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Long Memory Affine Term Structure Models*

Adam Goliński Paolo Zaffaroni

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Abstract

We develop a Gaussian discrete time essentially affine term structure model with long memory state variables. This feature reconciles the strong persistence observed in nominal yields and inflation with the theoretical implications of affine models, especially for long maturities. We characterise in closed-form the dynamic and cross-sectional implications of long memory for our model. We explain how long memory can naturally arise within the term structure of interest rates, providing a theoretical underpinning for our model. Despite the infinite-dimensional structure that long memory implies, we show how to cast the model in state space and estimate it by maximum likelihood. An empirical application of our model is presented.

JEL classification: G12, C58, C32.

Key words: Gaussian essentially affine model, long memory, state space, P and Q measures.

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