Comments on:

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

by

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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

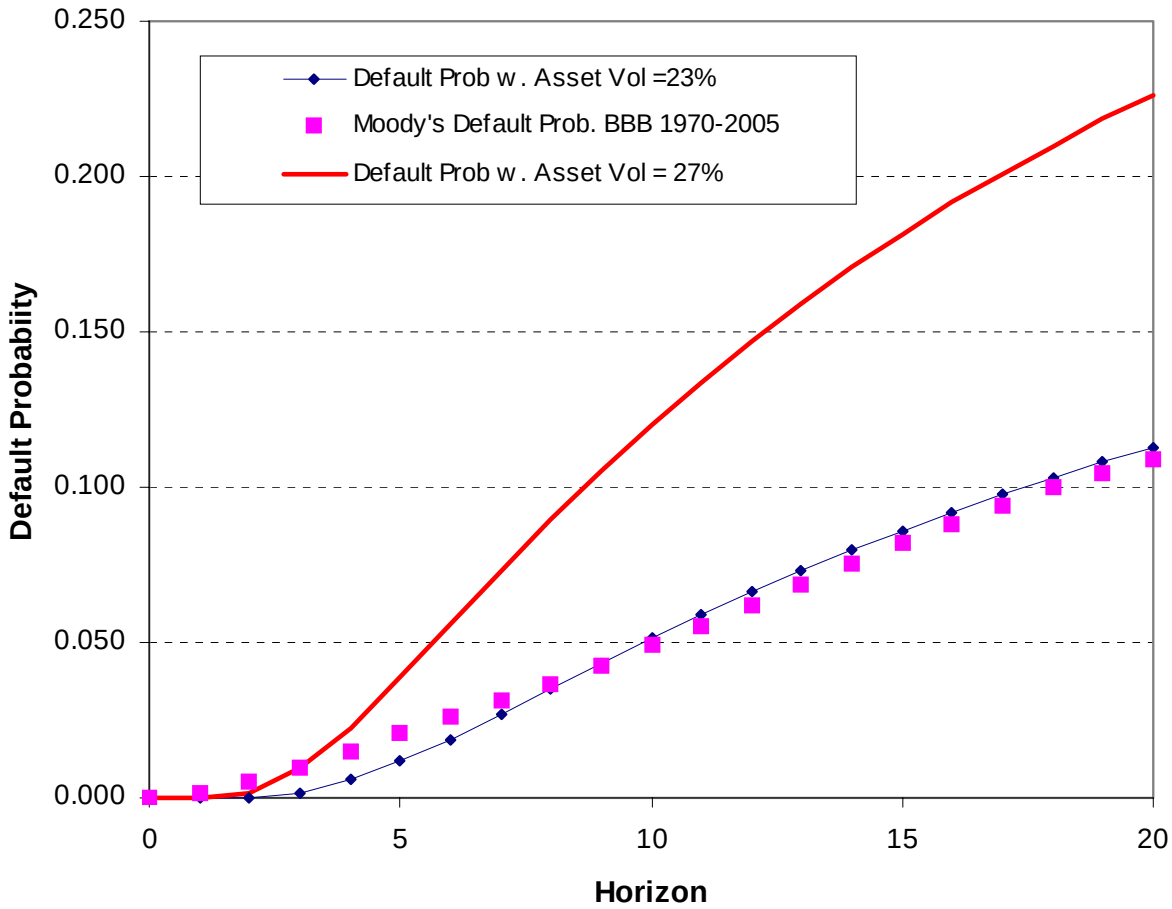
- Bonds and CDS not maturity matched
  - ✓ complicates interpretation of differences in pricing performance

Asset Volatility Parameter

- Asset vol. estimates:
  - ✓ 27% [for Leland Toft]
  - ✓ 31% [for Leland / Fan Sundaresan]
- Own recent work with Strebulaev (and some previous work by others) suggests this may be a ***somewhat high***

	All	*AAA*	*AA*	*A*	*BBB*	*BB*	*B*	*CCC*
			Quasi-Market Leverage					
Mean	0.34	0.08	0.16	0.28	0.38	0.52	0.71	0.80
			EquityVolatility					
Mean	0.33	0.23	0.26	0.29	0.32	0.43	0.63	0.77
			Estimated Asset Volatility					
Mean	**0.22**	**0.22**	**0.21**	**0.21**	**0.21**	**0.24**	**0.28**	**0.34**

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

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***

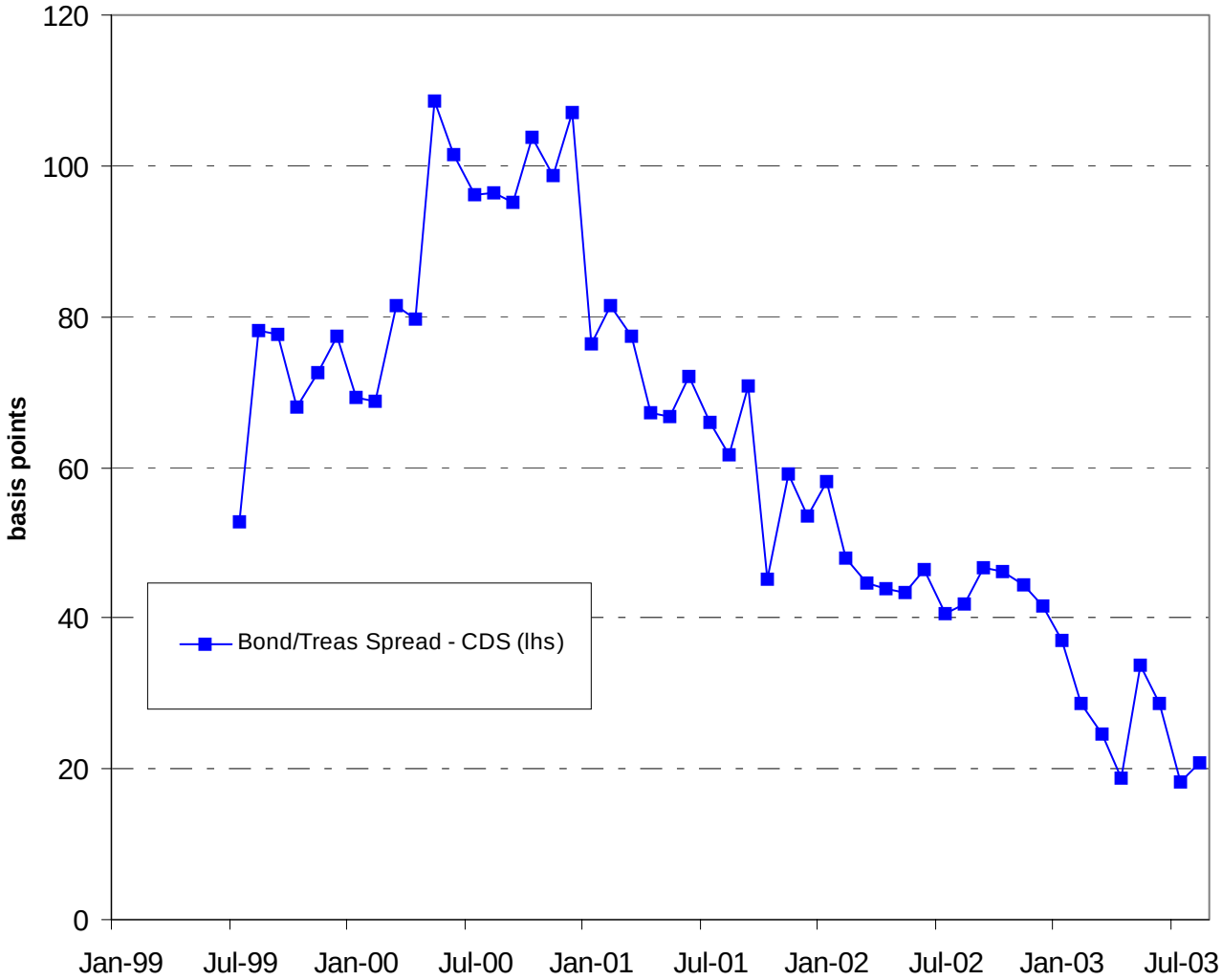
But

- .. ***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

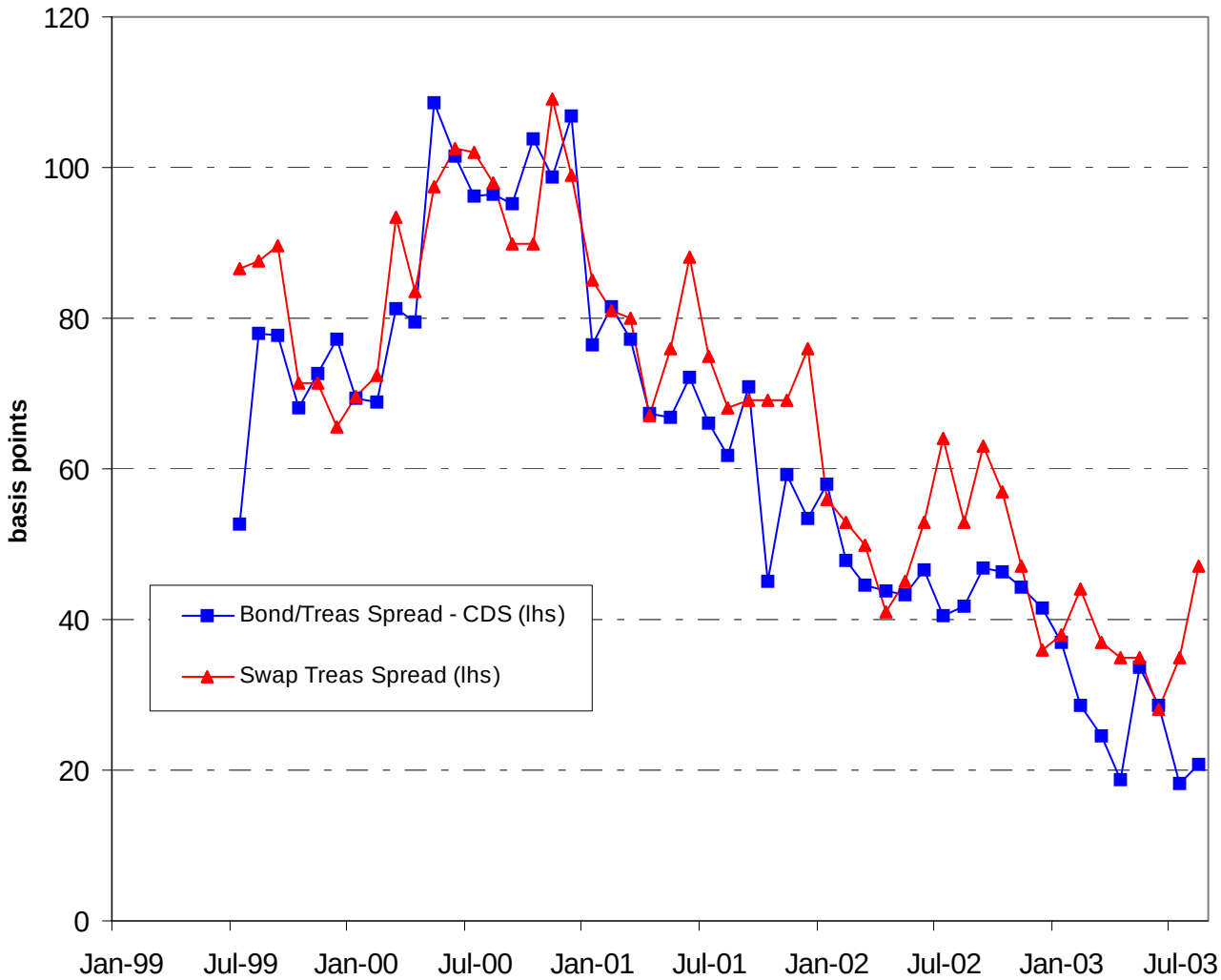
$$\left(\begin{array}{c}\text{Difference}\\ \text{in errors}\end{array}\right) = [Y - Treas] - CDS$$

$$= \underbrace{[Y - Swap] - CDS}_{\text{- CDS basis}} + \underbrace{[Swap - Treas]}_{\text{changes over time}}$$

Difference in pricing errors: Bond Spread to Treasury – CDS Premium (Credit Rating – A)



… compared to Swap / Treasury Spread (5 Years)



Implications

$$\begin{pmatrix}\text{Difference}\\ \text{in errors}\end{pmatrix} = \underbrace{[Y-Swap]-CDS}_{\text{-CDS basis} \approx 0} + \underbrace{[Swap-Treas]}_{\text{changes over time}}$$

- 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