

# SPECULATIVE DYNAMICS IN THE TERM STRUCTURE OF INTEREST RATES

## *SUPPLEMENTARY MATERIAL*

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These notes contains descriptions of the Matlab programs used to estimate and solve the model as well as plot the figures in the paper. It also contains three plots to help with some eye-balling diagnostics of the estimated posterior Markov Chain generated by BondAMA.m. Comments, questions, bug reports etc are most welcome.

### 1. SOLVING AND ESTIMATING MODEL

This folder contains the programs used to solve and estimate the model as well as the programs used to generate Figure 2, 3, 4 and 7.

Code	Description
termsolve.m	Solves the non-nested information model
BondAMA.m	Simulates posterior w/Adaptive Metropolis Algorithm
BondSA.m	Maximizes posterior w/Simulated Annealing
BondLL.m	Computes log likelihood of non-nested information model
FiguresPaper.m	Plots Figure 2,3,4 and 7 and computes dispersion of forecasts
KalmanLagLL.m	Subroutine for BondLL.m
KalmanLagSS.m	Steady state Kalman filter (subroutine for termsolve.m)
KalmanLagFIT.m	Computes innovations in Kalman filter
KalmanSimSmooth.m	Kalman simulation smoother
diagnostics.m	Plots the Markov Chain diagnostic plots at the end of these notes
plotpost.m	Subroutine of diagnostics.m
convcheck.m	Subroutine of diagnostics.m
simann.m	Simulated annealing algorithm
norm_rnd.m	Draws from multivariate normal (subroutine for BondAMA.m)
<b>Matrices</b>	
THETAMCMC.m	Simulated Posterior Markov Chain
thetamode.mat	Posterior mode $\hat{\theta}$
YFB.m	Yield data (demeaned)

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## 2. MODEL AND THREE FACTOR NO-ARBITRAGE MODELS

This folder contains the code used for Section 5.1-5.2 of the paper.

Code	Description
NoArb3facAMA.m	Estimates a no-arbitrage model on actual data using Adaptive Metropolis Algorithm
RiskDetect.m	Estimates restricted and unrestricted model on artificial data (used to construct Figure5).
BondSim.m	Generates artificial data from non-nested info model
NoArb3fac.m	Inputs parameters and returns state space form of unrestricted no-arbitrage model
NoArb3facZeros.m	Inputs parameters and returns state space form of restricted no-arbitrage model
NoArb3facLL.m	Computes log likelihood of unrestricted no-arbitrage model
NoArb3facLLZeros.m	Computes log likelihood of restricted no-arbitrage model
<b>Matrices</b>	
lastMCMC.mat	Simulated Posterior Markov Chain of unrestricted no-arbitrage model estimated on actual data
thetamode.mat	Posterior mode of unrestricted no-arbitrage model estimated on actual data
SAPO.mat	Stores the Schwarz Approximation to the Posterior Odds ratios used for Figure 5.

## 3. MODEL AND DUFFEE

This folder contains the code used for Section 5.3 of the paper.

Code	Description
DuffeeFac.m	Inputs parameters and returns state space form of Duffee's model
ModelAndDuffee.m	Estimates Duffee's model on artificial data using simulated ann.
Figure6plotter.m	Plots Figure 6 in paper
DuffeeFacLL.m	Computes log likelihood of Duffee's model
DuffPCIRF.m	Computes IRFs of PCs used in Figure 6
<b>Matrices</b>	
XOPT.mat	Stores the modes of Duffee model's parameters (estimated on artificial data)
xoptSIM.mat	Starting value for Duffee model parameter vector

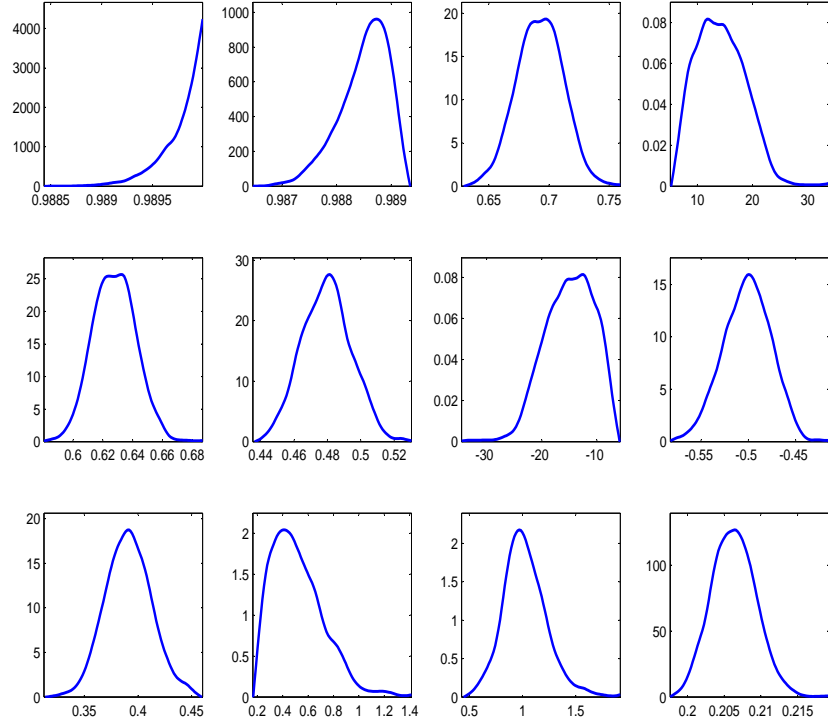


FIGURE 1. Posterior distribution of non-nested information model parameters (same order as in Table 1 of paper).

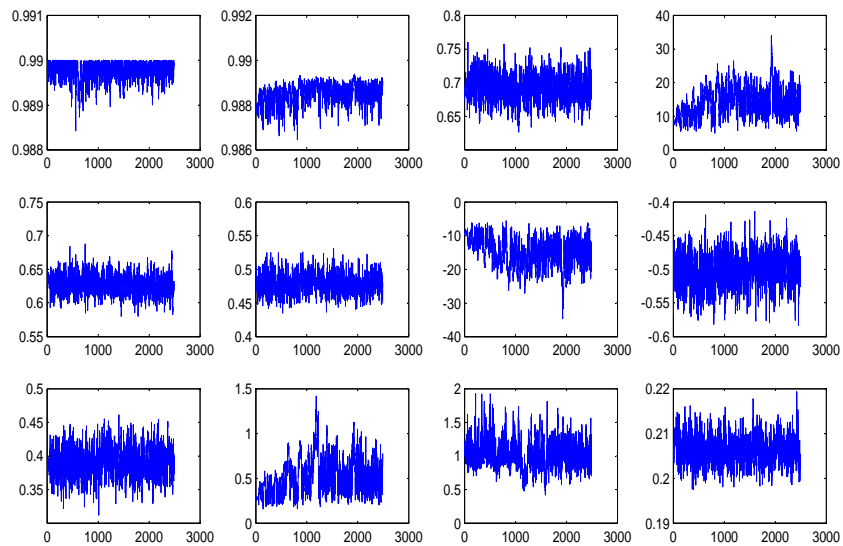


FIGURE 2. Plot of elements in simulated posterior Markov Chain (same order as in Table 1 of paper).

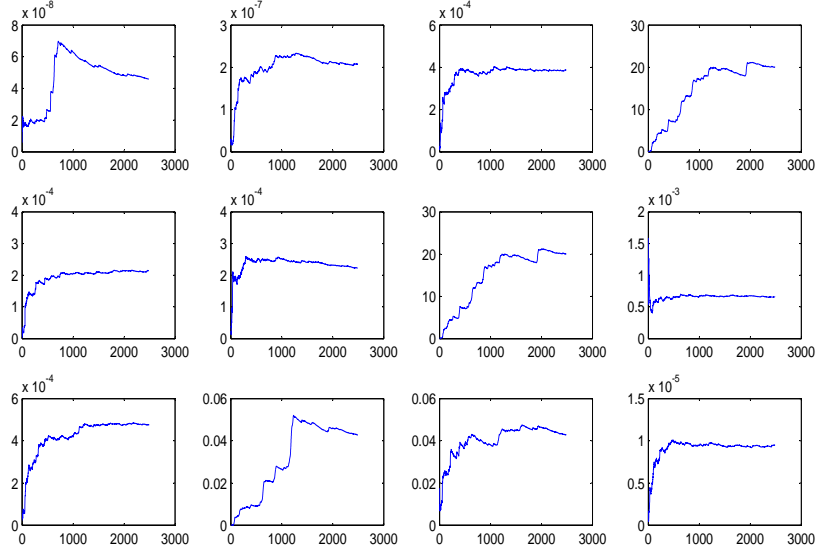


FIGURE 3. Plot of recursive s.d. of each row in simulated posterior Markov Chain (same order as in Table 1 of paper).