Asset Pricing in Dynamic $(\mathbf{B}, \mathbf{S})$-Markets

Preprint m-04-002

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ABSTRACT: We study the model (B, S, π, X^π) of asset pricing where the probabilities of the dynamic evolution of risky asset S follow a dynamic random walk model. A thorough theory from equivalence of martingale-measures, the fundamental theorem of dynamic asset pricing, the completeness of the related financial market, the fair price and related hedging strategy are presented. The standard static binomial model is contained as a special case. We are aiming at deriving a dynamic formula which is similar to the Cox-Rubinstein formula for European options in the static binomial model.

Key words and phrases. Dynamic asset pricing; (B, S, π, X^π)-market model; stochastic difference equations; equivalent martingale-measures; discrete girsanov transform; fundamental theorem of asset pricing; fair price; heding; European option; dynamic Cox-Rubinstein formula; binary market model; convergence to Black-Scholes model.

AMS 2000 Mathematics Subject Classification. 93E25, 91B74, 91B70, 91B62, 91B28, 91B26, 91B24, 90–02, 65C50, 65C20, 60G42, 60H35, 60H30, 39A10, 37H10, 34F05