DERIVATIVES

Credit Implied Volatility

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The authors introduce the concept of a credit implied volatility surface. Like its option analogue, credit implied volatility (CIV) is inverted from the credit-default swap (CDS) spread to provide a relative measure of CDS value across “moneyness” (leverage) and time to maturity, and offers simple diagnostic tests of candidate credit pricing models.

The CIV can be interpretable as risk-neutral asset volatility of the underlying firm or government.

The slope of the CIV term structure becomes more steeply negative in downturns and is positive during expansions. This is more pronounced for short maturity CDS, which tends to lead to twisting motion in the surface over time. These dynamics place important restrictions on the types of asset pricing models that are consistent with credit prices.

Twisting in the surface indicates that a multi-factor model is necessary to describe the data, and factor analysis suggests at least three factors are necessary to capture data dynamics.

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