Discussion of "A Search Model of Money with Aggregate and Idiosyncratic Uncertainty" by Chiu and Molico

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  - Welfare of different monetary policy rules
- Bottom line :
  - An ambitious and impressive agenda
  - Some doubt about whether or not the model is appropriate
  - Can the solution algorithm be improved?

Where Does This Paper Fit in the Literature?

- **First Generation** : Kiyotaki and Wright (1989, 1991, 1993)

  [Indivisible goods, indivisible money]

- **Second Generation** : Trejos and Wright (1995), Shi (1995)

  [Divisible goods, indivisible money]

- **Third Generation** :

  [Divisible goods, divisible money]

  - Lagos and Wright (2005), Shi (1997)

    [Degenerate distribution of money]

  - Molico (1997, 2006)

    [Non-degenerate distribution of money]

Is this Model Appropriate / Necessary for these Questions?

- Broadly speaking, I am not convinced that the complexity of the model (i.e. an endogenous non-degenerate distribution of money) is necessary to answer (some of) these questions. (This doesn't mean I think this is a **wrong** model to answer these questions.)
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- More specifically:
  - No capital (no investment, saving), no serious production, no wages etc... These (especially capital) seem to be critical for business cycles. [e.g. King and Rebelo, 1999]
  - All trade takes place in a decentralized environment.
  - All trade is conducted using money.

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- Two important questions:
  - How hard is it to introduce some of these components?
  - Why do the authors think, a priori, that having a distribution of money holdings is going to be critical for some of these questions?

The Solution Algorithm

In a nutshell the algorithm is :

1. Guess a value function (over a grid, using interpolation)
2. Simulate time series for the two aggregate shocks
3. For each period $t = 1, ...T$.
   (a) For the first period, set the moments for the distribution of money holdings based on the stationary equilibrium where the shocks are set to their unconditional mean and the coefficients of the approximating polynomial based on this distribution.
   (b) Given everything so far, compute the decision rules.
   (c) Compute the new moments of the distribution and the coefficients of the polynomial.
4. Hope that we found the ergodic distribution
5. Given the reference moments, compute the density at each point on the grid
6. Update the value function, solving the optimization problem
7. Update the law of motion

Questions about the Algorithm

- Do we need Value Function Iteration?
- Krusell and Smith (1998) uses a log-linear approximation.
- The original algorithm Algan et al. (2007) uses projection methods.
- These methods work very well in a variety of environments, including those with occasionally binding constraints.
- If occasionally bindings constraints is not an issue, then even a second-order perturbation should be able to do the job.

Conclusion

This is a very ambitious and interesting project.

The importance of having the complication of a distribution of money holdings should be motivated.

Proof is in the pudding? Maybe some of these will be clearer once we have concrete results?