Credit Spreads and Real Activity
by Philippe Mueller

Discussion by
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Summary of the Paper

- Credit spreads predict real GDP growth in regressions that include inflation and Treasury yields.

- A “macro-finance” model of the term structure of Treasury yields and credit spreads is developed whose factors are realized inflation and real GDP growth and three latent credit, level, and slope factors.

- The model’s estimated yields, spreads, and latent factors are analyzed to see which predict real GDP growth.
Credit Spreads Predict Real GDP Growth

- The paper shows that, relative to inflation ($\pi_t$) or Treasury yields ($y^T_t$), credit spreads ($CS_t$) are good predictors of future real GDP growth ($g_{t,k}$).

- Is the forecasting ability of credit spreads due to an “external finance premium”?

- Even without external finance frictions, credit spreads may embed expectations of future business losses which should be highly correlated with real GDP growth.
Data Construction and Sample Period

- Are $y_t^T$ and $CS_t$ constructed for a given day each quarter? Daily averages over a month? over a quarter?

- Using Lehman and Merrill Lynch $CS_t$, Table 9 reports that $CS_t$ forecasts $g_{t,k}$ less well prior to the 1990s.

- For comparison, I regressed four-quarter ahead real GDP growth ($g_{t,4}$) on Moody’s Baa credit spread for the middle month of the quarter ($CS_t^{Baa}$) and the quarterly SPF median forecast of real GDP growth ($E_{t}^{SPF}[g_{t,4}]$).

\[ g_{t,4} = 0.0456^{***} - 0.5617^{**} \times CS_t^{Baa} + u_{t+k} \]

\[ \bar{R}^2 = 0.068 \]

\[ g_{t,4} = 0.0549^{***} - 0.8563^{***} \times E_t^{SPF} \left[ g_{t,4} \right] + u_{t+k} \]

\[ \bar{R}^2 = 0.136 \]

- The Baa credit spread is significant with the correct sign.
- The SPF forecast is significant but with the wrong sign!

\[
g_{t,4} = 0.0017 + 1.3950^{***} \times CS_t^{Baa} + u_{t+k}
\]

\[
(0.0056) \quad (0.2706)
\]

\[
\overline{R^2} = 0.144
\]

\[
g_{t,4} = 0.0085^{**} + 0.6963^{***} \times E_t^{SPF} \left[ g_{t,4} \right] + u_{t+k}
\]

\[
(0.0042) \quad (0.1314)
\]

\[
\overline{R^2} = 0.151
\]

- The SPF forecast is significant with the correct sign.
- The Baa credit spread is significant but with the wrong sign!
Bond Pricing Models with $\pi_t$ and $g_t$ Factors

- Model factors should be consistent with theory.

- If realized inflation, $\pi_t$, and realized real output, $g_t$, are factors driving Treasury yields and credit spreads, this implies nominal bonds can hedge short-run inflation and real output risks (Kim “Challenges in Macro-Finance Modeling” FEDS 2008-06).

- But structural models (e.g., Pennacchi RFS 91) imply that nominal bond yields should be driven by expected, not realized, inflation and real output (consumption) growth.
Estimation Results: Implied Spreads

- The model’s Gaussian specification may produce negative credit spreads, though this did not occur in the sample.

- When estimating the model’s parameters, the paper includes an added penalty in the likelihood function for variation in the factor risk premia.

- This is helpful, but what if the penalty is set too large?

- Might the model’s estimated credit spreads have too small a premium for priced risks?
For AAA and BBB bonds, the estimated model average default loss rate exceeds the average risk premia.
But evidence in Huang and Huang (2003) suggest that historical default loss rates are less than risk premia for AAA (Aaa) and BBB (Baa) bonds.
Implied Spreads and Factors: In- versus Out-of-Sample Prediction

- The paper analyzes the ability of the model’s estimated spreads and latent factors to predict real GDP growth, $g_t$.

- The model’s parameters are estimated using data on $g_t$ which is later being predicted from the model’s estimated spreads and factors.

- In principle, a better test of predictability would use spreads and factors estimated from data prior to the date when $g_t$ is forecasted.
Conclusions

- As a forward-looking measure of business conditions, credit spreads have much potential to predict real GDP.
- The paper does a masterful job of estimating a multi-factor model of credit spreads.
- The model’s theoretical foundation could be fortified by substituting factors for realized inflation and GDP growth with expected inflation and GDP growth.
- Fortunately, quarterly SPF data on expected inflation and expected real GDP growth are available.