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# Credit gap risk in a first passage time model with jumps

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## Notes

<sup>1</sup>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.

<sup>2</sup>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 structure as well.

<sup>3</sup>A credit spread is typically paid by an investor for bearing the credit risk (see, e.g., (2002, section 1.1)).

<sup>4</sup>The required return is typically higher than the risk-free rate.

<sup>5</sup>For notational convenience, we consider here setups of time-varying interest rates.

<sup>6</sup>Actually, the credit spread is typically higher, hence for efficiency reasons.

<sup>7</sup>If the interest rate moves only in response to the intensity of the variation, the variation is not determined by the interest rate.



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

<sup>8</sup>Under a suitable metric on  $C$ , resp.  $D$ , the  $\sigma$ -algebra( $C$ ), resp. ( $D$ ), corresponds to the  $\sigma$ -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).

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