中国管理科学 2015, **Vol. 23** Issue (7) :10-17

基于MCS方法的高斯仿射利率期限结构模型研究

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Gaussian Affine Term Structure Model of Interest Rate Based on MCS Approach

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摘要 本文在最小卡方估计方法基础上研究了高斯仿射利率模型的参数识别和估计问题。以标准化高斯模型为起点,从结构化模型和简约化模型参数的函数关系出发研究高斯仿射模型的可识别性,最小卡方估计量继承了结构化模型极大似然估计量的所有渐进性质并保证了参数估计量的可靠性。以上交所2006-2013年隐含于国债价格月度数据的零息票收益率为样本采用最小卡方方法实证研究了高斯仿射期限模型,结论表明高斯仿射模型很好的拟合了观测的期限结构,并且整体上看简约型和结构型参数估计量的统计性质的优劣具有一致性。

关键词： 高斯仿射期限结构 可识别性 极大似然估计量 最小卡方估计量

Abstract： The paper is first to study the identification and estimation of Gaussian affine term structure of interest rate based on Minimum-Chi-Square method. As beginning with the normalized Gaussian model, the identification is from the functional relations of parameters between the structure model and reduced-form model, Minimum-Chi-Square estimation has inherited all the asymptotical properties of MLE in structure model and maintains the reliability of estimator. And then, With the term structure of yields implying in monthly bonds price from 2006 to 2013 in Shanghai Stock Exchange (SSE), Gaussian affine term structure model is empirically applied using the MCS method and the results indicate that the Gaussian affine model gives good fitting of term structure and the merits of the statistical properties of estimators are consistent with structure and reduced-form model.

收稿日期: 2013-09-05;

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引用本文:
.基于MCS方法的高斯仿射利率期限结构模型研究[J] 中国管理科学, 2015,V23(7): 10-17

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