

Joint Seminar of
Department of Systems Engineering and Engineering Management
The Chinese University of Hong Kong
&
Department of Statistics
The Chinese University of Hong Kong

Calibration of Stock Betas from Skews of Implied Volatilities

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William M.W. Mong Engineering Building Room 513
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Abstract: We develop call option price approximations for both the market index and an individual asset using a singular perturbation of a continuous time Capital Asset Pricing Model (CAPM) in a stochastic volatility environment. These approximations show the role played by the asset's beta parameter as a component of the parameters of the call option price of the asset. They also show how these parameters, in combination with the parameters of the call option price for the market, can be used to extract the beta parameter. Finally, a calibration technique for the beta parameter is derived using the estimated option price parameters of both the asset and market index. The resulting estimator of the beta parameter is not only simple to implement but has the advantage of being forward-looking as it is calibrated from skews of implied volatilities. (Joint work with Eli Kollman, UCSB).

ALL ARE WELCOME!