
MATHEUS GRASELLI, McMaster University

Insurance products in markets with stochastic volatility

We consider the problem of partially hedging the risk of an insurance contract by trading in a financial market. Because of the typical duration of such contracts, it is unrealistic to assume that the volatilities of the underlying financial assets are constant. Accordingly, we investigate how the results of Young and Zariphopoulou (2002) and Young (2003) can be generalized for markets with stochastic volatility. We show that stochastic volatility does not affect the indifference price of either single-life insurance and pure-endowment contracts, unless the agent uses a random horizon, in which case the indifference price depends on the speed of mean reversion and long term average of the volatility, as well as the mean rate of return of the stock. Equity-index contracts, on the other hand, exhibit a much richer dependence on volatility, which we explore numerically using the perturbation technique of Papanicolau, Fouque and Sircar (2000).