

# Global Macro Strategy

## Focusing the Credit Lens on the US Economy

Strategy

Global

### Investors should heed corporate credit trends

Our recent report on the tightness in non-bank corporate credit standards has prompted numerous follow-up questions from investors. At their core, the questions center on the aggregate economic implications of such a deterioration. Empirically, there has been a strong link between changes in corporate credit growth and overall US output, and that may be particularly amplified in this cycle. As households have delevered post-crisis, US corporates have re-levered to near record highs, providing a key risk for macro investors to monitor. In addition, standard business cycle gauges, such as the output gap, may not be capturing growth risks fully this time, as a corporate re-leveraging cycle fuelled by financial engineering continues.

### We introduce a credit-based gauge to assess US recession risks

We attempt to quantify the impact of corporate credit trends on US recession probabilities by isolating those credit variables that consistently turn in late cycle environments. This is done in a complementary fashion to research done by our US economics team. We find that changes in corporate leverage, interest coverage, bank NPLs and the Fed SLOS survey (C&I loans to small firms) have historically provided useful gauges of recession risks for investors. Our work suggests that the probability of a US recession from Q2'15-Q2'16 is 15%. This is slightly higher than much of the post-crisis period, due to an increase in corporate leverage.

### Credit is not forecasting a 2016 recession

While our credit gauge is forecasting an uptick in recession probabilities, the overall likelihood still remains well below levels (~50%) seen prior to past recessions, and is only at levels consistent with what typical metrics would imply for this stage of the business cycle. This is consistent with the views of our US Economics team that no recession is likely in 2016. We think probabilities may remain elevated, especially if bank lending conditions do tighten in response to recent market volatility. Still, this would not be enough on its own to signal an imminent risk. Corporate interest coverage remains strong and is a key area to watch. While US high-yield funding costs have risen in recent months, the much larger investment grade universe is maintaining the benefits of low interest rates, as Treasury yields have fallen and debt loads have been termed out.

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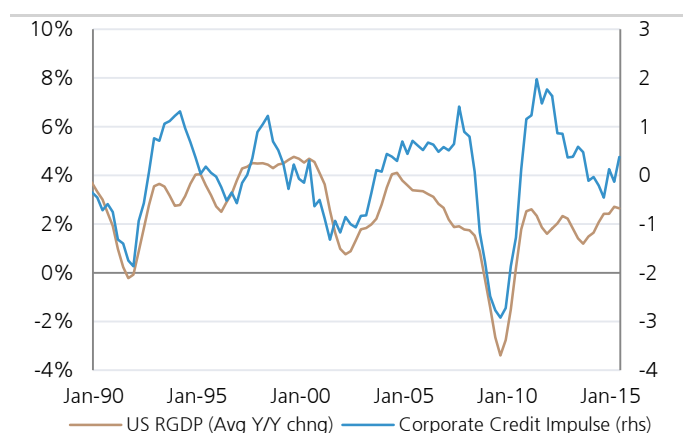
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Our recent report on the emerging tightness in non-bank corporate credit standards has prompted numerous follow-up questions from investors<sup>1</sup>. At their core, the questions center on the aggregate economic implications of such a deterioration. Many have asked if the worsening trend in non-bank conditions is enough to signal a near-term US recession, particularly in the context of recent disappointing US growth data. In this piece, we introduce a credit-based gauge to assess US recession risks, in a complementary manner to those methods used by our economists. In our view, we come to two main conclusions:

- 1) Our credit gauge suggests that the chance of a 2016 US recession has ticked higher vs. post-crisis lows, given aggressive corporate re-leveraging and the expected flow-through of recent deterioration in non-bank lending standards.
- 2) With that said, our credit gauge does not suggest a 2016 US recession is likely. Overall probabilities remain well below levels that have signalled imminent danger in the past, as interest coverage remains solid and bank NPLs continue to head lower.

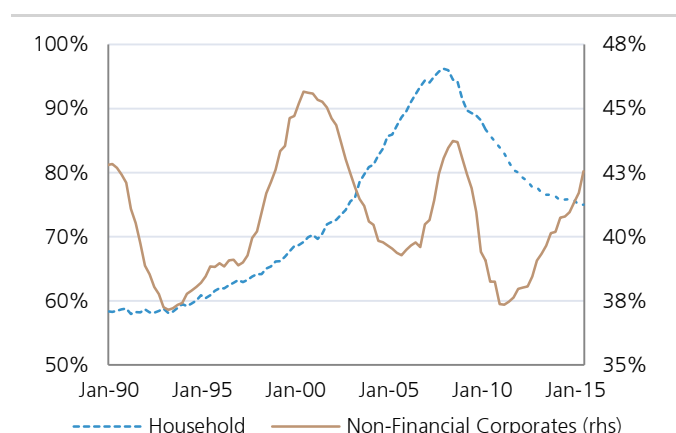
Taking a step back, why should credit variables be useful in predicting recessions, as opposed to more standard business cycle variables? First, there has historically been a strong link between the US corporate credit impulse (the rate of acceleration in US non-financial corporate credit growth) and overall US real GDP (correlation of 0.64 back to 1990) (Figure 1). There are exceptions, such as in 2007, when corporate re-leveraging was not enough to offset US household deleveraging amidst a faltering domestic real-estate market. But this cycle should be different. Total US non-financial corporate debt to GDP levels are now near record highs as corporates have re-gearred, while the US household sector continues to de-lever (Figure 2). In a sense, *corporate* credit growth has been a major support to the US economy in the post-crisis period. Even when accounting for corporate cash balances by looking at net debt to EBITDA ratios, the re-leveraging is plainly evident (Figure 3). In short, corporates are more likely to provide the leading indication of macro health in this cycle, absent a resurgence in household credit growth.

**Figure 1: US Corporate Credit Impulse vs. US RGDP**



Source: UBS, Bloomberg, Federal Reserve

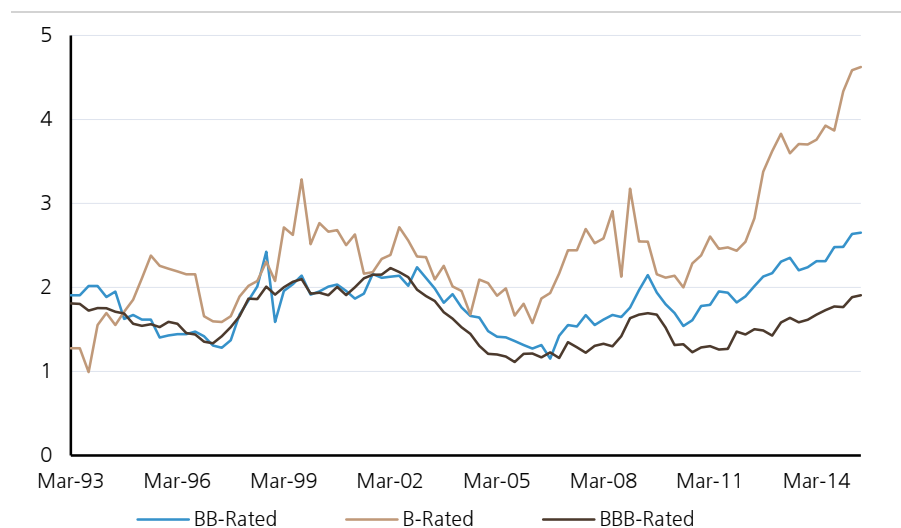
**Figure 2: US Household vs. Corporate Debt % PGDP**



Source: UBS, Bloomberg, Federal Reserve

<sup>1</sup> [Credit Cycle Turning? Non-Bank Liquidity Hits Multi-Year Lows](#), S. Caprio, October 8, 2015

**Figure 3: US Corporate Median Net Debt to EBITDA**



Source: UBS, Worldscope

Second, there is sufficient academic research that links the corporate credit cycle with overall economic output. In particular, Stein (2015) demonstrates a clear link between frothy credit market sentiment (strong issuance at tight spreads) with declining net issuance 2 years later, and a drop in economic activity 2-4 years later<sup>2</sup>. Today, we are starting to see the decline in issuance phase play out. 2015 HY net issuance through Q3 (\$19bn) is down considerably from 2012-2014 levels at the same point in the calendar (\$100-160bn). Ex-energy, the drop-off is still very much evident (Figure 4). This is not just a commodities story. And as we discussed at length in our prior piece<sup>3</sup>, the drop in net issuance is particularly stark among B-rated and lower issuers.

**Figure 4: US HY Net Issuance (Q1-Q3), Total vs. Ex-Energy, (\$bn)**

Date	Total	Ex-Energy
2015	19.0	8.2
2014	101.9	62.1
2013	159.5	133.2
2012	125.8	96.3

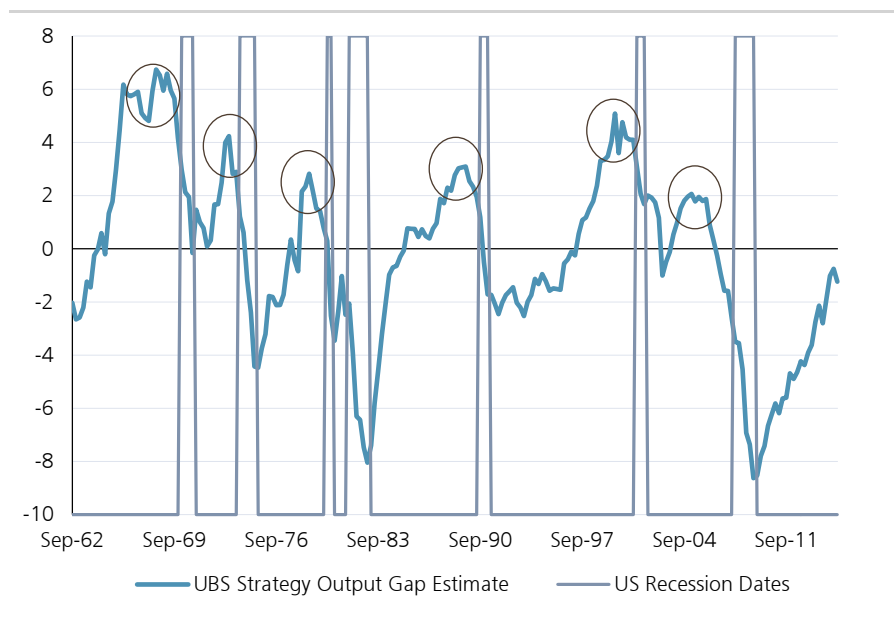
Source: UBS, Bloomberg

Lastly, there is a risk that this credit cycle evolves in a different manner from historical norms. Typically, the credit cycle evolves with the business cycle, and hence estimated measures of economic slack can often provide useful guides to where the credit cycle may head. For example, our estimate for the US output gap has been a solid leading indicator of future recessions roughly 2-3 years out, with values of +2 or higher signifying heightened risk (Figure 5).

<sup>2</sup> Credit-market sentiment and the Business Cycle, D. Lopez-Salido, J. Stein, E. Zakrajsek, 2015

<sup>3</sup> [Credit Cycle Turning? Non-Bank Liquidity Hits Multi-Year Lows](#), S. Caprio, October 8, 2015

**Figure 5: US Output Gap vs. Recessions**

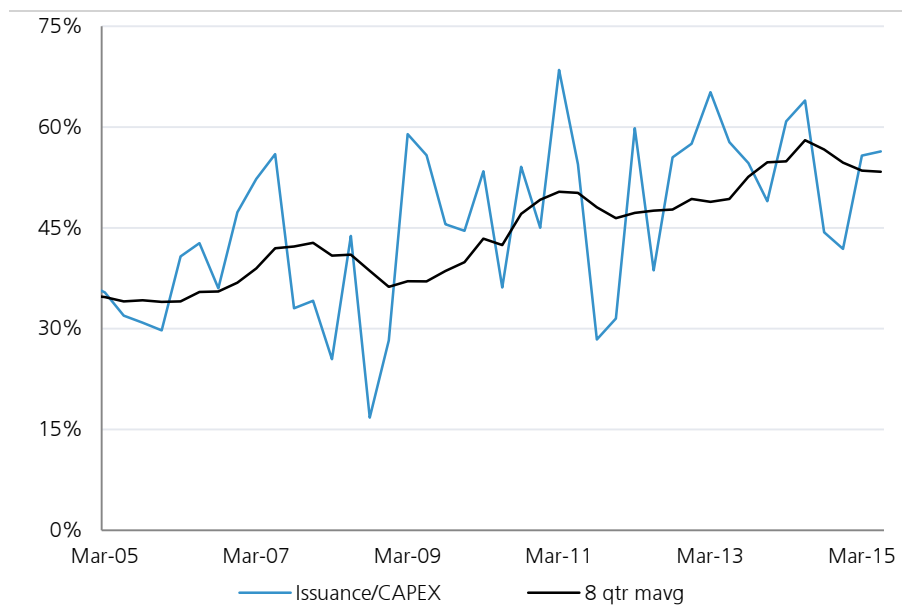


Source: UBS, Bloomberg

An economy with little slack can set in motion the latter phases of the corporate re-leveraging process, as companies borrow more and hire more to meet increased demand, pushing up interest rates and wages. Along with tighter Fed policy, this helps to compress profit margins, weaken earnings, and ultimately increase leverage and default risks.

Today's output gap of -1.2 would seem to suggest the business cycle has a fair amount of runway left before reaching more dangerous levels. But does this necessarily imply the credit cycle will stay well-anchored? We have our concerns. Our most pressing concern is the extent to which this credit cycle has been driven by financial engineering, through share buybacks and M&A activity, rather than real economic capex. The amount of corporate bond and loan issuance relative to capex (56%) is running at levels significantly higher than during the mid-2000s (mid 30% range, Figure 6). Hence we worry that this credit cycle has the potential to run ahead of economic fundamentals, in a break from past cycles and how the normal re-leveraging process works.

**Figure 6: Total US Issuance (Bonds + Loans) Relative to Capex**



Source: UBS, Bloomberg, Haver, S&P LCD

Given that we believe credit provides a unique lens to view US recession risks, is there a way to quantify this? We set out to do this by trying to construct a credit gauge that ideally leads US recessions by up to one year, but at worst at least signals periods coincident with US recessions. (This is still useful information for investors, given that recession dates are only known ex-post). The credit concepts we test include non-financial leverage, non-financial interest coverage, BBB credit spreads, HY default rates, the Fed Senior Loan Officer Survey for C&I Loans to Small Firms, and Bank NPLs. We chose these concepts based on their fundamental importance to the credit cycle and their long back-history, which allows us to test the robustness of these variables across multiple cycles (back to the 1960s in most cases). The appendix of this piece lists our data sources and methodology in more detail.

On this note, we find four key credit concepts that have been reliable indicators of past US recessions.

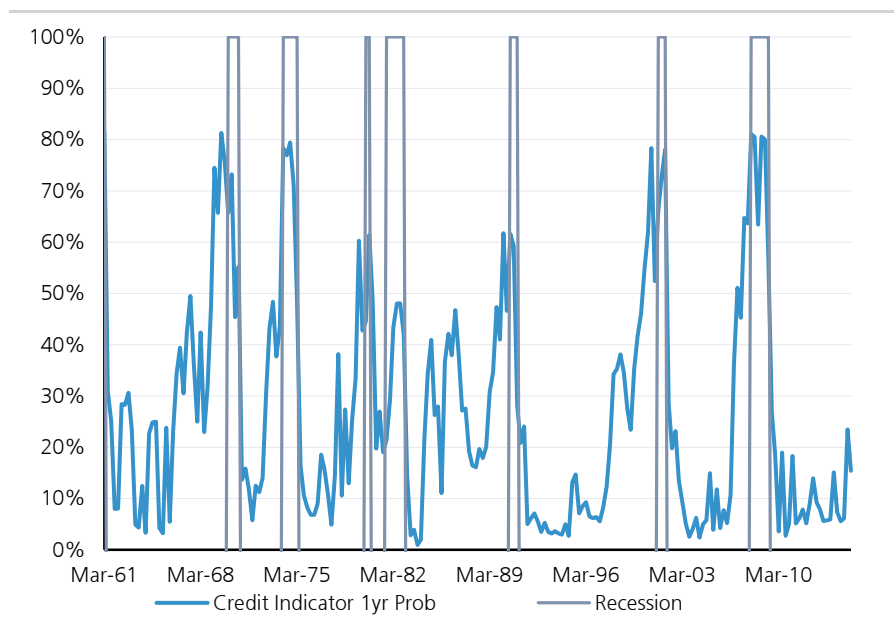
- 1) Rising Corporate Leverage
- 2) Deteriorating Interest Coverage
- 3) Bank Lending Standards Tightening for C&I Loans to Small Firms
- 4) Rising Bank NPLs

It is most interesting to note that all variables selected were change variables (remember that SLOS levels are actually a change concept); levels were not especially powerful in helping to predict business cycle turns. In addition, BBB credit spreads were not significant, which is surprising at first glance. However, this finding is backed by academic research such as Gilchrist (2011) and Levanon (2011), which find that widening credit spreads are not a great predictor of future

US recessions<sup>45</sup>. Gilchrist (2011) does find that excess credit spreads (i.e., the additional spread compensation above that required for expected defaults) lead significant declines in economic activity, but we do not have enough historical data to test this concept in our view.

Our credit gauge recession probability forecast over time is shown in Figure 7. This indicator illustrates the credit-based probability of being in a recession now or within 1 year at any date. Currently, our indicator suggests a 15% probability of being in a recession between Q2'15-Q2'16, though this number was at 25% in Q1. This probability is the highest in the post-crisis period, and also above that seen in the mid-1990s and mid-2000s (7-10%). Hence, credit variables suggest the recent up-tick in investor recession inquiries is warranted to some extent.

**Figure 7: Credit Recession Gauge (Q2'15-Q2'16)**



Source: UBS, Bloomberg

But much more importantly, we are still far below warning levels that a recession is imminent, given the information we have today. The unconditional probability of being within one year of a recession is 19% back to 1983 and 27% back to 1961. Hence, while our credit gauge is detailing a *relative* increase in risk from low levels, the *absolute* risk is far from elevated. In particular, our indicator has typically reached the 50% level before US recessions have occurred (Figure 8). This level has a consistent track record, providing a leading signal for every recession, except Sept 1981, while also highlighting elevated risks in the mid-1980s and 1997-1998 that our economists believe were legitimate risks. Our indicator also compares favorably to other widely used leading indicators, such as changes in the S&P 500 and the Conference Board's Leading Economic Index (Figures 9 & 10).

<sup>4</sup> Credit spreads and business cycle fluctuations, S. Gilchrist and E. Zakrajsek, May 2011

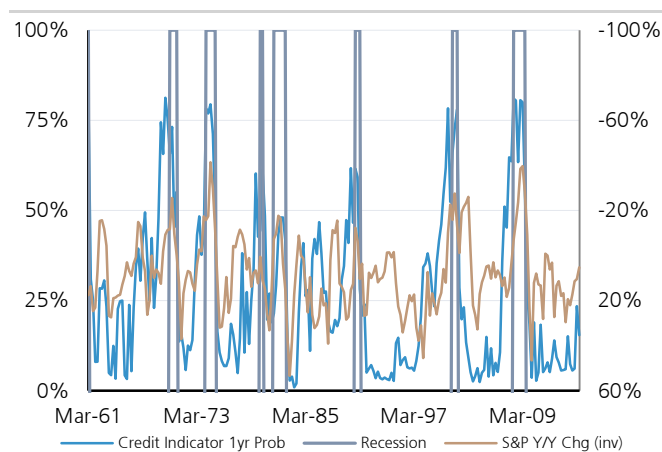
<sup>5</sup> Using a Leading Credit Index to Predict Turning Points in the US Business Cycle, Dec 2011

**Figure 8: Indicator Warning Levels and Subsequent Recession Start Dates**

Indicator Near 50% Threshold	Indicator Probability	Recession Starts
Jun-1967	49%	33 months later
Dec-1968	48%	15 months later
Jun-1973	48%	9 months later
Sept-1979	60%	6 months later
Sept-1986	47%	48 months later
Sept-1989	47%	12 months later
Jun-2000	55%	12 months later
Mar-2007	51%	12 months later

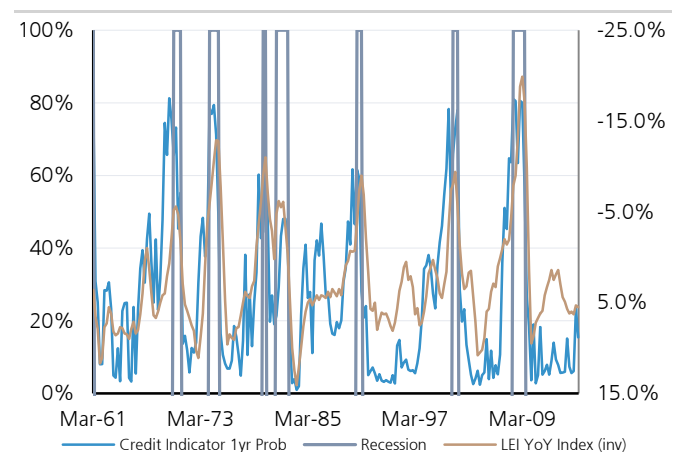
Source: UBS, Bloomberg

**Figure 9: Credit Recession Gauge vs. S&P 500 Y/Y Chg**



Source: UBS, Bloomberg

**Figure 10: Credit Recession Gauge vs. Conf Board Leading Econ Index (Y/Y Chg)**



Source: UBS, Bloomberg

Could credit signal a different story as we obtain more data in 2015? The individual signals behind our current estimate provide a starting point (Figure 11). For most variables, recession probabilities are very subdued. However, it must be noted that corporate re-leveraging is occurring at a fast and furious pace, in a similar manner to prior dangerous periods for the US economy. On US corporate bank lending standards (SLOS), we do expect this probability to tick up given recent market volatility and tightness in non-bank corporate lending standards. However, even if US banks were to tighten aggressively as per our non-bank proxy suggests (13.8% of banks tightening), this would only take aggregate recession risks into the 20-25% range per our credit gauge.

**Figure 11: Credit Gauge Recession Probabilities (Q2'15-Q2'16) By Indicator**

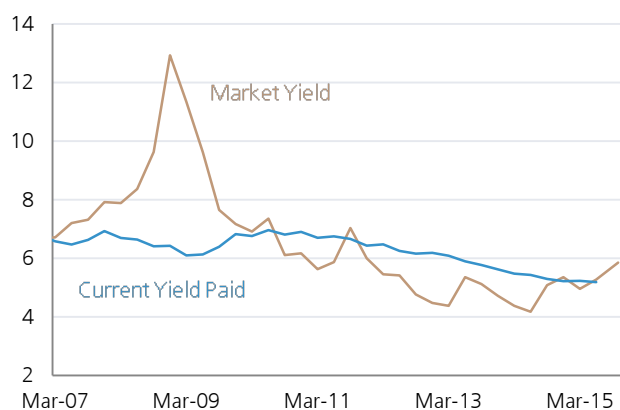
Non-Financial Leverage (Chng)	Interest Coverage (Chng)	Bank NPLs (Chng)	SLOS
50%	2%	0%	10%

Source: UBS

In our view, it would take a deterioration in interest coverage ratios, from both weaker earnings and higher interest rates, to become more concerned. To be clear, this is starting to play out for US high-yield firms as current market rates have surged beyond that currently paid by most HY firms on prior borrowings (Figures 12 & 13). But the HY universe is only 20% of the total corporate bond market; it won't be enough to tip the scale from a broader economy point of view. We

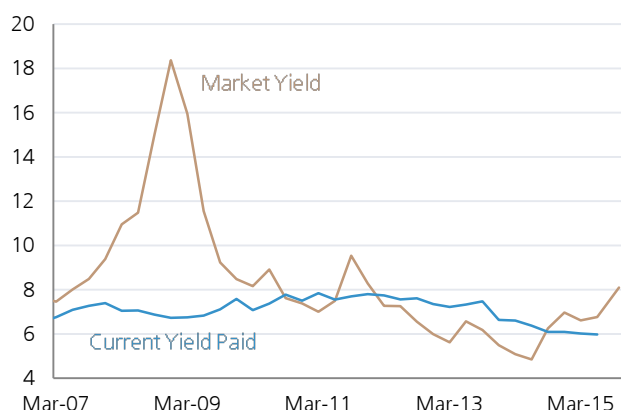
would need to see some spillover to investment-grade firms, and while this has occurred in recent weeks, the increase has been far less subdued due to falling longer term Treasury yields and more termed out maturities (Figure 14). In sum, we do believe that recent corporate credit trends are an important US growth risk for investors to monitor. However, there is a higher bar to meet to extrapolate that potential downside risk to US growth into outright recessionary conditions. Based on the information we have today, our credit gauge is suggesting that a 2016 US recession is unlikely.

**Figure 12: Current Yield Paid vs. Market Yield: BB Credits**



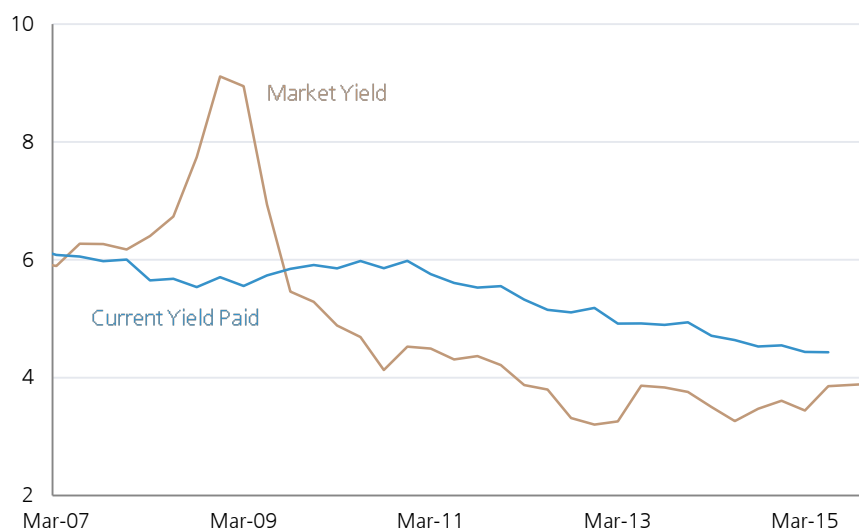
Source: UBS, Worldscope, Yieldbook

**Figure 13: Current Yield Paid vs. Market Yield: B Credits**



Source: UBS, Worldscope, Yieldbook

**Figure 14: Current Yield Paid vs. Market Yield: BBB Credits**



Source: UBS, Worldscope, Yieldbook



## Appendix

The general methodology behind the construction of our credit-based recession probability forecast was to build an early warning signal that highlighted rising recession risks given the divergence between credit and economic/interest rate cycles. We use recession dates per the NBER, where recessionary quarters are defined as having a minimum of at least 2 out of 3 months in a recession. We test below both variable levels and changes, where changes = current value – average of prior 4 quarters. This is done to better capture trends in the underlying time series.

We then calculate the average value of each variable below within 1 year of a US recession. We compare the conditional probability of that average being within 1 year of a recession start date, including being in a recession itself, to the unconditional probability for each variable. We chose this method to find variables that consistently either lead recessions, or at worst, provide a coincident signal that a recession is occurring.

Because we cannot directly take the conditional probability of a continuous variable, we use intervals surrounding the average that encompass roughly 10% of the distribution as a proxy (though other measures such as medians or larger distributions of up to 20% around the average do not change the results in any meaningful sense). The results for each variable (both levels and changes) are below. The variables selected are the ones with the greatest signal of a near-term recession risk, with conditional probabilities more than 20% above unconditional probabilities. (The only reason for variation in unconditional probabilities is the different time series history for each variable). The aggregate signal finally constructed is simply the average of the individual conditional probabilities through time.

**Figure 15: UBS Credit Variables Tested For Recession Indicator**

	Conditional Probability	Unconditional Probability
<b>Interest Coverage (chng)</b>	<b>57%</b>	<b>27%</b>
<b>Total Bank NPLs (chng)</b>	<b>50%</b>	<b>20%</b>
<b>Non-Financial Leverage (chng)</b>	<b>50%</b>	<b>27%</b>
<b>SLOS</b>	<b>50%</b>	<b>30%</b>
Interest Coverage	41%	28%
Total Bank NPLs	25%	20%
BBB Spreads (chng)	30%	27%
Non-Financial Leverage	30%	28%
BBB Spreads	27%	28%
HY Default Rate (chng)	17%	28%
HY Default Rate (Trailing 12m lvl)	11%	30%

Source: UBS

## Data Concepts:

- **US Non-Financial Leverage:** Average leverage of non-financial corporate sector (Nonfinancial Corp Debt/ (US Nonfinancial + Rest of World Corp Profits) (i.e. earnings earned both domestically and abroad)

Sources: *Nonfinancial Corporate Debt* - Federal Reserve, Z1 release: Tables D.3, line 1 and *US Nonfinancial + Rest of World Corp Profits* - Bureau of Economic Analysis: Table 6.16D lines 4 and 5).

- **US Non-Financial Interest Coverage:** (US Nonfinancial Profits + US Nonfinancial Consumption of Fixed Capital + US Nonfinancial Net Interest & Misc Payments)/ US Nonfinancial Net Interest & Misc Payments

Source: Haver Tickers: a) **YCPDN@USNA** - Nonfinancial Corporate Business: Profits with IVA & CCAdj (SAAR, Bil.\$); b) **BNALO@USNA** - Nonfinancial Corp Business: Consumption of Fixed Capital (SAAR, Bil.\$); c) **BNNI@USNA** - Nonfinancial Corporate Business: Net Interest & Misc Payments (SAAR, Bil.\$)

- **US Bank NPLs:** Nonperforming loans (past due 90+ days plus nonaccrual) to total loans for all US Banks

Source: FDIC, Federal Reserve of St. Louis (FRED) Ticker: USNPTL Index

- **Fed Senior Loan Officer Survey:** Senior Loan Officer Survey of 60 large domestic US banks and 24 US branches and agencies of foreign banks. We have used the net percentage of banks tightening standards for commercial and industrial loans to small firms. Note: Since 1990 banks have been asked about "standards to approve commercial and industrial loans or credit lines" to firms according to size. By contrast, from 1978 to 1983, banks were asked about "standards to qualify for the prime rate," and between 1967 and 1977, about "standards for loans to nonfinancial businesses." The questions asked between 1978 and 1983 were considerably more narrow than the earlier, more general standards question. From 1984 through 1989 this question was not asked in any manner.

Source: Federal Reserve, Bloomberg Ticker: SLDETGTS Index

- **BBB Spreads:** 30yr BBB Spreads

Source: Moody's until Jan-2013, Citi BBB Index thereafter

- **HY Default Rate:** Trailing 12m HY Default Rate (issuer-weighted)

Source: Moody's

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Neutral	FSR is between -6% and 6% of the MRA.	40%	26%
Sell	FSR is > 6% below the MRA.	12%	18%
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Source: UBS. Rating allocations are as of 30 September 2015.

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