The I Theory of Money
&
Redistributive Monetary Policy

Markus K. Brunnermeier & Yuliy Sannikov

Princeton University
## Redistributive Monetary Policy

### (New) Keynesian Demand Management

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| Representative Agent             | Heterogeneous Agents               |

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| Focus on **levels**               |                                     |
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- **Focus on levels and risk dynamics**
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Roadmap

- Redistribution via MoPo
  - A Money Model without Banks
  - Banks as “Money Creators” & “Risk Mitigators”
  - Amplification in 4 Steps
  - Ex-post Redistribution: Money vs. Credit View
    - Special Role of Long-term Safe Bond
  - Ex-ante Perspective: Risk-transfer (Insurance)
  - MacroPru Allows more Aggressive MoPo

- Defaultable government bond
  - Role of Financial Sector
    - Insurer (if strict MacroPru)
    - Hostage – but diabolic loop

- ESBies
A Money Model without Intermediaries

- Store of value: Money pays no dividend and is a bubble
  - Value of money and of capital is endogenous

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**Only money**
- Samuelson
- Bewley

**With capital**
- Diamond
- Aiyagari, Krusell-Smith
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Portfolio choice

- Invest in own firm → output/dividend yield but idio risk
- Hold money → no dividend no idio risk
- Higher idiosyncratic risk $\sigma$
  - Lower price of physical capital $q$
  - Higher value of money $p$
Endogenous Value of Money and Capital

- Higher idiosyncratic risk $\tilde{\sigma}$
  - Lower price of physical capital $q$
  - Higher value of money $p$

\[ p = \frac{\tilde{\sigma} - \sqrt{\rho}}{\sqrt{\rho}} q \]
\[ q = \frac{\kappa A + 1}{\kappa \sqrt{\rho} \tilde{\sigma} + 1} \]
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- ESBies
Add intermediaries

- Technologies $b$

- Intermediaries
  - Can hold outside equity & diversify within sector $b$
  - Monitoring
- Technologies $b$

- Add intermediaries

- Risky Claim
- Inside equity
- Money $B_1$

- Technologies $a$

- Outside Money

- Money $A_1$

- Intermediatearies
  - Can hold outside equity & diversify within sector $b$
  - Monitoring
Add intermediaries

Risk mitigators

- Technologies $b$
  - Can hold outside equity & diversify within sector $b$
  - Monitoring
  - Create inside money
  - Maturity/liquidity transformation

- Technologies $a$

Intermediaries

Outside Money

Inside Money (deposits)

Net worth

Pass through

Money

Inside equity

Risky Claim

Risky Claim

Risky Claim

$B_1$

$A_1$

HH Net worth

Inside Money

Maturity/liquidity transformation
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- ESBies
Shock impairs assets: 1\textsuperscript{st} of 4 steps

- Technologies \(b\)

- Technologies \(a\)
Shrink balance sheet: 2\textsuperscript{nd} of 4 steps

- Technologies $b$

\begin{itemize}
  \item Deleveraging
  \item Inside Money (deposits)
  \item Nets worth
  \item Losses
\end{itemize}

- Technologies $a$

\begin{itemize}
  \item Deleveraging
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Switch
Liquidity spiral: asset price drop: 3rd of 4

- Technologies $b$
- Technologies $a$

Switch
Disinflationary spiral: 4th of 4 steps

- Technologies $b$

- Technologies $a$
... after an adverse shock

- Intermediaries are hit and shrink their balance sheets inducing
  - Asset side: liquidity spiral, financial stability
  - Liability side: disinflation spiral, price stability

- Financial frictions are key driver
  - Risk premium is time-varying
  - Risk is endogenous

- Risk-bearing capacity of financial sector
  - Credit
  - Inside money
  - Disinflationary pressures
  - Risk premia
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Monetary Policy: Ex-post perspective

- Money view  
  - Friedman-Schwartz
    - Restore money supply
      - Replace missing inside money with outside money
    - Aim: Switch off deflationary spiral
      - ... but banks might not extent credit (hold excess reserves)

- Credit view  
  - Tobin
    - Restore credit flow
    - Aim: Switch off deflationary spiral & liquidity spiral
Redistributive MoPo: Ex-post perspective

- Adverse shock → value of risky claims drops
- Monetary policy
  - Interest rate cut ⇒ long-term bond price
  - Asset purchase ⇒ asset price
  - ⇒ “stealth recapitalization” - redistributive
  - ⇒ risk premia
- Liquidity & Deflationary Spirals are mitigated
Redistributive MoPo: Ex-post perspective

- Adverse shock → value of risky claims drops

**Monetary policy**
- Interest rate cut ⇒ long-term bond price
- Asset purchase ⇒ asset price
- ⇒ “stealth recapitalization” - redistributive
- ⇒ risk premia

- Liquidity & Deflationary Spirals are mitigated
Bottle Neck Approach: Beyond Financial Sector

- Japan 1990s: Corporations
- US 2000s: Households

Riskier direct lending/credit

Households
- Real Estate
  - Risky Credit
  - Equity
- Corporation
  - Factory
    - Risky Credit
    - Equity

Government

Banks
- Reserves
  - Outside money
- Inside money
  - Equity

Savers
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MoPo Rules: Ex-ante perspective

- No monetary economics
  - Fixed outside money supply
  - Amplification/endogenous risk through
    - Liquidity spiral: asset side of intermediaries’ balance sheet
    - Disinflationary spiral: liability side

- Monetary policy
  - Ex-ante: Wealth shifts by affecting relative price between
    - Long-term bond
    - Short-term money
  - Ex-post: Risk transfers – reduce endogenous aggregate risk

- MoPo can provide insurance, but cannot control risk from risk-taking and risk premia separately!
  - Risk taking of banks changes
  - Form of “moral hazard”
MoPo Rules: Ex-ante perspective

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- Aggressive MoPo can be welfare reducing (due to behavioral response)!
“Financial Dominance” (see my Baffi Lecture)

- So far, we assumed
  - Banks do not issue new equity or

- Extended framework:
  Bankers pay out dividend and store private wealth
  - Fear that losses will be pushed on financial sector
    - Change of private bankruptcy laws/foreclosure rules
      “financial repression”
  - “being weak is your strength”

- Banks pay out dividends ....
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MacroPru policy: Welfare frontier

- Stabilize intermediaries net worth and earnings
- Control the value of money to allow HH insure idiosyncratic risk (investment distortions still exists, otherwise can get 1st best)

![Graph showing welfare frontier,
no policy, policy that removes endogenous risk, and optimal macroprudential policy.](image-url)
MacroPru

- MacroPru *complements* MoPo
  - Not substitutes

- Good MacroPru enables more aggressive MoPo
  - More redistribution ex-post
  - More risk-transfers/insurance ex-ante
  - Value of money is higher (lifts level)
Contingent Commitment Challenge

- **Ideal:**
  
  - State 1: Bliss
  - State 2:
  - State 3: Boom
  - ....
  - State 6: Recession
  - State 7: Downturn
  - State 8: Crisis
  - State 9: ...
  - State 10: Catastrophe

- **Time-inconsistency**
  - Ex-ante: promise limited redistribution to keep interest rate low
  - Ex-post: redistribute too much
Institutional design: split authorities

0/1-Dominance vs. battle: “dynamic game of chicken”
Institutional design: split authorities

- **Monetary dominance**
  - Fiscal authority is forced to adjust budget deficits

- **Fiscal dominance**
  - Inability or unwillingness of fiscal authorities to control long-run expenditure/GDP ratio
  - Limits monetary authority to raise interest rates

0/1-Dominance vs. battle: “dynamic game of chicken”
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- **ESBies**
Government Debt

- Dual role of contingent debt
  - Liquidity: Smooth temporary shocks over time
    - Tax smoothing
    - Keynesian stimulus
  - Solvency: Risk sharing permanent shocks over states of nature
    - Through MoPo default-free bond
    - Through default defaultable bond

Tension
How can financial sector help?

1. Provide insurance against
   • Rollover risk
   • Solvency risk

   only achievable if banks are well capitalized in crisis
   financial dominance rules this out

2. Offer itself as hostage for commitment device to repay

   financial dominance is helpful ...
   • But ...
     ▪ “straight jacket commitment”
     ▪ Gov. has to pay in addition to bail out banking sector
     ▪ Banking sector kills real sector, gov. debt crowds out real loans
       • Even state 6, 7 will be shifted down to state 8,9
Hostage Problem 1: straight jacket

- 0-1 Choice Dilemma!
  - “straight jacket” commitment
  - No commitment

- Analogy:
  - currency union is already a “straightjacket commitment” w.r.t. inflation or exchange rate safety valve
  - Where is the safety valve?
Hostage Problem 2: Diabolic Loop

- Trigger: fiscal or financial

- Make bad state really horrible
Hostage Problem 2: Diabolic Loop

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Hostage Problem 2: Diabolic Loop

- Trigger: fiscal or financial

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- Sovereign debt risk

- Tax revenue

- Growth in real economy

- Bailout probability

- LTRO starts

- Change in CDS Premia of Average Banks

- Percent Change
Solution for Europe: ESBies

- **Challenge:** Need both
  - Safe asset to conduct redistributive MoPo
  - Insurance component in contingent debt (see e.g. Greece)

- **ESBies structure**

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<th>ESBies</th>
<th>Junior Bond</th>
<th>Safe asset</th>
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- **MacroPru for banks:**
  - no risk weight on ESBies,
  - all risk weight on Junior bond

- Allows “default insurance”
  - Contingent on very bad states
ESBies & Flight to Safety: An Added Bonus

- Today: asymmetric shifts across borders
  - Value of German debt decreases
    - German CDS spread rises, but yield on bund drops (flight to quality)
  - Value of Italian/Spanish/Greek... sovereign debt declines

- With ESBies: Negative co-movement across tranches
  - Value of ESBies expands – due to flight to quality
  - Value of Junior bond shrinks – due to increased risk
  - Asset side is more stable

Flight to safety asset is endogenous (coordination problem)
Conclusion

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