An empirical investigation of affine term structure model uncertainty

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Pension Day October 2016

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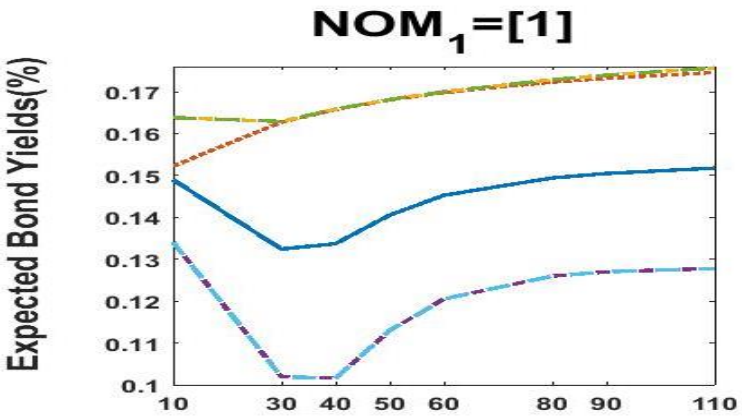
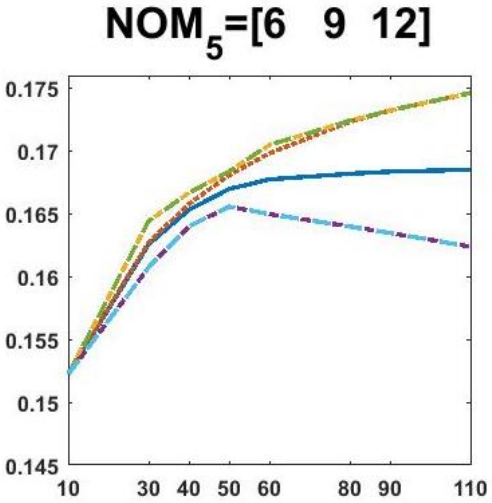
Main results

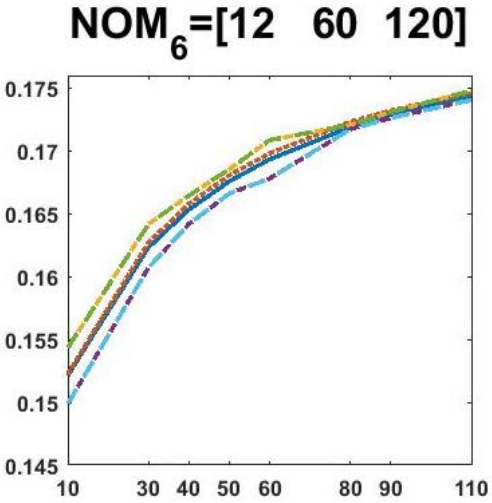


Models calibrated on 1-month yield, and indistinguishable from estimated model, generate different yield curves

- but how different?
- and how good?

- robustness of 3-factor models calibrated on a broad cross-section
- but need both long and short yields





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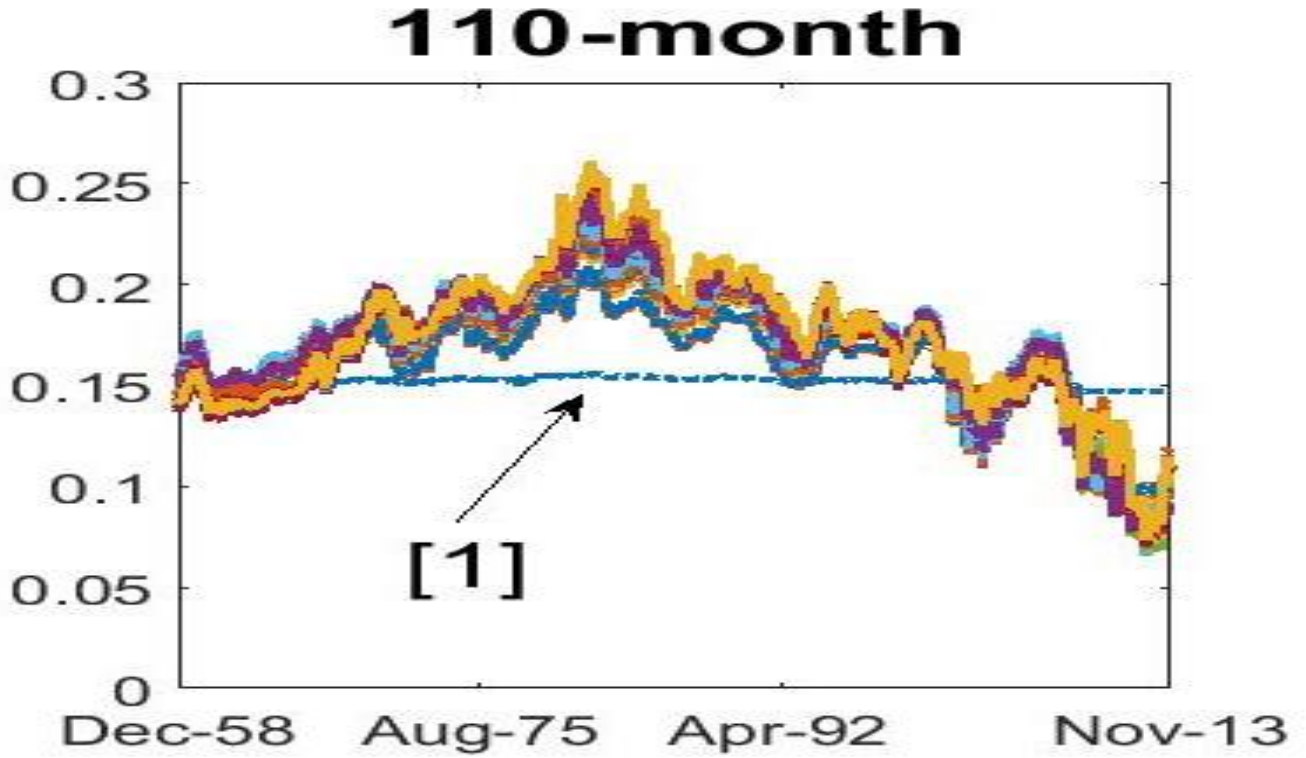
Single factor model, calibrated on 1-month yield, does not fit long-term yields



What to discuss?

Two themes

1. affine term structure models
   - Empirical analysis
   - Number and identification of factors

2. model uncertainty
   - How bad are simple models that from a statistical testing perspective seem misspecified?

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Dealing with model uncertainty

- Different uncertainties
  - parameter estimates: sampling error
  - model misspecification: omitted variables
  - predictive failure: instability
- Simple models often perform well
  - forecasting, portfolio choice, risk management
  - tradeoff between bias and variance
  - robustness
  - more data ➔ more complex models
  - all models are wrong
- More useful to think about consequences of decisions rather than statistical significance

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On the term structure empirics

- A data issue: Fed H.15 data are constant maturity yields
  - ... and already interpolated: not all yields are independent data
- What are good factors?
  - individual yields all have measurement error
  - literature suggest principal components (Joslin, Singleton and Zhu, RFS, 2011)
- Is single factor model always bad?
  - depends on purpose: prediction, derivative pricing, monetary policy

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