



The High Yield Default Risk Premium

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- **We use index spreads to derive estimates of the level of spread compensation for future default losses - the high yield default risk premium.**
- **We show the extent to which the default risk premium compensated investors for default losses between December 1999 and September 2016.** On average, US HY investors were almost exactly compensated for default losses that occurred a year later, while euro HY investors were over-compensated by approximately 120 bp.
- **From January 2014 to September 2015, the average US HY excess spread across commodities sectors was -342 bp, while the average ex-commodities excess spread was 182 bp.**
- **Our estimate of excess spread compensation for default losses over the next 12 months is 100 bp for US HY and 110 bp to 140 bp for euro HY.** This assumes a September 2017 debt-weighted default rate of 4% for US HY and 2.5% to 3% for euro HY.

Corporate bond spreads over governments provide compensation for risks not faced by government bond investors: defaults, early calls and secondary market illiquidity. Isolating these components can provide insight into what level of spread compensation investors expect given their forward view on defaults.

We make the assumption that IG index spreads reflect mainly non-default risks. The concept is that investors in HY are making a play on default risk while IG investors are more defensive, looking for correlation with treasuries, taking longer duration exposure and interest rate risk. **The difference between HY and IG index option-adjusted spreads (OAS) can then be used as a measure of the spread compensation for future default losses, which we refer to as the high yield default risk premium.**

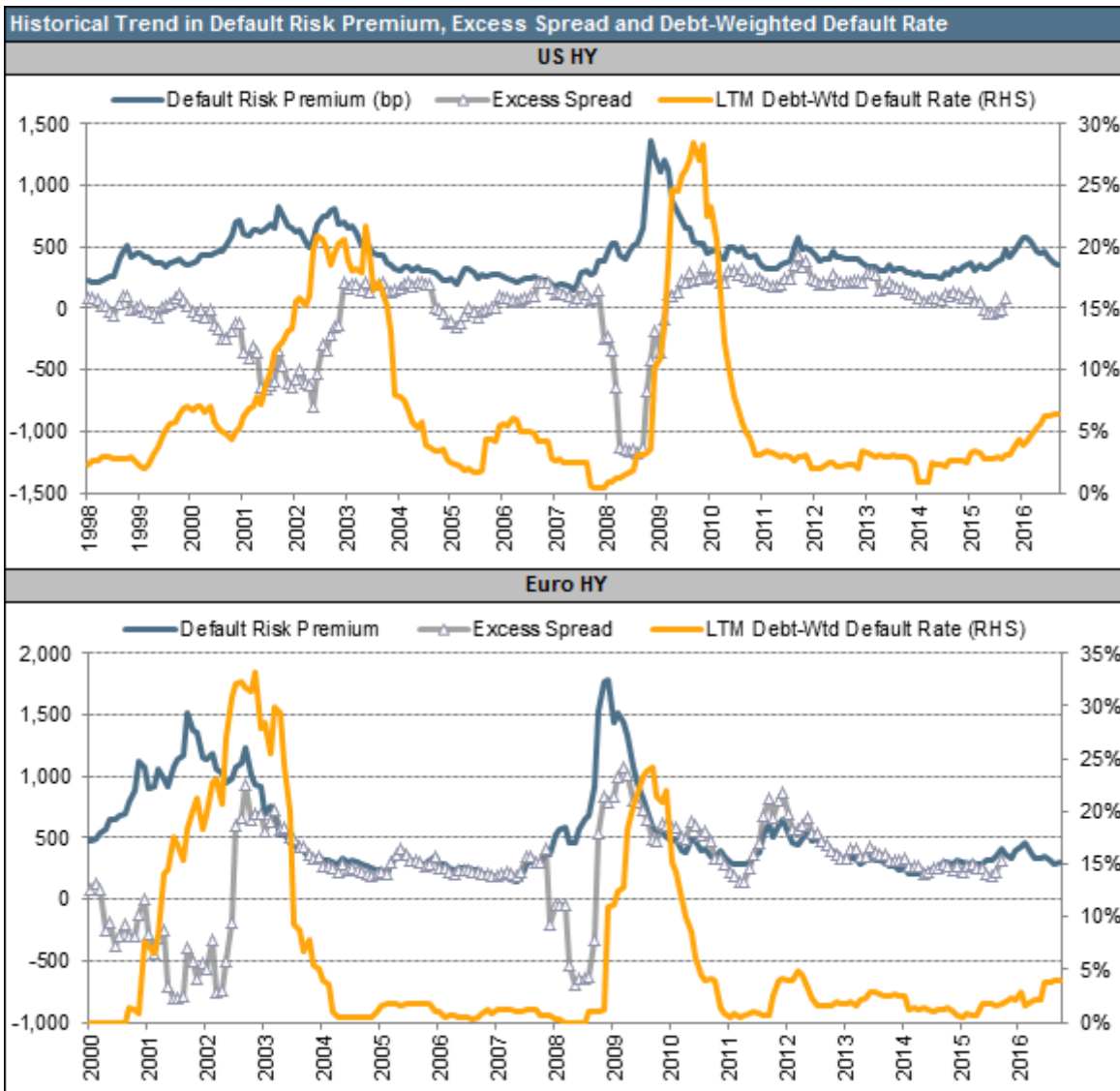
Although IG bonds are not entirely default-free, this approach allows us to take a conservative view on the level of spread compensation HY investors receive for exposure to default risk. Another benefit is that it guarantees that the compensation for trading liquidity varies over time; assuming the liquidity premium is constant through the cycle can lead to a negative HY default risk premium in periods of very tight HY spreads.

The Excess Spread

The default risk premium can be used to estimate the extent to which spreads compensate investors for future default losses, by comparing last year's default risk premium (HY minus IG index spreads) with default losses today. To estimate default losses, we multiply today's LTM debt-weighted default rate by an assumed loss given default, i.e. 100% minus the recovery. For example, the US HY default risk premium on December 31, 2014 was 360 bp, and the debt-weighted US HY default rate at the end of December 2015 was 4.4%. Using a senior unsecured recovery assumption of 37%, the December 2015 US HY default loss is calculated as $4.4\% \times (1 - 0.37)$, or 277 bp. Subtracting this default loss from the December 2014 default risk premium yields an excess spread of 83 bp.

The charts below show the trend in the default risk premium, excess spread and LTM debt-weighted default rate for the US and euro HY indices. We only calculate excess spreads to September 30, 2015, as debt-weighted default rates are only available to September 30,

2016. Across both indices the excess spread fell to large negative values in the 2001/2002 and 2008/2009 downturns, as the default risk premium proved to be an insufficient level of spread compensation for the estimated default losses a year later. Outside these two default cycles excess spreads have generally been positive, with the exception of the US HY index in early 2005 and mid-2015. In the latter case, the culprit was the surge in commodity defaults that pushed debt-weighted default rates above 5% in mid-2016.



Source: CreditSights Risk Products, BAML

Between December 1998 and September 2015, the average excess spread for the US HY index was -2 bp. **This suggests that, on average, the US HY default risk premium has provided a level of compensation roughly equal to future default losses.** The level of over-compensation for defaults prior to low-default points in the cycle balances out the significant under-compensation that occurred prior to the major default cycles.

For euro HY, the average excess spread between December 1999 and September 2015 was 120 bp. This relatively high level of excess compensation for default losses makes intuitive sense; the euro HY market is smaller, has a very different industry mix, and spans a variety of legal systems with no common governing process for creditor rights. The positive differential between euro HY and US HY excess spreads still remains if we exclude the two major default cycles; the average excess spread between January 2010 and September 2015 was 181 bp for US HY and 237 bp for euro HY.

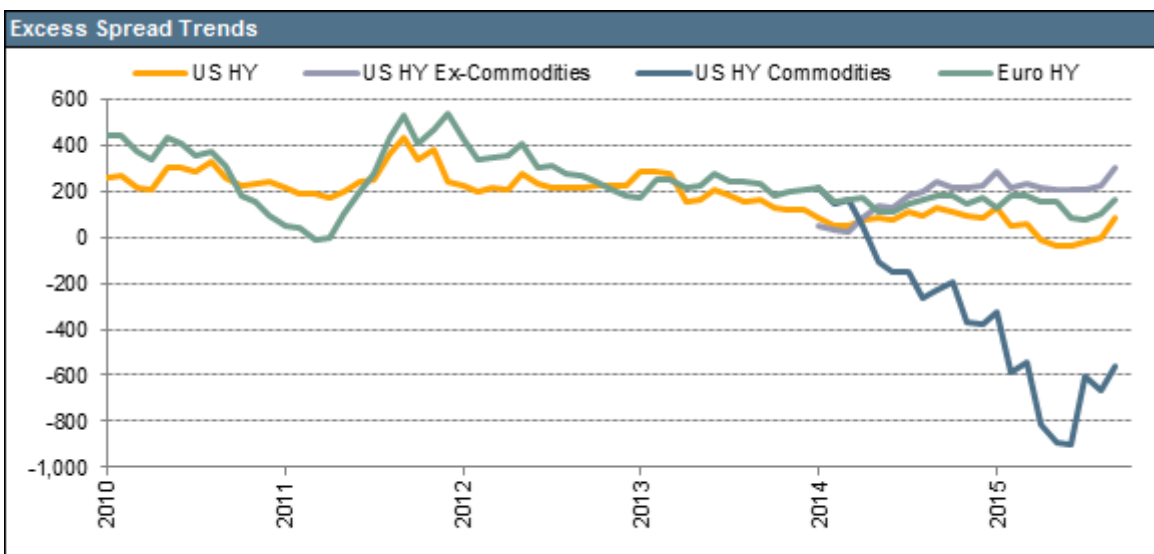
Our excess spread calculations assume a fixed recovery of 37%. It is well known that recoveries vary across the credit cycle, especially in periods of high default rates when recoveries can be significantly lower due to supply and demand imbalances for defaulted securities. We tested the impact of varying the assumed recovery rate according to the level

of debt-weighted default rates: while average historical recoveries were maintained at a level close to 37%, recoveries were assumed to be lower than average in high-default periods and higher than average in low-default periods. We found that this resulted in lower average excess spread levels; the average historical excess spread for the US and euro HY indices fell to -17 bp and 92 bp respectively. This makes intuitive sense, as the reduction to the excess spread (from lower than average recoveries) prior high-default periods - when spreads are much higher than average - outweighs the excess spread improvement prior to low-default periods, when spreads tend to be lower than average.

The Ex-Commodities Excess Spread

As shown in the above charts, excess spread falls well below zero prior to periods of high and rising default rates. For US HY excess spreads became negative in April 2015, as spreads were not sufficient compensation for the level of default losses that occurred between April 2015 and April 2016, when **US HY default rates rose above the historical average**. Interestingly, however, outside of commodities sectors US HY default rates have been relatively low and stable, so we might expect excess spreads to be much healthier.

In the chart below we compare the trend in US HY and euro HY excess spreads between January 2010 and September 2015. Additionally, from January 2014 onward we show two additional excess spread lines, splitting the US HY excess spread into two components: the ex-commodities component strips out the energy, metals and mining sectors from the US HY index, and the commodities component considers only these sectors. The excess spread for commodities sectors fell below zero in May 2014, and continued to fall as spreads provided ever-decreasing levels of compensation for default losses in late 2015 and the first half of 2016. It was only in June 2015 that excess spread levels began to rise, and at the end of September 2015 they were still only just above -600 bp.



Source: CreditSights Risk Products, BAML

Commodities includes Energy, Metals and Mining

In contrast, the ex-commodities excess spread rose steadily throughout 2014 as spreads increased, stabilizing at close to 200 bp until August 2015, at which point it rose again to 300 bp by the end of September 2015. **From January 2014 to September 2015, the average US HY commodities excess spread was -342 bp, while the average ex-commodities excess spread was 182 bp.**

Given that excess spreads are only available to September 2015, an obvious question is whether current index spread levels are providing adequate compensation for next year's potential default losses. As of 30 September 2016, US HY and US IG index spreads were 497 bp and 143 bp respectively, yielding a default risk premium of 354 bp. Dividing the default risk premium by our fixed loss-given-default ($1 - 0.37$) provides a market-implied default rate of 5.6%. This means that debt-weighted US HY default rates would need to

reach a level of 5.6% by September 2017 in order for current index spreads to exactly compensate investors for next year's default losses. The same calculation for euro HY yields a 'break-even' September 2017 debt-weighted default rate of 4.8%.

Will US HY debt-weighted default rates will be higher or lower than 5.6% by September 2017? We think they will be significantly lower. US HY issuer-weighted **default rates fell** in September 2016, and we expect this trend to continue as new defaults are outnumbered by older defaults that drop from the LTM calculation. Our default risk models are also pointing towards much lower forward default rates; we think that US HY debt-weighted default rates could fall to as low as 3.5% to 4.% by September 2017. Should default rates reach 4% a year from now, the excess spread provided by current index levels would be approximately 100 bp.

While it is harder to forecast debt-weighted default rates for the euro HY index, it is very likely that they will also be lower than the current level of 3.9%, as the defaults of **Abengoa**, **Oi** and **Isolux** earlier this year will drop out of the LTM calculation. We estimate that debt-weighted euro HY default rates could fall to the 2.5% to 3% range by September 2017, implying that the current euro HY default risk premium of 301 bp is providing an excess spread between 110 bp and 140 bp.

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