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A comparative analysis of current credit risk models

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Abstract

The new BIS 1998 capital requirements for market risks allows banks to use internal models to assess regulatory capital related to both general market risk and credit risk for their trading book. This paper reviews the current proposed industry sponsored Credit Value-at-Risk methodologies. First, the credit migration approach, as proposed by JP Morgan with CreditMetrics, is based on the probability of moving from one credit quality to another, including default, within a given time horizon. Second, the option pricing, or structural approach, as initiated by KMV and which is based on the asset value model originally proposed by Merton (Merton, R., 1974. *Journal of Finance* 28, 449–470). In this model the default process is endogenous, and relates to the capital structure of the firm. Default occurs when the value of the firm's assets falls below some critical level. Third, the actuarial approach as proposed by Credit Suisse Financial Products (CSFP) with CreditRisk+ and which only focuses on default. Default for individual bonds or loans is assumed to follow an exogenous Poisson process. Finally, McKinsey proposes CreditPortfolioView which is a discrete time multi-period model where default

Credit portfolio view which is a discrete time multi-period model where default probabilities are conditional on the macro-variables like unemployment, the level of interest rates, the growth rate in the economy, $\hat{\epsilon}_t^i$ which to a large extent drive the credit cycle in the economy.



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JEL classification

G21; G28; G13

Keywords

Risk management; Credit risk; Default risk; Migration risk; Spread risk; Regulatory capital; Banking

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