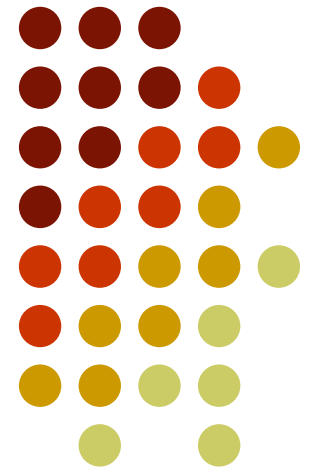


Developments in CDO Pricing

Moody's/NYU Conference
John Hull
May 2006



Gaussian Copula/Base Correlation Approach



- Assumes that a normally distributed factor defines the default environment
- Conditional on the value of the factor the hazard rates of all companies at all times is known
- Computationally easy to use
- Provides a one-to-one correspondence between market prices and correlations

Sample Data: August 30, 2005



CDX IG Tranches						
	0% to 3%	3% to 7%	7% to 10%	10% to 15%	15% to 30%	Index
5-year Quotes	40%	127	35.5	20.5	9.5	50

iTraxx Tranches						
	0% to 3%	3% to 6%	6% to 9%	9% to 12%	12% to 22%	Index
5-year Quotes	24%	81	26.5	15	9	36.375
10-year Quotes	53%	395	90	52	29	57.625

Implied Correlations for 5-year Quotes



	CDX IG					
	0% to 3%	3% to 7%	7% to 10%	10% to 15%	15% to 30%	Index
Tranche Correlation	0.091	0.012	0.068	0.106	0.156	n/a
Base Correlation	0.091	0.177	0.223	0.280	0.448	n/a

	iTraxx					
	0% to 3%	3% to 6%	6% to 9%	9% to 12%	12% to 22%	Index
Tranche Correlation	0.134	0.030	0.079	0.111	0.154	n/a
Base Correlation	0.134	0.210	0.266	0.308	0.428	n/a

Performance of Gaussian Copula Model



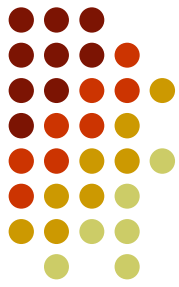
- If the model worked perfectly implied correlations would be the similar for all tranche attachment points
- In fact implied tranche (compound) correlations exhibit a “correlation smile” and implied base correlations exhibit an upward sloping correlation skew.

Gaussian Copula Model continued



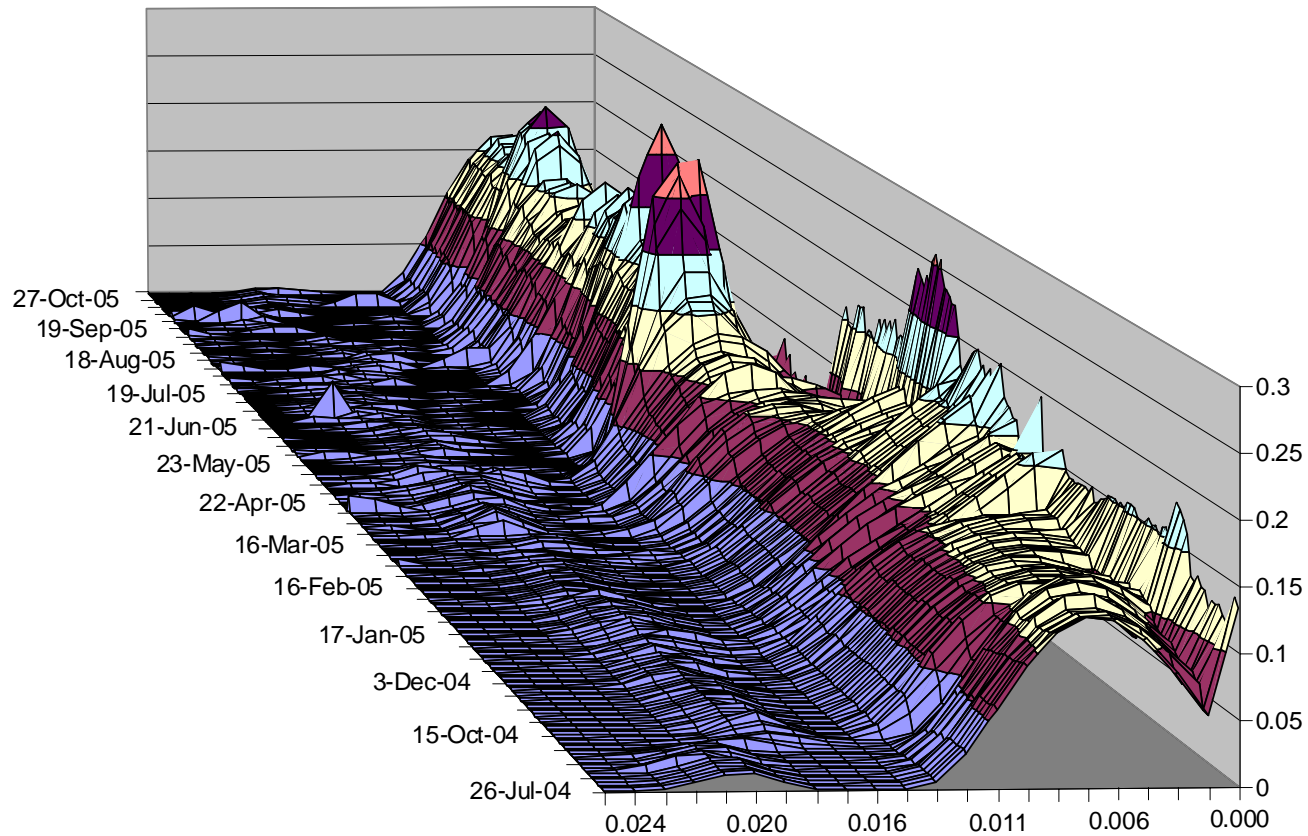
- For valuing CDOs with non-standard attachment points traders make the Gaussian copula model work by interpolating between implied correlations
- However when valuing CDO squareds and other more exotic deals it is difficult to know the correct correlation to use.

Solving the Problem

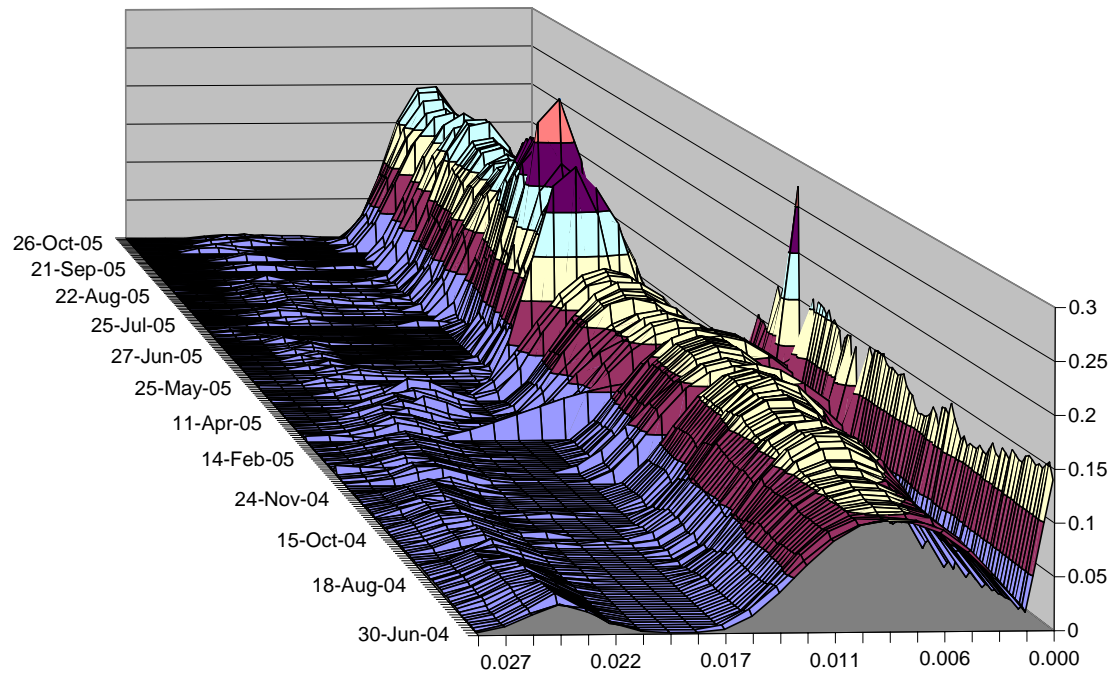


- Find a copula that fits market prices better (e.g. the double t copula or copula where factor loading depend on factor values)
- Imply the copula from market prices

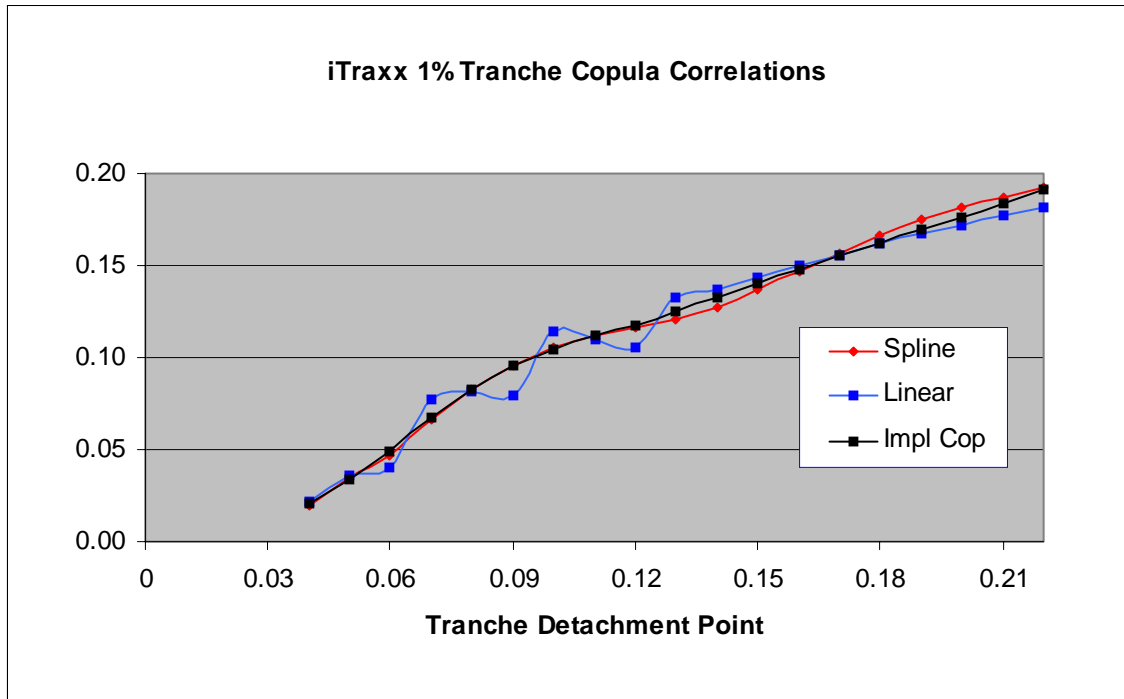
Hazard Rate Distribution for iTraxx, July 26, 2004 and November 2, 2005



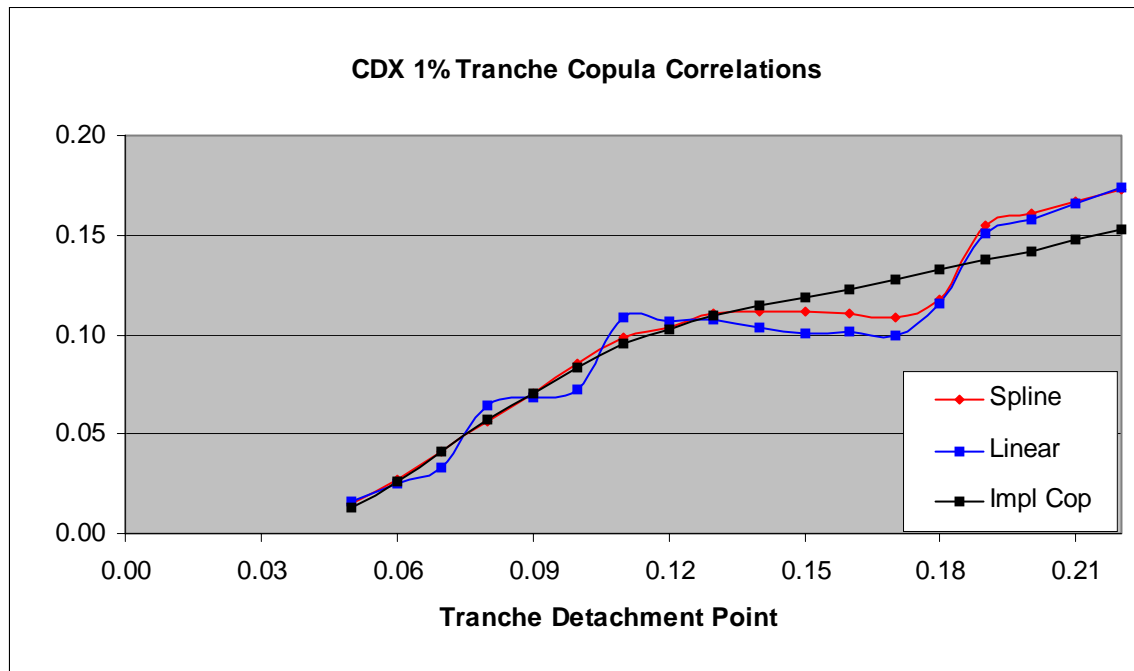
Hazard Rate Distribution for CDX, July 26, 2004 and November 2, 2005



Implied Correlations for Base Correlation and Implied Copula Models For tranches of iTraxx that are 1% wide, Aug 30, 2005



Implied Correlations for Base Correlation and Implied Copula Models For tranches of CDX that are 1% wide, Aug 30, 2005



Today's Speakers

- Francis Longstaff
- Darrell Duffie

