Lecture 3 Outline

1. Muth's example.
2. Shocks and information sets. Wold representations and invertibility.
3. Quah's (1990) example. Blaschke matrices.
4. Invertibility depends on conditioning information. Quah (1990) vs. Campbell & Deaton (1989). Hansen, Sargent & Roberds (1991).
5. DP solution of the LQ/PI model. State variables, Bellman equations, and policy functions.
6. A trick to enforce L^2.
7. Riccati equations. Controllability, stabilizability & TVCs.
8. Value function iteration vs. Policy function iteration.
9. A Lagrangian/Invariant Subspace Approach. Symplectic matrices.
10. The Kalman Filter. Observability & Detectibility.
11. Duality between Kalman filtering and LQ control. The 'separation principle'.
12. Muth's example (again). Guvenen's (2007) example.
13. The Kalman filter vs. the Wonham filter. Hidden Markov models. Linear vs. nonlinear filtering.