

Foreword

Commodity prices are an important input factor for capital investment decisions, for instance when it comes to valuation of oil fields, mines or chemical plant configurations to name but a few areas of application. One investment appraisal method which allows to explicitly quantify managerial flexibility is real options valuation which requires the proper specification of the underlying – typically the commodity price – in terms of a stochastic process. Most of the literature relies on the assumption that commodity prices are characterised by Geometric Brownian Motion (GBM) which entails mathematical tractability. Max Schöne, as a starting point for his Master's Thesis, questions this premise and sets out to explore alternative stochastic processes to model commodity price processes providing a better fit to historical data.

Schöne devises in his thesis a calibration scheme which allows him to assess the fit of the investigated processes to a basket of commodities. He finds that the alternatives to GBM provide a better fit and singles out the variance gamma process as the best compromise between goodness of fit and model complexity. He then goes on to demonstrate that the more appropriate specification of the commodity price process for the purpose of real options valuation may affect both project values by as much as 20% and the optimal time to invest.

This thesis therefore serves for the practitioner in capital investment valuation as an excellent source for model selection and for the researcher as a solid starting point for enhanced commodity price modelling.

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Real Options Valuation

The Importance of Stochastic Process Choice in
Commodity Price Modelling

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2015, XIV, 104 p. 15 illus., Softcover

ISBN: 978-3-658-07492-0