QUADRATIC TERM STRUCTURE MODELS IN DISCRETE TIME

Marco Realdon*

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Abstract

This paper extends the results on quadratic term structure models in continuous time to the discrete time setting. The continuous time setting can be seen as a special case of the discrete time one. Discrete time quadratic models have advantages over their continuous time counterparts as well as over discrete time affine models. Recursive closed form solutions for zero coupon bonds are provided even in the presence of multiple correlated underlying factors, time-dependent parameters, regime changes and "jumps" in the underlying factors. In particular regime changes and "jumps" cannot so easily be accommodated in continuous time quadratic models. Pricing bond options requires simple integration and model estimation does not require a restrictive choice of the market price of risk.

Key words: quadratic term structure model, discrete time, bond valuation, regime change, jumps, bond option.

JEL classification: G12; G13.

*Department of Economics, University of York, Alcuin College, University Rd, YO10 5DD, UK; tel: +44/(0)1904/433750; email: mr15@york.ac.uk.