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(Joint work with Paul Glasserman)

Title: Moment Explosions and Stationary Distributions in Affine Diffusion Models

Many of the most widely used models in finance fall within the affine family of diffusion processes. The affine family combines modeling flexibility with substantial tractability, particularly through transform analysis; these models are used both for econometric modeling and for pricing and hedging of derivative securities. We analyze the tail behavior, the range of finite exponential moments, and the convergence to stationarity in affine models, focusing on the class of canonical models defined by Dai and Singleton (JF, 2000). We show that these models have limiting stationary distributions and characterize these limits. We show that the tails of both the transient and stationary distributions of these models are necessarily exponential or Gaussian; in the non-Gaussian case, we characterize the tail decay rate for any linear combination of factors. We also give necessary and sufficient conditions for a linear combination of factors to be Gaussian. Our results follow from an investigation into the stability properties of the systems of ordinary differential equations associated with affine diffusions.