Comments on:
Can Structural Models Price Default Risk?
Evidence from Bond and Credit Derivative Markets

by
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Moody’s Corporation & The Salomon Centre, NYU Stern School of Business
THIRD CREDIT RISK CONFERENCE
New York, 16-17 May 2006
What does the paper find?

1. Leland Toft model:
   - prices *CDS* reasonably *well* (on average)
   - but … *underestimates bond spreads* (> CDS premia)

2. Leland model and Fan Sundaresan model do less well.

3. Liquidity effect:
   - errors in *bond spreads*: sensitive to *liquidity factors*
   - errors in CDS: *less sensitive* to liquidity factors
Why I liked the paper

• Shows us that despite a poor press so far (at least one) *structural model* has the *potential to explain* (at least some) *prices*

• *Good news* … (personal view) since structural models allow us to understand more easily relation between credit risk and fundamental company information on assets, asset risk and capital structure
Comments: The data

• Sample is quite small:
  ✓ includes only 731 bond-CDS price pairs from 71 entities
  ✓ 56% Baa; 26% A

• Bonds and CDS not maturity matched
  ✓ complicates interpretation of differences in pricing performance
Asset Volatility Parameter

• Asset vol. estimates:
  ✓ 27% [for Leland Toft]
  ✓ 31% [for Leland / Fan Sundaresan]

• Own recent work with Strebel (and some previous work by others) suggests this may be a *somewhat high*

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and credit exposure highly sensitive to asset volatility (Leland-Toft Model; parameters as in Leland (2005))
Why is there a difference in success of model in explaining CDS vs. Bond spreads?

• **Model:**
  ✓ No interest rate uncertainty so, for given maturity, model will give CDS premium and bond spread that are *identical*.
  ✓ So differences in *model* premia / spreads in Table 4 due to:
    – *Maturity* differences between CDS (ave. 4.4 years) and bonds (ave. 9.4 years)
    – CDS premium in model assumed *continuous*

• For given maturity, since model prices are the same, *difference in errors* between bond spread and CDS premia is just equal to (minus) *CDS basis* in data

Comments on Ericsson, Reneby & Wang
CDS vs. Bond Spreads

• In practice, i.e., with *uncertain interest rates*, triangular *arbitrage* between CDS, risky debt and defaultable debt does *not hold exactly*

But

• *.. holds approximately* and market practitioners will intervene when basis diverges too much from zero (adjusting for repo rate, funding costs etc.)

• and *.. relevant “riskless rate”* will be *swap rate* rather than Treasury rate

\[
\begin{align*}
\text{(Difference in errors)} &= [Y-Treas] - CDS \\
&= [Y-Swap] - CDS + \underbrace{[Swap-Treas]} - \text{CDS basis changes over time}
\end{align*}
\]

Comments on Ericsson, Reneby & Wang
Difference in pricing errors:
Bond Spread to Treasury – CDS Premium (Credit Rating – A)

Comments on Ericsson, Reneby & Wang
... compared to Swap / Treasury Spread (5 Years)
Implications

\[
\text{Difference in errors} = \left[ Y-\text{Swap}-\text{CDS} \right] + \left[ \text{Swap}-\text{Treas} \right]
\]

- CDS basis \approx 0
- changes over time

- Difference in **average error** for bond spreads and CDS most likely due to measurement of bond spreads against *Treasuries* rather than against *swaps*.
- Measured against swaps, *model* would probably explain *bond spreads* and *CDS* premia *about equally well*.
- **Liquidity exposure** of CDS probably *more similar* to bond spreads *vs. swaps* than bond spreads vs. Treasuries.
- And …. strongly endorse basic message: second generation structural models have great potential to help us understand credit risk pricing.