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VALUATION

# Risk and Valuation of Collateralized Debt Obligations

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prioritization scheme is simple subordination: Senior CDO notes are paid before

mezzanine and lower subordinated notes are paid, and any residual cashflow is paid to an equity piece. CDOs form an increasingly large and important class of fixed-income securities. Our analysis may provide useful approaches to valuation and diagnostic 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 the market values of individual CDO tranches are highly “short a call option” on the market value of the equity piece, with the effect on the equity piece, which has no clear effect on the equity piece. “written” for

Spreads are positive to the “lumping” the contribution to the degree of correlation relatively small role



Regarding alternative computational methods, we show that if (risk-neutral) diversity scores can be evaluated accurately, which is computationally simple in the framework we propose, these scores can be used to obtain good approximate market valuations for reasonably well-collateralized tranches.

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