A Stochastic Volatility Swap Market Model

Sami Attaoui*

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Abstract

This paper derives a stochastic volatility extension of the Swap Market Model where a multiplicative stochastic factor equally affects all instantaneous forward swap rate volatilities. First, qualitative support for such extension is provided, and second, based on the fast fractional Fourier transform and a specific functional form of the instantaneous swap rate volatility a calibration methodology to European swaption prices is performed.

EFM Classification : 550, 410.
Keywords : Swap market model, stochastic volatility, fast fractional Fourier transform, European swaptions.

*Université Paris 1 Panthéon-Sorbonne, Prism-Sorbonne, 17, rue de la Sorbonne, 75005 Paris. Ph: 0140463170. E-mail: sattaoui@gmail.com. I would like to thank P. Poncet, H. de La Bruslerie, K. Miltersen, B. M. Dia, A. Trifi as well as participants at the Campus-For-Finance 2006 conference for helpfull comments and remarks. Any remaining errors are my sole responsability.