

On break-even correlation: the way to price structured credit derivatives by replication

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We consider the pricing of European-style structured credit payoff in a static framework, where the underlying default times are independent given a common factor. A practical application would consist of the pricing of n th-to-default baskets under the Gaussian copula model (GCM). We provide necessary and sufficient conditions so that the corresponding asset prices are martingales and introduce the concept of "break-even" correlation matrix. When no sudden jump-to-default events occur, we show that the perfect replication of these payoffs under the GCM is obtained if and only if the underlying single name credit spreads follow a particular family of dynamics. We calculate the corresponding break-even correlations and we exhibit a class of Merton-style models that are consistent with this result. We explain why the GCM does not have a lot of competitors among the class of one-period static models, except perhaps the Clayton copula.

Subjects: **Pricing of Securities (q-fin.PR)**; Risk Management (q-fin.RM)

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