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Credit gap risk in a first passage time model with jumps

Natalie Packham, Lutz Schloegl & Wolfgang M. Schmidt

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Abstract

The payoff of many credit derivatives depends on the level of credit spreads. In particula … risk, a risk associat … ap spreads. In the fr … ldresses these iss … integral with resp … sentation of the cre … ve formulas for c … ochastic volatility … ocess. The model c … sion. Calibrati … ctiveness of the mod

Keywords: Gap risk Credit spreads Credit dynamics First passage time models Stochastic volatility General Ornstein–Uhlenbeck processes

JEL Classification: G13 C69

Notes

[1]Since 2009, following an initiative of the International Swaps and Derivatives Association to facilitate netting, credit default swaps are nowadays entered into with standardised premiums of 25, 100, 500 or 1000 basis points. As a consequence, entering into a CDS normally requires an upfront premium to be paid. In the analysis of our model, we neglect the changes in market quoting conventions, since the qualitative results on the spread dynamics are not affected.

[2]The term credit spread also refers to the yield spread, which is the yield difference of defaultable and default-free zero-coupon bonds of the same maturity. There are some subtle differences between yield spreads and CDS spreads, mainly due to factors such as liquidity of the underlying and restrictions regarding short-selling. However, we assume that stylised facts of the yield spread term structure that can be related to the credit risk component of the underlying entity apply to the CDS term structure as well.

[3]A credit-linked note (CLN) is a note or bond paying an enhanced coupon to an investor for bearing the credit risk of a reference entity; see Bielecki and Rutkowski (2002, section 1

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deterministic. The former can be incorporated by specifying the jump process as an additive process.

[8]Under a suitable metric on C, resp. D, the σ-algebra(C), resp. (D), corresponds to the σ-algebra generated by the open sets (with respect to the metric) of C, resp. D, see e.g. (1996, section II.§2) or Karatzas and Shreve (1998, sections 2.4 and 6.2).