

Local-Momentum Autoregression and the Modeling of Interest Rate Term Structure

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A parsimonious autoregressive model that is globally mean-reverting but locally driven by momentum is proposed. The local-momentum autoregression (LM-AR) model carries one extra parameter, and depending on the sign of this extra parameter, it can be either local momentum-preserving or momentum-building. The LM-AR model is motivated by observing US interest rate movement over many decades, which over a long time span seems to mean revert but over a period of several months or years can actually exhibit a momentum-like behavior. We use the LM-AR model with a stochastic central tendency factor as the dominant global risk factor in interest rates and add a local variation component of the standard mean-reverting type to create a 3-factor risk environment. We then derive its corresponding term structure model and empirically implement the model on US interest rates of seven maturities from January 1954 to December 2013 on a weekly frequency to establish the presence of local momentum building.