

1108-60-286

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Variable Volatility and Financial Failure.

Structural models of corporate default, e.g. Merton's model typically impose a rigid parametric specification on the volatility of the firm's assets. We propose a nonparametric structural model whose volatility is a function of the distance to default. We develop closed form formulas which relate RNDP and equity value to this asset volatility function and to asset price. We also show how to explicitly determine the implied RNDP and the implied asset value from the market price of the equity and from the market prices of calls written on the equity. Remarkably, the RNDP formula is independent of both the initial asset level and the debt level. Generalizations to incorporate interest rates, dividend yield, CEV, stochastic volatility into the model will also be discussed. This is based on the joint work with Peter Carr. (Received January 16, 2015)