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Risk and Valuation of Collateralized Debt Obligations

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A col derlying collat bans. A CDO cash flo n a collateral pool of c standard prioritiza fore mezzani w is paid to an equit ed-income securitie gnostic measures of risk.

We concentrate on cash flow CDOs-those for which the collateral portfolio is not subjected to active trading by the CDO manager. The implication of this characteristic is that the uncertainty regarding interest and principal payments to the CDO tranches is determined mainly by the number and timing of defaults of the collateral securities. We do not analyze market-value CDOs, those in which the CDO tranches receive payments based essentially on the marked-to-market returns of the collateral pool as determined largely by the trading performance of the CDO manager.

In our analysis of the risk and market valuation of cash flow CDOs, we illustrate the effects of correlation and prioritization for the market valuation, “diversity score” (a measure of the risk of the CDO collateral pool that has been used for CDO risk analysis by rating agencies), and risk of CDOs in a simple jump diffusion setting for correlated default intensities. The main issue is the impact of the joint distribution of default risk of the underlying collateral securities on the risk and valuation of the CDO tranches. We also address the efficacy of alternative computational methods and the role of diversity scores.

We show that default-time correlation has a significant impact on the market values of individual tranches. The priority of the senior tranche, by which it is effectively “short a call option” on the performance of the underlying collateral pool, causes its market value to decrease with the risk-neutral default-time correlation. The value of the equity piece, w has no clear effect or tion “written” for sufficien

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Regardin) diversity scores c framework we prop valuations for reasc

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