Monetary Economics III - From Implementation to Outcomes

UCLA - 19S-ECON221C-1 Spring 2019

Professor: Saki Bigio (email: sbigio@econ.ucla.edu)

Office Hours: By Appointment

Content: This class covers recent theoretical and empirical research on monetary policy. Over the last 10 years, monetary policy has experienced a fundamental change. Central banks in Europe, Japan and the US have carried out large-scale open-market operations and are changing their systems of monetary implementation.

My goal with the class is to do a blend of a tools course, together with an overview of a literature that studies some recent changes in monetary economics. I will try do be as broad as possible in term of topics, and let students deepen their knowledge on a particular subject on their own. I will build primarily on a core model that we will work to extend little by little. In terms of tools, I will try to introduce students to stochastic-calculus tools. I will also ask students to produce homeworks in Julia.

I will not go into the deep questions of why money is essential or why banks exists. I will speak to some of those issues, but I will take a monetary/financial arrangement as given.

1. How is monetary implemented in practice?

2. What are the effects of different monetary policy tools.

3. What restrictions on government does monetary policy impose?

4. What are the transmission mechanisms of monetary policy?

5. What are the welfare costs of inflation?

6. How does monetary policy interact with credit markets? How does it affect asset prices?

7. When does MP affect output and allocations?

Prerequisites: Students are assumed to have knowledge equivalent or above a first year PhD sequence in economics.

Grading Policy: Problem Sets (50%) Class Project (50%)

Class Project: You have to prepare an individual presentation. It should last 30 minutes. This should be based on an extension from one of the homeworks I assign. About 25% of the slides should be motivated by an empirical anomaly or fact you want to explain.

Outline: We will follow the outline of the next pages, but not in strict order. The outline is admittedly over ambitious, so we won't complete the material. However, I do want students to have an idea of the "full" picture. I will add references on a continuous basis. We will use this syllabus as a weekly guide on the topics we will cover.

Part I: Implementation

- **Lectures 1 - 2 (April 1 - April 8): Interbank market and the corridor system**

    - L1: Institutional details of the interbank market

        * Atalay and Afonso & Lagos empirical paper

    - An OTC interbank market (BB version of AL)

        * from discrete trade to continuous time

        * properties
    - Homework #1

        * introducing dealers to the baseline model
    - L2: The Wong and Zhang model
    - References:

        * I follow closely Afonso and Lagos [2015a,b]. These papers are the foundation of the lecture.

        * The model I present is based of Bianchi and Bigio [2017] which is a simplification of Afonso and Lagos [2015a] but renders closed for solutions. A virtue is that it produces a transparent analysis. We will see that the model collapses to a classic model of Poole [1968] for a certain limit. The Poole model is the basis of models used in actual implementation. See Bindseil [2014] for a textbook that covers the main issues in practical policy implementation.

        * Afonso and Lagos [2014] and Bech and Atalay [2010] for empirical evidence of the trade dynamics of the Fed funds market.

Part II: Policy Channels

- **Lecture 3-4 (April 15 - April 22): Bank Liquidity Management, Monetary Policy and the Credit Channel**

    - Evidence
    - Bianchi Bigio model
    - cannonical model
    - Derivation of the deterministic KFE equation
    - Application 2: Dynamics of Bank Equity
    - Homework #2

        * linear framework

        * stability of rates

        * monetary policy frameworks

    - Repo markets

        * endogenous fluctuations in the interbank market Bigio Shi (2019) model
    - References

        * Bianchi Bigio (2019)

        * Piazzesi Schneider

        * Hoerova Uhlig

        * Nuno, Thomas

        * Bernanke Blinder

        * Stein

- **Lecture 5 (April 29): Stochastic Calculus - I**

    - Introduction to Brownian Motion
    - Ito's Lemma
    - Binomial Approximation
    - Reference

        * Evans manuscript
    - Homework #3

        * exercises on stochastic calculus

        * derivation of the Alvarez model

- **Lecture 6 (May 6): Stochastic Calculus - II**

- Derivation and study of Stochastic HJB equation
- Application 5: Bewley model in Continuous Time
- Homework #4

  * coding the model in Julia

  * welfare analysis of government debt
- References

  * Ljungvist and Sargent (Ch. xxx)

  * Bigio and Sannikov

- **Lecture 7 (May 13): Stochastic Calculus - III**

  - Inside Money: another Bewley economy in Continuous Time
  - Homework #5

    * code the model in Julia (based on HW #4)

    * study the effects of open-market operations
  - the Government Budget constraint

    * Ljungvist and Sargent (Ch. xxx)

    * Bigio and Sannikov

- **Lecture 8 (May 20): Monetary Policy as a Macroprudential tool**

  - the Harrison Kreps model
  - Bigio Zilberman
  - Homework #6

    * code the model in Julia (based on HW #4)

    * study the effects of open-market operations

- **Lectures 9 (May 27 (holiday will be used as buffer)): New-Keynesian Model in Continuous Time**

  - Overview of sticky price facts

  - Some models:

    * Werning, Benhabib, Schmitt-Grohe, Uribe

    * Kaplan Moll Violante

    * Caballero Farhi

- **Lectures 10 - (June 10): Open-Economy Model**

  - Bianchi-Bigio in open economy

References

Gara Afonso and Ricardo Lagos. An empirical study of trade dynamics in the fed funds market. Federal Reserve Bank of Minneapolis Research Department, Working Paper 708, 2014. (document)

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Morten L. Bech and Enghin Atalay. The topology of the federal funds market. *Physica A: Statistical Mechanics and its Applications*, 389(22):5223 – 5246, 2010. ISSN 0378-4371. doi: https://doi.org/10.1016/j.physa.2010.05.058. URL http://www.sciencedirect.com/science/article/pii/S0378437110004887. (document)

Javier Bianchi and Saki Bigio. A note on otc markets. Mimeo, Federal Reserve Bank of Minneapolis https://www.dropbox.com/s/az3zznfspoqqb2j/Note$_O TC.pdf$?$dl = 0$, 2017. (document)

Ulrich Bindseil. *Monetary Policy Operations and the Financial System*. Oxford University Press, first edition edition, 2014. ISBN-10: 0198716907. (document)

William Poole. Commercial bank reserve management in a stochastic model: Implications for monetary policy. *The Journal of Finance*, 23(5):pp. 769–791, 1968. ISSN 00221082. URL http://www.jstor.org/stable/2325906. (document)