortgages are sold to a group of individuals (a government agency or investment bank) that securitizes, or packages, the loans together into a security that investors can buy
Corporate high yield	Bloomberg Barclays Global High Yield Index is a multi-currency flagship measure of the global high yield debt market. The index represents the union of the US High Yield, the Pan-European High Yield, and Emerging Markets (EM) Hard Currency High Yield Indices.
Municipal	Bloomberg Barclays Municipal Bond Index is a broad-based benchmark that measures the investment grade, US dollar-denominated, fixed tax-exempt bond market. The index includes state and local general obligation, revenue, insured, and pre-refunded bonds
Preferred/Hybrid	Bank of America (BofA) Merrill Lynch Fixed Rate Preferred Securities Index tracks the performance of fixed rate US dollar denominated preferred securities issued in the US domestic market.
European Contingent Convertible	Credit Suisse European Contingent Convertible Index tracks bonds known as “CoCos”. The term CoCo is used to describe a new type of convertible bond that is automatically converted into a predetermined amount of shares when a predefined trigger is breached. Since this type of bond is transformed into equity upon conversion, it would be available for further loss absorption and therefore satisfies regulatory requirements of hybrid capital instruments.

CDS

CDX North America Inv Grade	Markit CDX North American Investment Grade Index consists of CDS levels for the most liquid north American entities with investment grade credit ratings.
CDX North America High Yield	Markit CDX North American High Yield Index consists of CDS levels for the most liquid north American entities with high yield credit ratings.
CDX North America High Vol	Markit CDX North American Investment Grade High Volatility Index consists of CDS levels for the most liquid north American entities with investment grade credit ratings and higher volatility.
Markit MCDX Municipal Index	The Markit MCDX index is a credit index consisting of municipal single name CDS.
iTraxx Europe Index Inv Grade	The benchmark Markit iTraxx Europe index comprises CDS levels of 125 equally-weighted European names.
iTraxx Europe Crossover Index	The Markit iTraxx Crossover index comprises CDS levels for the 75 most liquid sub-investment grade entities.
iTraxx Europe Senior Financial	The Markit iTraxx Europe Senior Financials Index consists of twenty-five (25) financial entities from the Markit iTraxx Europe index referencing senior debt.
iTraxx SOVX Western Europe	The Markit iTRaxx SovX Western Europe index consists of 15 equally weighted Western European sovereign CDS constituents.
iTraxx Japan Inv Grade	The Markit iTraxx Japan Investment Grade Index consists of fifty (50) of the most liquid Japanese entities with investment grade credit ratings as published by Markit
iTraxx Asia ex-Japan Inv Grade	The Markit iTraxx Asia ex-Japan Investment Grade Index consists of forty (40) of the most liquid Asian entities with investment grade credit ratings as published by Markit
CDX Emerging Markets	The Markit CDX Emerging Markets Index is composed of 14 sovereign CDS issuers. All entities are domiciled in three regions: (i) Latin America, (ii) Eastern Europe, the Middle East and Africa, and (iii) Asia.

Other miscellaneous definitions

Citi Economic Surprise Index	The Citigroup Economic Surprise Index are objective and quantitative measures of economic news, covering all G10 economies. They are defined as weighted historical standard deviations of data surprises (actual releases vs Bloomberg survey median).
S&P/LSTA Leveraged Loan Index	The S&P/LSTA (Loan Syndication and Trading Association) Leveraged Loan Index is a rules based index that tracks the investable senior loan market.
European Additional Tier 1	European Additional Tier 1 capital (or Contingent Convertibles or CoCo's) are subordinated securities that qualify as Tier 1 capital under Basel III capital requirements.
LIBOR	The London Interbank Offered Rate (LIBOR is the average of interest rates estimated by each of the leading banks in London that it would be charged were it to borrow from other banks. Libor rates are calculated for 5 currencies, including Euros, and 7 borrowing periods ranging from overnight to one year and are published each business day
Barbell strategies	Barbell strategies incorporate weighing two distinctively different investments in order to mitigate potential market risk
AMT Bond	Alternative Minimum Tax (AMT) bond is a private activity municipal bond whose interest is treated as a preference item for purposes of computing the alternative minimum tax imposed on individuals and corporations.
Variable rate demand note (VRDN)	Longer-term municipal securities that feature both a periodic coupon reset and a demand feature that allows an investor to periodically tender, or put, the securities at par plus accrued interest.

Covenant-Lite loan	Loan agreement that has fewer covenants to protect the lender and fewer restrictions on the borrower regarding payment terms, income requirements and collateral. Conversely a covenant heavy loan has more covenants.
Fixed to Float Preferred (F2F) securities	Are junior subordinated structures that carry a fixed coupon for a specified period of time. If not redeemed by the issuer at that time, coupon payments would then float at a spread, determined at issuance, over a specified benchmark — typically three-month LIBOR.
Bond Connect	Bond Connect is a new mutual market access scheme that allows investors from mainland China and overseas to trade in each other's respective bond market
Runoff Cap	According to the US Federal Reserve, holdings of Treasuries, agency debt and agency mortgage-backed securities will be allowed to mature (or run-off) up to a pre-determined amount. This amount is considered a "cap". Any amount of matured debt that exceeds this cap, will be reinvested back into their respective market.
G7	Group of 7 (G7) is a group consisting of Canada, France, Germany, Italy, Japan, the United Kingdom and the United States.
EuroCOIN	Is a coincident indicator of the euro area business cycle that provides an estimate of monthly growth of euro area GDP after the removal of measurement errors, seasonal, and other short run fluctuations.
Merrill Lynch Option Volatility Expectations	Merrill Lynch Option Volatility Expectations or MOVE is an index measure of Treasury yield volatility.
Asset Backed Security (ABS)	A security whose income payments and hence value are derived from and collateralized (or "backed") by a specified pool of underlying assets such as consumer credit card debt or auto loans.
Investment Grade Corporate bonds (IG)	Investment grade corporate bonds are bonds with a credit rating equal to or above BBB- (S&P) or Baa3 (Moody's), and are debt securities issued by a corporation and sold to investors. The backing for the bond is usually the payment ability of the company, which is typically money to be earned from future operations.
High Yield Corporate Bonds (HY)	High yield corporate bonds are bonds with a credit rating less than BBB- (S&P) or Baa3 (Moody's), and are debt securities issued by a corporation and sold to investors. The backing for the bond is usually the payment ability of the company, which is typically money to be earned from future operations.
Commercial Mortgage Backed Securities	Commercial mortgage-backed securities (CMBS) are a type of mortgage-backed security that is secured by mortgages on commercial properties, instead of residential real estate.
Collateralized loan obligation (CLO)	A form of securitization where payments from multiple middle sized and large business loans are pooled together and passed on to different classes of owners in various tranches. A CLO is a type of collateralized debt obligation.

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Bond rating equivalence

Alpha and/or numeric symbols used to give indications of relative credit quality. In the municipal market, these designations are published by the rating services. Internal ratings are also used by other market participants to indicate credit quality.

Bond credit quality ratings	Rating agencies		
Credit risk	**Moody's[1]**	**Standard and Poor's[2]**	**Fitch Ratings[2]**
Investment Grade			
Highest quality	Aaa	AAA	AAA
High quality (very strong)	Aa	AA	AA
Upper medium grade (Strong)	A	A	A
Medium grade	Baa	BBB	BBB
Not Investment Grade			
Lower medium grade (somewhat speculative)	Ba	BB	BB
Low grade (speculative)	B	B	B
Poor quality (may default)	Caa	CCC	CCC
Most speculative	Ca	CC	CC
No interest being paid or bankruptcy petition filed	C	D	C
In default	C	D	D

1 The ratings from Aa to Ca by Moody's may be modified by the addition of a 1, 2, or 3 to show relative standing within the category.
2 The ratings from AA to CC by Standard and Poor's and Fitch Ratings may be modified by the addition of a plus or a minus to show relative standing within the category.

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Additionally, the underlying collateral supporting non-Agency MBS may default on principal and interest payments. In certain cases, this could cause the income stream of the security to decline and result in loss of principal. Further, an insufficient level of credit support may result in a downgrade of a mortgage bond's credit rating and lead to a higher probability of principal loss and increased price volatility. Investments in subordinated MBS involve greater credit risk of default than the senior classes of the same issue. Default risk may be pronounced in cases where the MBS security is secured by, or evidencing an interest in, a relatively small or less diverse pool of underlying mortgage loans.

MBS are also sensitive to interest rate changes which can negatively impact the market value of the security. During times of heightened volatility, MBS can experience greater levels of illiquidity and larger price movements. Price volatility may also occur from other factors including, but not limited to, prepayments, future prepayment expectations, credit concerns, underlying collateral performance and technical changes in the market.

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