## **Credit**Sights

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# STAYING THE COURSE: US IG & HY UPDATE / 2024 PREVIEW

### CreditSights Staying the Course: US IG & HY Update/2024 Preview 15 Jun 2023, 9:59 PM

#### **Executive Summary**

- We are sticking with our full overweight recommendations for both US IG and HY as we update our views through 1H24. We expect our base case bumpy landing economic scenario to persist through the 1H24 with economic growth remaining in the 0-1% range and the Fed cutting rates back toward a more neutral stance beginning with the Jan 2024 meeting.
- Our spread targets for 1H24 are 110 bp and 375 bp for US IG and HY, respectively, marking a gradual grind tighter from our affirmed YE23 spread targets of 120 bp and 400 bp. We expect more cash to shift out of the very front end/cash equivalents as the Fed begins cutting rates in early 2024 and view credit as the more likely destination as it looks cheap to equities on a historical basis and offers notably attractive carry over the next twelve months.
- Our stagflation scenario remains the most damaging for both US IG and HY credit. We increased our probability of this scenario unfolding to 15% (from 10%) and expect spreads to ultimately widen out to 200 bp and 600 bp respectively at YE23. Through 1H24 we expect a gradual narrowing to 175 bp and 550 bp for IG and HY.
- In our hard landing scenario, spreads widen out to 300 bp and 900 bp for IG and HY, but rapid rate cuts support the market through the first half of 2024 with spreads ultimately narrowing to 200 bp and 600 bp for IG and HY. We maintained our 25% probability of a hard landing but note the upshift in the June 2023 FOMC dot plot to show 50 bp more tightening in 2023.

Despite recent positive momentum in markets, economic uncertainty remains a key risk, with consensus expectations putting the odds of a US recession in the next 12 months at 65%. We continue to highlight the need for specificity in the 'recession' narrative as the current challenges facing the global economy could result in either a true hard landing or stagflation for the US economy. These macroeconomic outcomes, despite both being consistent with a 'recession', would have very different implications for Fed policy, rates markets and corporate credit market performance. In November 2022, we presented our take on these recession scenarios in **Chair Powell & the Three Bears**, highlighting a bumpy landing as our base case economic and corporate credit market outcome. With this, we took a constructive view on credit spreads, setting our US IG and HY mid-year 2023 spread targets at 140 bp and 475 bp, respectively.

In mid-March 2023, we affirmed our constructive view for corporate credit at the height of the regional bank-driven volatility (see **Idiosyncratic vs. Systemic: Road Ahead for Credit**), highlighting that the liquidity challenges that had emerged were consistent with the idiosyncratic fallout of an extreme Fed policy tightening cycle rather than evidence that systemic risks would soon emerge.

| Market Chang | jes Since Ren | noving "Tactica | al Caution" |
|--------------|---------------|-----------------|-------------|
|              | 3/16/2023     | 6/13/2023       | Change      |
| Terminal     | 4.92%         | 5.28%           | 36 bp       |
| FF Dec 2023  | 4.22%         | 5.18%           | 96 bp       |
| FF Dec 2024  | 3.03%         | 3.84%           | 81 bp       |
| 2y Treas     | 4.16%         | 4.67%           | 51 bp       |
| 5y Treas     | 3.74%         | 3.99%           | 25 bp       |
| 10y Treas    | 3.58%         | 3.81%           | 24 bp       |
| Treas 2s10s  | -58 bp        | -85 bp          | -27 bp      |
| S&P 500      | 3,960         | 4,369           | 10.3%       |
| US IG        | 161 bp        | 139 bp          | -22 bp      |
| US HY        | 493 bp        | 418 bp          | -75 bp      |
| 3m10y vol    | 133           | 109             | -17.7%      |
| 3m2y vol     | 217           | 152             | -29.7%      |

Source: CreditSights, Bloomberg LP, FactSet, ICE Data Indices, LLC

In the three months following our removal of 'tactical caution' (**Central Bank Preview Feb '23: Tactical Caution**) and our recommendation that clients again take a full Overweight allocation to US IG and HY, risk assets have fared well despite further UST yield curve inversion. Since March 16, the 10Y UST yield has climbed 24 bp into our 2023 target range (3.75%-4.0%) while the S&P 500 has gained 10.3%. Corporate credit has also seen good momentum, with IG spreads tightening 22 bp on strength from As and BBBs and HY spreads tightening 75 bp with the CCC and distressed markets each posting compression of 100-300 bp. Total and excess return gains have been generally strong, though long-duration AAAs continued to face total return pressure from rising long-end rates.

| US IG & HY: Performance | Since Retu | rn to Full Ov | verweight | Recommendation          |           |           |         |
|-------------------------|------------|---------------|-----------|-------------------------|-----------|-----------|---------|
|                         | 6/13/2023  | 3/16/2023     | Change    |                         | 6/13/2023 | 3/16/2023 | Change  |
| US IG OAS               | 139 bp     | 161 bp        | -22 bp    | US HY OAS               | 418 bp    | 493 bp    | -75 bp  |
| AAA                     | 55 bp      | 69 bp         | -14 bp    | BB                      | 272 bp    | 339 bp    | -67 bp  |
| AA                      | 76 bp      | 90 bp         | -14 bp    | В                       | 439 bp    | 514 bp    | -75 bp  |
| А                       | 117 bp     | 138 bp        | -21 bp    | CCC                     | 977 bp    | 1139 bp   | -162 bp |
| BBB                     | 171 bp     | 196 bp        | -25 bp    | Distressed              | 1528 bp   | 1903 bp   | -375 bp |
| US IG YTW               | 5.59%      | 5.52%         | 7 bp      | US HY YTW               | 8.55%     | 8.93%     | -37 bp  |
| AAA                     | 4.71%      | 4.54%         | 17 bp     | BB                      | 7.05%     | 7.38%     | -33 bp  |
| AA                      | 4.96%      | 4.81%         | 15 bp     | В                       | 8.81%     | 9.15%     | -34 bp  |
| A                       | 5.39%      | 5.31%         | 8 bp      | CCC                     | 14.11%    | 15.38%    | -126 bp |
| BBB                     | 5.91%      | 5.85%         | 5 bp      | Distressed              | 19.56%    | 22.92%    | -337 bp |
| US IG YTD Total Return  | 2.35%      | 1.60%         | 75 bp     | US HY YTD Total Return  | 5.18%     | 1.65%     | 352 bp  |
| AAA                     | 2.52%      | 2.60%         | -9 bp     | BB                      | 3.95%     | 1.03%     | 292 bp  |
| AA                      | 2.16%      | 2.02%         | 15 bp     | В                       | 5.55%     | 1.91%     | 364 bp  |
| A                       | 2.10%      | 1.55%         | 55 bp     | CCC                     | 9.23%     | 3.47%     | 576 bp  |
| BBB                     | 2.58%      | 1.55%         | 103 bp    | Distressed              | 10.69%    | 4.58%     | 610 bp  |
| US IG YTD Excess Return | 1.02%      | -0.79%        | 181 bp    | US HY YTD Excess Return | 3.83%     | -0.01%    | 384 bp  |
| AAA                     | 1.08%      | -0.55%        | 163 bp    | BB                      | 2.61%     | -0.73%    | 334 bp  |
| AA                      | 0.77%      | -0.63%        | 140 bp    | В                       | 4.2%      | 0.32%     | 388 bp  |
| A                       | 0.82%      | -0.79%        | 161 bp    | CCC                     | 7.9%      | 1.97%     | 593 bp  |
| BBB                     | 1.22%      | -0.82%        | 204 bp    | Distressed              | 9.33%     | 3.1%      | 623 bp  |

Source: CreditSights, FactSet, ICE Data Indices, LLC

#### **Updated Views Through 1H24**

Almost halfway into 2023 and on the back of the FOMC's June meeting, we continue to see a bumpy landing as the most likely outcome through the end of the year and into 2024; however, we are re-racking our probabilities slightly, decreasing our Bull case to 15% (from 25%), increasing the Base case to 45% (from 40%) and increasing the Bear 1: Stagflation to 15% (from 10%). Recent inflation data have shown some signs of progress; however, the goods disinflation of 4Q22 has slowed or reversed (**US Chart of the Day: May CPI Heatmap 2023**), leaving us somewhat more concerned about the future path of inflation.

| US Credit Strategy IG/HY: Full Y | /ear 2023 Fore      | casts   |             |           |                     |             |              |
|----------------------------------|---------------------|---------|-------------|-----------|---------------------|-------------|--------------|
|                                  |                     |         |             |           | Year-End 20         | 23 Forecast |              |
|                                  |                     |         |             |           |                     |             |              |
|                                  |                     |         | YTD 2023    |           | Base Case:<br>Bumpy | Bear 1:     | Bear 2: Hard |
|                                  | YE 2021             | YE 2022 | as of 06/13 | Bull Case | Landing             | Stagflation | Landing      |
| Probability Weighting            |                     |         |             | 15%       | 45%                 | 15%         | 25%          |
| US Treasury Yields               |                     |         |             |           |                     |             |              |
| Fed Funds Target (Upper)         | 0.1%                | 4.4%    | 5.3%        | 5.3%      | 5.3%                | 6.0%        | 2.5%         |
| 5-Yr UST                         | 1.3%                | 4.0%    | 4.0%        | 3.3%      | 4.0%                | 5.0%        | 2.8%         |
| 10-Yr UST                        | 1.5%                | 3.9%    | 3.8%        | 3.8%      | 4.0%                | 5.0%        | 2.3%         |
| US Investment Grade              | US Investment Grade |         |             |           |                     |             |              |
| OAS                              | 98bp                | 138bp   | 139bp       | 110bp     | 120bp               | 200bp       | 300bp        |
| Excess Return                    | 1.5%                | -1.4%   | 1%          | 3.8%      | 3.1%                | -2.4%       | -9.3%        |
| YTW                              | 2.4%                | 5.5%    | 5.6%        | 5.2%      | 5.6%                | 7.4%        | 5.6%         |
| Total Return                     | -1.0%               | -15.4%  | 2.3%        | 7.9%      | 5.5%                | -6.9%       | 5.1%         |
| Gross Supply (\$bn)              | 1,561               | 1,241   | 669         | 1,200     | 1,050               | 800         | 1,000        |
| Net Supply (\$bn)                | 546                 | 434     | 234         | 420       | 357                 | 160         | 250          |
| US High Yield                    |                     |         |             |           |                     |             |              |
| OAS                              | 310bp               | 479bp   | 418bp       | 350bp     | 400bp               | 700bp       | 900bp        |
| YTW                              | 4.3%                | 9.0%    | 8.6%        | 7.1%      | 8.4%                | 12.4%       | 12.1%        |
| Total Return                     | 5.4%                | -11.2%  | 5.2%        | 15.7%     | 10.6%               | -5.7%       | -4.7%        |
| Gross Supply (\$bn)              | 493                 | 113     | 86          | 250       | 175                 | 125         | 125          |
| Net Supply (\$bn)                | 247                 | 62      | 28          | 113       | 79                  | 25          | 31           |
| HY Defaults (TTM % Issuers)      | 1.2%                | 1.6%    | 2.2%        | 2.0%      | 3.0%                | 4.0%        | 7.5%         |

Source: CreditSights, FactSet, ICE Data Indices, Bloomberg, L.P.

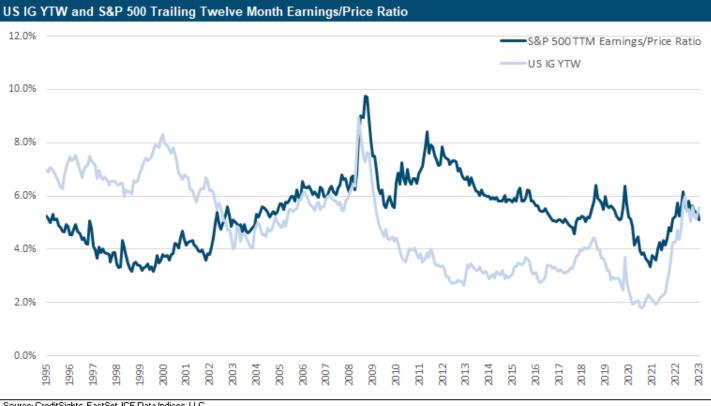
With the Fed's June meeting behind us, we are reaffirming our US IG and HY spread forecasts and providing a preliminary look at 1H24 (**US Recession Update: Still Waiting to Land**). In the forecast table below, we use the same four scenarios that we outlined for 2023 and push forward our expectations for Fed Funds, UST yields and corporate credit spreads.

|                             |         |         |             | 1H 2024 Forecast |            |             |              |  |  |  |  |
|-----------------------------|---------|---------|-------------|------------------|------------|-------------|--------------|--|--|--|--|
|                             |         |         |             |                  | Base Case: |             |              |  |  |  |  |
|                             |         |         | YTD 2023    |                  | Bumpy      | Bear 1:     | Bear 2: Hard |  |  |  |  |
|                             | YE 2021 | YE 2022 | as of 06/13 | Bull Case        | Landing    | Stagflation | Landing      |  |  |  |  |
| Probability Weighting       |         |         |             | 15%              | 45%        | 15%         | 25%          |  |  |  |  |
| US Treasury Yields          |         |         |             |                  |            |             |              |  |  |  |  |
| Fed Funds Target (Upper)    | 0.1%    | 4.4%    | 5.3%        | 3.3%             | 4.3%       | 6.5%        | 2.0%         |  |  |  |  |
| 5-Yr UST                    | 1.3%    | 4.0%    | 4.0%        | 3.4%             | 3.5%       | 5.3%        | 2.5%         |  |  |  |  |
| 10-Yr UST                   | 1.5%    | 3.9%    | 3.8%        | 3.5%             | 3.5%       | 5.0%        | 2.8%         |  |  |  |  |
| US Investment Grade         |         |         |             |                  |            |             |              |  |  |  |  |
| OAS                         | 98bp    | 138bp   | 139bp       | 100bp            | 110bp      | 175bp       | 200bp        |  |  |  |  |
| Excess Return <sup>1</sup>  | 1.5%    | -1.4%   | 1%          | 3.0%             | 2.5%       | -2.4%       | -9.0%        |  |  |  |  |
| YTW                         | 2.4%    | 5.5%    | 5.6%        | 4.9%             | 5.0%       | 7.1%        | 5.1%         |  |  |  |  |
| Total Return <sup>1</sup>   | -1.0%   | -15.4%  | 2.3%        | 10.7%            | 10.0%      | -4.7%       | 9.0%         |  |  |  |  |
| US High Yield               |         |         |             |                  |            |             |              |  |  |  |  |
| OAS                         | 310bp   | 479bp   | 418bp       | 325bp            | 375bp      | 550bp       | 600bp        |  |  |  |  |
| YTW                         | 4.3%    | 9.0%    | 8.6%        | 7.0%             | 7.6%       | 11.1%       | 8.9%         |  |  |  |  |
| Total Return <sup>1</sup>   | 5.4%    | -11.2%  | 5.2%        | 15.3%            | 12.7%      | -1.5%       | 7.6%         |  |  |  |  |
| HY Defaults (TTM % Issuers) | 1.2%    | 1.6%    | 1.9%        | 1.5%             | 4.0%       | 5.0%        | 7.5%         |  |  |  |  |

Source: CreditSights, FactSet, ICE Data Indices, Bloomberg, L.P.

1 Represents Excess and Total Return for the period beginning 06/13/2023 and ending 06/30/2024.

Using forward 12-month returns for the period ending June 30, 2024, we remain constructive on the outlook for corporate credit, especially for total return focused investors. Probability weighted total returns remain solidly positive across US IG and HY, though excess returns are modestly negative. Given the current mix of macro and micro factors, we view corporate credit yields as very compelling, especially when compared to equities.



Source: CreditSights, FactSet, ICE Data Indices, LLC

Below we provide an update of our trade recommendations across US IG and HY in our different scenarios. The biggest change to our strategy is taking a more constructive view on duration in our Base Case scenario as we expect the 10Y UST yield to begin to reverse course and fall back toward 3.5-3.75% in 1H24 (from our YE2023 target range of 3.75%-4.0%).

|                          | Bull Case   | Base Case: Bumpy<br>Landing                                 | Bear 1: Stagflation   | Bear 2: Hard Landing  |
|--------------------------|---|---|---|---|
| Expectations/Probability | 15%   | 45%   | 15%   | 25%   |
| Ratings (Spread Curve)   | Flatten   | Flatten   | Steepen   | Steepen   |
| Duration (Spread Curve)  | Steepen   | Steepen/Neutral   | Neutral   | Flatten/Invert  |
| Duration (Yield Curve)   | Bull Steepen  | Bull Steepen  | Bear Flattener/Invert   | Bull Flattener/Invert   |
| Risk Versus Duration     |   |   |   |   |
| Credit Risk              | Overweight  | Overweight  | Neutral   | Underweight   |
| Duration                 | Overweight  | Overweight  | Underweight   | Overweight  |
| US Investment Grade      | Overweight  | Overweight  | Underweight   | Market Weight   |
| Ratings                  | Overweight As & BBBs<br>Neutral >=AA                        | Overweight As & BBBs<br>Neutral >=AA                        | Overweight As<br>Neutral >=AA<br>Underweight BBB                      | Overweight >=AA<br>Neutral As<br>Underweight BBBs                     |
| Duration                 | Neutral Front-End &<br>Intermediates<br>Overweight Long-End | Neutral Front-End &<br>Intermediates<br>Overweight Long-End | Overweight Front-End<br>Underweight Intermediates<br>& Long-End       | Overweight Long-End<br>Neutral Intermediates<br>Underweight Front-End |
| US High Yield            | Overweight  | Overweight  | Market Weight   | Underweight   |
| Ratings                  | Overweight Bs & CCCs<br>Neutral BBs                         | Overweight BBs & Bs<br>Neutral CCCs                         | Overweight BBs<br>Neutral Bs<br>Underweight CCCs                      | Overweight BBs<br>Underweight Bs & CCCs                               |
| Duration                 | Neutral Front-End &<br>Intermediates<br>Overweight Long-End | Neutral Front-End &<br>Intermediates<br>Overweight Long-End | Overweight Front-End<br>Neutral Intermediates<br>Underweight Long-End | Overweight Long-End<br>Neutral Intermediates<br>Underweight Front-End |

Source: CreditSights

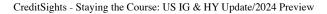
Below we provide model forward 12-month total and excess returns across US IG and HY ratings and duration segments. These forecasts are based on our base case outlook and factor in our corresponding UST yield curve shape and spread compression expectations for each segment.



Source: CreditSights, FactSet & ICE Data Indices, LLC

Note: Represents Excess and Total Return for the period beginning 06/13/2023 and ending 06/30/2024.

In US IG, the long-end could prove a strong performer, with total returns approaching 12% over the next 12 months, building on the 3.4% YTD return gains in the long-end, but not quite enough to offset the dismal performance in 2022 (-25.5%).





Source: CreditSights, FactSet & ICE Data Indices, LLC

Note: Represents Excess and Total Return for the period beginning 06/12/2023 and ending 06/30/2024.

In our base case, CCC total return potential is close to 20%; however, we expect that defaults will continue to rise, toward 3.5%-4% by 1H24, creating a wide range of outcomes for lower rated issuers and highlighting the importance of credit selection in the current environment (**Special Situations: US Picks & Pans - June 2023**).

Below we provide an overview of US IG and HY spread ranges, both YTD 2023 and the current cycle, by rating and duration. These charts highlight market segments that are still trading meaningfully wide of early February 2023 levels, when IG and HY spreads initially reached our base case targets of 120 bp and 400 bp, respectively.

In aggregate, US IG valuations have recovered half of the spread widening in March amid the regional banking turmoil, with higher rated segments trading closer to YTD tight levels while A and BBB spreads have lagged.



Source: CreditSights, FactSet, ICE Data Indices, LLC

Across ratings, US HY is trading closer to the tight-end of the YTD range with CCCs spreads the widest relative to the 2021-present cyclical range. As defaults rise toward our YE 2023 and 1H24 forecasts of 3.0% and 4.0%, respectively, HY index spreads will tighten when bonds currently trading at very wide spreads default.

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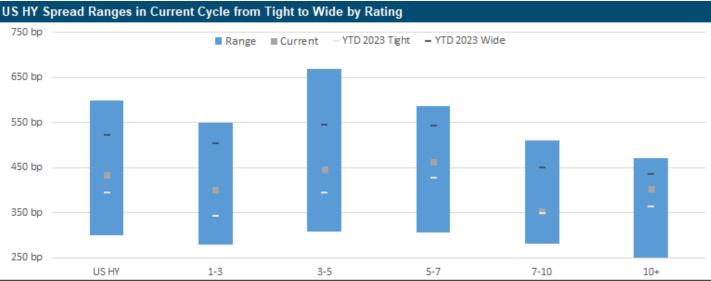
Source: CreditSights, FactSet, ICE Data Indices, LLC

In US IG, the front-end of the curve saw outsized spread widening amid the regional banking crisis, leaving front-end spreads wider than the peak from October 2022, when US IG index level OAS hit 171 bp. While we are becoming more constructive on duration in our base case scenario, outsized spread and a still flat/inverted US IG yield curve merits a barbell strategy with a focus on the front-end (1-3 years) and long-end (7+ years).



Source: CreditSights, FactSet, ICE Data Indices, LLC

In US HY, the spread curve across duration is influenced by rating composition as CCCs have the shortest duration (3.2 years) compared with BBs at 4.0 years and Bs at 3.4 years. Spreads in the front-end (1-5 years) have been slowest to tighten back to February 2023 levels while the 7-10 year segment is almost back to YTD tights.



Source: CreditSights, FactSet, ICE Data Indices, LLC

#### Broad Market Performance Post-SVB: Compared to Prior "Liquidity Events"

We updated our prior analysis examining how credit spreads/yields have performed post-SVB when compared to prior liquidity events. In the three months following March 10, the day of SVB's collapse, US IG spreads tightened 11 bp while yields rose 14 bp; this is comparable to historical liquidity-driven episodes, with 3-month median spread compression of 17 bp and yield increase of 14 bp.

| US IG Spreads & Liqu  | US IG Spreads & Liquidity Events |                |                |                |                |                |                 |               |                |                |                |                 |  |
|-----------------------|----------------------------------|----------------|----------------|----------------|----------------|----------------|-----------------|---------------|----------------|----------------|----------------|-----------------|--|
|                       |                                  |                |                | IG 0           | AS             |                |                 |               | IG 0           | AS Chang       | je*            |                 |  |
| Event                 | Event Date                       | 1-Mo.<br>Prior | 1-Day<br>After | 1-Mo.<br>After | 3-Mo.<br>After | 6-Mo.<br>After | 12-Mo.<br>After | Post<br>Event | 1-Mo.<br>After | 3-Mo.<br>After | 6-Mo.<br>After | 12-Mo.<br>After |  |
| Black Monday          | 10/20/1987                       | 144 bp         | 189 bp         | 168 bp         | 172 bp         | 129 bp         | 157 bp          | 46 bp         | -21 bp         | -17 bp         | -60 bp         | -32 bp          |  |
| Mini Crash            | 10/13/1989                       | 117 bp         | 126 bp         | 94 bp          | 95 bp          | 91 bp          | 134 bp          | 9 bp          | -32 bp         | -31 bp         | -35 bp         | 8 bp            |  |
| LTCM                  | 9/23/1998                        | 127 bp         | 127 bp         | 144 bp         | 124 bp         | 102 bp         | 124 bp          | 0 bp          | 17 bp          | -3 bp          | -25 bp         | -3 bp           |  |
| September 11          | 9/11/2001                        | 153 bp         | 159 bp         | 184 bp         | 169 bp         | 172 bp         | 226 bp          | 6 bp          | 25 bp          | 10 bp          | 13 bp          | 67 bp           |  |
| Bear Stearns          | 3/14/2008                        | 245 bp         | 293 bp         | 255 bp         | 241 bp         | 330 bp         | 565 bp          | 48 bp         | -38 bp         | -52 bp         | 37 bp          | 272 bp          |  |
| Lehman                | 9/15/2008                        | 303 bp         | 396 bp         | 586 bp         | 618 bp         | 561 bp         | 224 bp          | 93 bp         | 190 bp         | 222 bp         | 165 bp         | -172 bp         |  |
| Commodity Crisis      | 2/11/2016                        | 202 bp         | 220 bp         | 173 bp         | 157 bp         | 145 bp         | 127 bp          | 18 bp         | -47 bp         | -63 bp         | -75 bp         | -93 bp          |  |
| 2018 Policy "Mistake" | 1/3/2019                         | 159 bp         | 162 bp         | 132 bp         | 124 bp         | 119 bp         | 103 bp          | 3 bp          | -30 bp         | -38 bp         | -43 bp         | -59 bp          |  |
| COVID                 | 3/23/2020                        | 131 bp         | 382 bp         | 218 bp         | 157 bp         | 137 bp         | 101 bp          | 251 bp        | -164 bp        | -225 bp        | -245 bp        | -281 bp         |  |
| Russia/Ukraine        | 2/24/2022                        | 110 bp         | 127 bp         | 120 bp         | 149 bp         | 142 bp         | 128 bp          | 17 bp         | -7 bp          | 22 bp          | 15 bp          | 1 bp            |  |
| SIVB Collapse         | 3/10/2023                        | 125 bp         | 151 bp         | 138 bp         | 140 bp         |                |                 | 26 bp         | -13 bp         | -11 bp         |                |                 |  |
| Average Spread Chang  | e                                |                |                |                |                |                |                 | 47 bp         | -11 bp         | -17 bp         | -25 bp         | -29 bp          |  |
| Median Spread Change  | •                                |                |                |                |                |                |                 | 18 bp         | -21 bp         | -17 bp         | -30 bp         | -18 bp          |  |
| Average Spread Chang  | e Ex-GFC                         |                |                |                |                |                |                 | 42 bp         | -30 bp         | -40 bp         | -57 bp         | -49 bp          |  |
| Median Spread Change  | Ex-GFC                           |                |                |                |                |                |                 | 17 bp         | -21 bp         | -17 bp         | -39 bp         | -18 bp          |  |

Source: CreditSights, FactSet, ICE Data Indices, LLC

Note: Spread change reflects move from 1-month prior to 1-day after for Post-Event; reflects 1, 3-, 6- and 12-month spread changes relative to post-event levels.

|                        |            |                |                | IG Y           | ſW             |                |                 |               | IG Y           | TW Chang       | je*            |                 |
|------------------------|------------|----------------|----------------|----------------|----------------|----------------|-----------------|---------------|----------------|----------------|----------------|-----------------|
| Event                  | Event Date | 1-Mo.<br>Prior | 1-Day<br>After | 1-Mo.<br>After | 3-Mo.<br>After | 6-Mo.<br>After | 12-Mo.<br>After | Post<br>Event | 1-Mo.<br>After | 3-Mo.<br>After | 6-Mo.<br>After | 12-Mo.<br>After |
| Black Monday           | 10/20/1987 | 10.60%         | 10.20%         | 10.14%         | 9.47%          | 9.70%          | 9.07%           | -40 bp        | -6 bp          | -73 bp         | -50 bp         | -113 b          |
| Mini Crash             | 10/13/1989 | 9.50%          | 9.25%          | 9.31%          | 9.77%          | 10.23%         | 9.79%           | -25 bp        | 6 bp           | 52 bp          | 98 bp          | 54 b            |
| LTCM                   | 9/23/1998  | 6.48%          | 6.13%          | 6.45%          | 6.19%          | 6.49%          | 7.29%           | -35 bp        | -3 bp          | 7 bp           | 36 bp          | 116 b           |
| September 11           | 9/11/2001  | 6.18%          | 6.18%          | 5.97%          | 6.34%          | 6.54%          | 5.80%           | 0 bp          | -21 bp         | 16 bp          | 36 bp          | -37 b           |
| Bear Stearns           | 3/14/2008  | 5.46%          | 5.62%          | 5.97%          | 6.30%          | 6.56%          | 7.96%           | 17 bp         | 51 bp          | 68 bp          | 94 bp          | 234 b           |
| Lehman                 | 9/15/2008  | 6.38%          | 6.96%          | 8.95%          | 8.11%          | 8.01%          | 4.91%           | 58 bp         | 257 bp         | 115 bp         | 105 bp         | -205 b          |
| Commodity Crisis       | 2/11/2016  | 3.61%          | 3.67%          | 3.34%          | 3.04%          | 2.78%          | 3.34%           | 6 bp          | -27 bp         | -63 bp         | -89 bp         | -33 b           |
| 2018 Policy "Mistake"  | 1/3/2019   | 4.25%          | 4.25%          | 3.97%          | 3.75%          | 3.25%          | 2.82%           | 0 bp          | -29 bp         | -50 bp         | -100 bp        | -143 b          |
| COVID                  | 3/23/2020  | 2.47%          | 4.57%          | 2.81%          | 2.22%          | 1.97%          | 2.25%           | 210 bp        | 34 bp          | -234 bp        | -259 bp        | -232 b          |
| Russia/Ukraine         | 2/24/2022  | 2.80%          | 3.23%          | 3.92%          | 4.24%          | 4.70%          | 5.59%           | 43 bp         | 112 bp         | 102 bp         | 148 bp         | 236 b           |
| SIVB Collapse          | 3/10/2023  | 5.05%          | 5.35%          | 5.21%          | 5.49%          |                |                 | 30 bp         | 16 bp          | 14 bp          |                |                 |
| Average Yield Change   |            |                |                |                |                |                |                 | 24 bp         | 36 bp          | -4 bp          | 2 bp           | -12 b           |
| Median Yield Change    |            |                |                |                |                |                |                 | 6 bp          | 6 bp           | 14 bp          | 36 bp          | -35 b           |
| Average Yield Change E | Ex-GFC     |                |                |                |                |                |                 | 21 bp         | 9 bp           | -26 bp         | -22 bp         | -19 b           |
| Median Yield Change E  | x-GFC      |                |                |                |                |                |                 | 0 bp          | -3 bp          | 7 bp           | -7 bp          | -35 b           |

Note: Yield change reflects move from 1-month prior to 1-day after for Post-Event; reflects 1-, 3-, 6- and 12-month yield changes relative to post-event levels.

The HY market has fared even better on a spread basis, posting 64 bp of compression, versus a historic median of 44 bp, while yields have fallen 33 bp; exactly in-line with the post-'liquidity event' median.

| US HY Spreads & Liquidity Events |            |                |                |                |                |                |                 |                |                |                |                |                 |
|----------------------------------|------------|----------------|----------------|----------------|----------------|----------------|-----------------|----------------|----------------|----------------|----------------|-----------------|
|                                  |            |                |                | HY C           | )AS            |                |                 | HY OAS Change* |                |                |                |                 |
| Event                            | Event Date | 1-Mo.<br>Prior | 1-Day<br>After | 1-Mo.<br>After | 3-Mo.<br>After | 6-Mo.<br>After | 12-Mo.<br>After | Post<br>Event  | 1-Mo.<br>After | 3-Mo.<br>After | 6-Mo.<br>After | 12-Mo.<br>After |
| Black Monday                     | 10/20/1987 | 445 bp         | 617 bp         | 568 bp         | 573 bp         | 465 bp         | 492 bp          | 173 bp         | -49 bp         | -44 bp         | -152 bp        | -126 bp         |
| Mini Crash                       | 10/13/1989 | 663 bp         | 792 bp         | 823 bp         | 821 bp         | 850 bp         | 1267 bp         | 129 bp         | 31 bp          | 29 bp          | 58 bp          | 475 bp          |
| LTCM                             | 9/23/1998  | 520 bp         | 573 bp         | 609 bp         | 553 bp         | 517 bp         | 515 bp          | 53 bp          | 36 bp          | -20 bp         | -56 bp         | -58 bp          |
| September 11                     | 9/11/2001  | 805 bp         | 822 bp         | 961 bp         | 820 bp         | 736 bp         | 961 bp          | 17 bp          | 139 bp         | -2 bp          | -86 bp         | 139 bp          |
| Bear Stearns                     | 3/14/2008  | 765 bp         | 859 bp         | 680 bp         | 639 bp         | 849 bp         | 1791 bp         | 94 bp          | -179 bp        | -220 bp        | -10 bp         | 932 bp          |
| Lehman                           | 9/15/2008  | 822 bp         | 924 bp         | 1661 bp        | 2117 bp        | 1745 bp        | 810 bp          | 102 bp         | 737 bp         | 1193 bp        | 821 bp         | -114 bp         |
| Commodity Crisis                 | 2/11/2016  | 774 bp         | 864 bp         | 693 bp         | 640 bp         | 534 bp         | 390 bp          | 90 bp          | -171 bp        | -224 bp        | -330 bp        | -474 bp         |
| 2018 Policy "Mistake"            | 1/3/2019   | 533 bp         | 505 bp         | 412 bp         | 390 bp         | 398 bp         | 361 bp          | -28 bp         | -93 bp         | -115 bp        | -107 bp        | -144 bp         |
| COVID                            | 3/23/2020  | 504 bp         | 1055 bp        | 760 bp         | 602 bp         | 545 bp         | 357 bp          | 551 bp         | -295 bp        | -453 bp        | -510 bp        | -698 bp         |
| Russia/Ukraine                   | 2/24/2022  | 363 bp         | 362 bp         | 357 bp         | 474 bp         | 465 bp         | 428 bp          | -1 bp          | -5 bp          | 112 bp         | 103 bp         | 66 bp           |
| SIVB Collapse                    | 3/10/2023  | 430 bp         | 503 bp         | 448 bp         | 439 bp         |                |                 | 73 bp          | -55 bp         | -64 bp         |                |                 |
| Average Spread Change            | e          |                |                |                |                |                |                 | 114 bp         | 9 bp           | 17 bp          | -27 bp         | 0 bp            |
| Median Spread Change             | •          |                |                |                |                |                |                 | 90 bp          | -49 bp         | -44 bp         | -71 bp         | -86 bp          |
| Average Spread Change            | e Ex-GFC   |                |                |                |                |                |                 | 117 bp         | -51 bp         | -87 bp         | -135 bp        | -102 bp         |
| Median Spread Change             | Ex-GFC     |                |                |                |                |                |                 | 73 bp          | -49 bp         | -44 bp         | -97 bp         | -92 bp          |

Source: CreditSights, FaotSet, ICE Data Indices, LLC

Note: Spread change reflects move from 1-month prior to 1-day after for Post-Event; reflects 1-, 3-, 6- and 12-month spread changes relative to post-event levels.

| US HY YTW & Liquidity Events |            |                |                |                |                |                |                 |               |                |                |                |                 |
|------------------------------|------------|----------------|----------------|----------------|----------------|----------------|-----------------|---------------|----------------|----------------|----------------|-----------------|
|                              |            |                |                | HY Y           | тw             |                |                 |               | HY Y           | TW Chan        | ge*            |                 |
| Event                        | Event Date | 1-Mo.<br>Prior | 1-Day<br>After | 1-Mo.<br>After | 3-Mo.<br>After | 6-Mo.<br>After | 12-Mo.<br>After | Post<br>Event | 1₋Mo.<br>After | 3-Mo.<br>After | 6-Mo.<br>After | 12-Mo.<br>After |
| Black Monday                 | 10/20/1987 | 13.61%         | 14.48%         | 14.14%         | 13.48%         | 12.66%         | 12.00%          | 87 bp         | -34 bp         | -100 bp        | -182 bp        | -248 bp         |
| Mini Crash                   | 10/13/1989 | 14.96%         | 15.77%         | 15.96%         | 16.53%         | 17.50%         | 20.89%          | 81 bp         | 19 bp          | 76 bp          | 173 bp         | 512 bp          |
| LTCM                         | 9/23/1998  | 10.18%         | 10.29%         | 10.83%         | 10.29%         | 10.38%         | 10.91%          | 11 bp         | 54 bp          | 0 bp           | 9 bp           | 62 bp           |
| September 11                 | 9/11/2001  | 12.52%         | 12.62%         | 13.49%         | 12.65%         | 12.00%         | 13.01%          | 11 bp         | 86 bp          | 2 bp           | -63 bp         | 38 bp           |
| Bear Stearns                 | 3/14/2008  | 10.47%         | 11.08%         | 10.06%         | 10.19%         | 11.56%         | 19.86%          | 61 bp         | -102 bp        | -90 bp         | 48 bp          | 878 bp          |
| Lehman                       | 9/15/2008  | 11.39%         | 12.03%         | 19.35%         | 22.54%         | 19.49%         | 10.37%          | 64 bp         | 732 bp         | 1051 bp        | 745 bp         | -166 bp         |
| Commodity Crisis             | 2/11/2016  | 9.16%          | 9.96%          | 8.41%          | 7.72%          | 6.54%          | 5.80%           | 80 bp         | -155 bp        | -225 bp        | -343 bp        | -416 bp         |
| 2018 Policy "Mistake"        | 1/3/2019   | 7.95%          | 7.65%          | 6.71%          | 6.39%          | 6.04%          | 5.34%           | -30 bp        | -93 bp         | -126 bp        | -161 bp        | -231 bp         |
| COVID                        | 3/23/2020  | 6.20%          | 11.14%         | 8.04%          | 6.45%          | 5.80%          | 4.38%           | 494 bp        | -310 bp        | -469 bp        | -534 bp        | -676 bp         |
| Russia/Ukraine               | 2/24/2022  | 5.31%          | 5.60%          | 6.46%          | 7.51%          | 8.01%          | 8.70%           | 29 bp         | 86 bp          | 192 bp         | 241 bp         | 310 bp          |
| SIVB Collapse                | 3/10/2023  | 8.17%          | 8.95%          | 8.42%          | 8.62%          |                |                 | 78 bp         | -53 bp         | -33 bp         |                |                 |
| Average Yield Change         |            |                |                |                |                |                |                 | 88 bp         | 21 bp          | 25 bp          | -7 bp          | 6 bp            |
| Median Yield Change          |            |                |                |                |                |                |                 | 64 bp         | -34 bp         | -33 bp         | -27 bp         | -64 bp          |
| Average Yield Change 8       | Ex-GFC     |                |                |                |                |                |                 | 93 bp         | -44 bp         | -76 bp         | -107 bp        | -81 bp          |
| Median Yield Change E        | x-GFC      |                |                |                |                |                |                 | 78 bp         | -34 bp         | -33 bp         | -112 bp        | -96 bp          |

Source: CreditSights, FactSet, ICE Data Indices, LLC

Note: Yield change reflects move from 1-month prior to 1-day after for Post-Event; reflects 1-, 3-, 6- and 12-month yield changes relative to post-event levels.

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