Forecast Combination of Affine and Quadratic Term Structure Models near the Zero Lower Bound[*]

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Abstract

In this paper, we study the density forecasts of the affine term structure model (ATSM) and the quadratic term structure model (QTSM) with macro-finance features under the zero interest rate policy of Japan. As both the two models can be potentially misspecified, we adopt the optimal pooling prediction scheme following the recent work by Geweke and Amisano (2011). We find that the QTSM provides a more realistic statistical description when bond yields are close to the zero lower bound. The ATSM gives a good fit to the macroeconomic variables and bond yields simultaneously, however, it predicts a large probability of negative interest rates and hence is not appropriate for the forecasting of bond yields. One should use a forecast combination of the two models for the prediction of future bond yields during different time periods. Furthermore, we expand it to the combination of six models by using three datasets. According to the results, the QTSM with macroeconomic data tends to prevail forecasting overall six yields after Lehman Brother collapse in Sept. 2008. And, the ATSM with the three fundamental factors relatively defeats for forecasting of short term rate, whereas the QTSM is superior for the long terms rate.

Keywords: Term structure; Density Forecasts; Financial markets and the macroeconomy; Optimal pool; Dynamic prediction pool; Markov-switching mixture; Bayesian estimation

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