

# DRIFT-FREE SIMULATION METHODS FOR PRICING INFLATION AND COMMODITY DERIVATIVES

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## Abstract

In the context of LIBOR Market Model (LMM) for cross markets, with  $N$  tenor dates, we have to model  $N$  forward LIBOR rates of one economy A,  $N$  forward LIBOR rates of another economy B, and the  $N + 1$  rates that relate both economies. For example, in the cross-currency case we consider rates of the domestic and the foreign economies plus the forward exchange rates that relate them, while in the inflation case we consider rates of the nominal and the real economies plus the forward inflation rates that relate them [1], and in the commodity case we have the nominal and the commodity economies plus the forward price of the commodity that relate them [4]. So, in general, we have to choose between  $3N + 1$  underlying rates to formulate our cross-market model.

In this work, we explain what are the rates that we choose to formulate the model for pricing inflation derivatives (by analogy with the cross-currency LMM) and the ones for the commodity case. Moreover, we present an efficient procedure to simulate the dynamics of LMM, mainly avoiding the use of the drift dependent paths in Monte Carlo simulation. The efficient proposed method simulates forward LIBOR rates according to LMM model avoiding negative deflated bonds and negative forward rates. The method is based upon a new parameterization of the martingales introduced by Glasserman and Zhao in [3]. This procedure has been proposed in [2] for LMM in one currency and now we extend it to the case of two economies.

## References

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