

A UNIFIED TREATMENT OF DERIVATIVE  
PRICING AND FORWARD DECISION  
PROBLEMS WITHIN THE HJM FRAMEWORK

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Preprint no. 2012-08

**Abstract**

We study the HJM approach which was originally introduced in the fixed income market by David Heath, Robert Jarrow, and Andrew Morton and later was implemented in the case of the European option market by Martin Schweizer, Johannes Wissel, Rene Carmona and Sergey Nadtochiy. My main contribution is to apply HJM philosophy into the American option market. We derive the absence of arbitrage by a drift condition and a spot consistency condition. In addition, we introduce a forward stopping rule which is totally different from the classic stopping rule. When the Ito stochastic differential equation is used to model the dynamics of underlying assets, we discover that the drift part instead of the volatility part will determine the value of the option. As a counterpart to the forward rate for the fixed income market and the implied forward volatility and local volatility for the European option market, we introduce the forward drift for the American option market.