The Future of Asset Pricing
– Macro and Monetary Policy –

Markus Brunnermeier
Princeton University

Brunnermeier

NBER Asset Pricing Meeting at Stanford

Palo Alto, CA, Nov. 8th, 2019

The big changes & challenges

1. Central bank activism
   - Asset Purchasing Programs/QE
   - Yield Curve management
   - LTRO, Repo distortions

   New experiments ➡ new data

2. Big puzzles
   - Lowflation
   - low/negative risk-free rate

role of money and asset pricing

3. Technological revolution
   - Digitalization of money (Libra et al.)
   - Robo-advisors, recommender systems

Money: From Keynesian to Finance

	New Keynesian	I Theory of Money (Brunnermeier-Sannikov)
Key friction:	Price/wage stickiness	Financial friction (incomplete markets)
Role of money:	Medium of exchange	Store of value/safe asset
	Demand management	Capital & Risk allocation (endogenous risk dynamics)
	Consumption choice	Portfolio choice
Monetary Policy focus:	Interest rate	Risk-premia, price of risk

Money: From Keynesian to Finance

	New Keynesian	I Theory of Money
Key friction:	Price/wage stickiness	Financial friction (incomplete markets)
Role of money:	Medium of exchange	Store of value/safe asset
	Demand management	Capital & Risk allocation (endogenous risk dynamics)
	Consumption choice	Portfolio choice
Monetary Policy focus:	Interest rate	Risk-premia, price of risk

Intermediary AP + macro
+ resource allocation
+ growth (endogenous)

Money: From Keynesian to Finance

	New Keynesian	I Theory of Money
Key friction:	Price/wage stickiness	Financial friction (incomplete markets)
Role of money:	Medium of exchange	Store of value/safe asset
	Demand management	Capital & Risk allocation (endogenous risk dynamics)
	Consumption choice	Portfolio choice
Monetary Policy focus:	Interest rate	Risk-premia, price of risk

Intermediary AP + macro
+ resource allocation
+ growth (endogenous)

Money: From Keynesian to Finance

	New Keynesian	I Theory of Money
Key friction:	Price/wage stickiness	Financial friction (incomplete markets)
Role of money:	Medium of exchange	Store of value/safe asset
	Demand management	Capital & Risk allocation (endogenous risk dynamics)
	Consumption choice	Portfolio choice
Monetary Policy focus:	Interest rate	Risk-premia, price of risk

+ Intermediaries create money

Intermediary AP + macro
+ resource allocation
+ growth (endogenous)

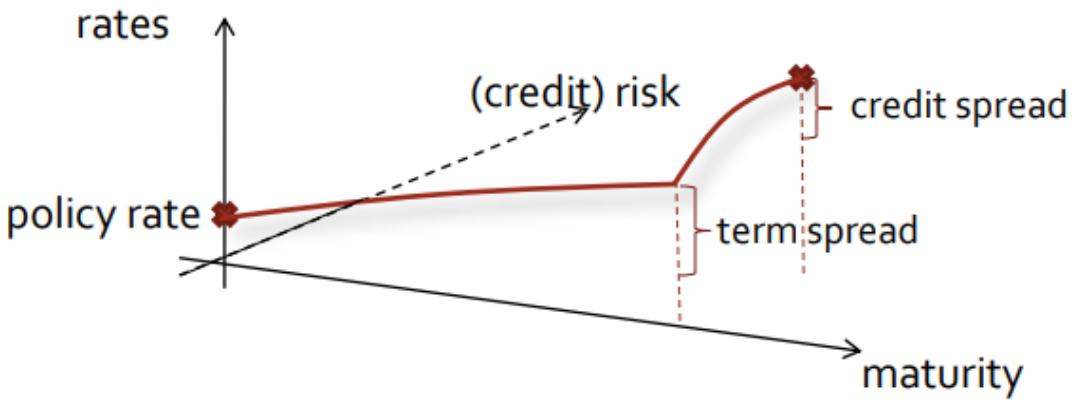
Brunnermeier

From *risk-free rate* to *risk premia/price of risk*

- *Risk-free rate*

- *Spreads*
  - *Term spread*
  - *Credit spread*

  contain
  - *Expected losses +*
  - *Risk premium = price of risk * (exog. + endogenous risk)*

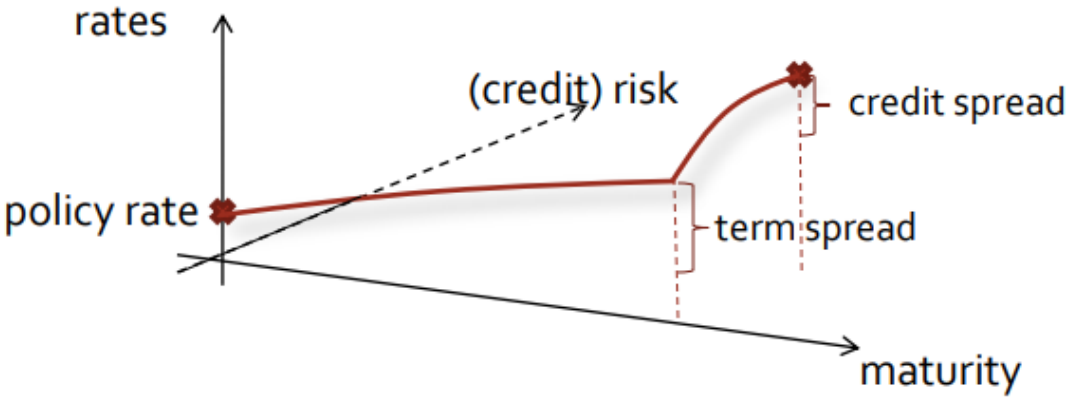


From *risk-free rate* to *risk premia/price of risk*

- *Risk-free rate*

- *Spreads*
  - *Term spread*
  - *Credit spread*

  contain
  - *Expected losses +*
  - *Risk premium = price of risk * (exog. + endogenous risk)*



amplifications, spirals, runs, …

dynamics

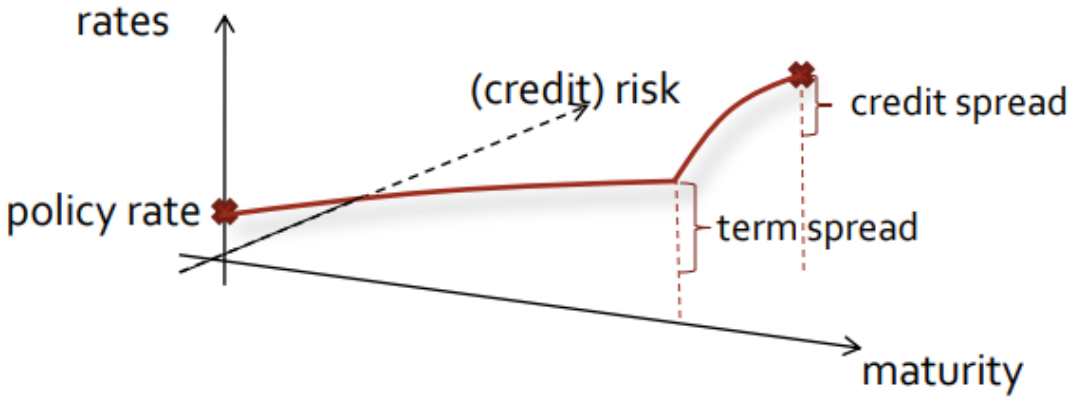
Safe Asset
(symmetrically supplied)

From *risk-free rate* to *risk premia/price of risk*

- *Risk-free rate*

- *Spreads*
  - *Term spread*
  - *Credit spread*

  contain
  - *Expected losses +*
  - *Risk premium = price of risk * (exog. + endogenous risk) dynamics*



amplifications, spirals, runs, …

Asset Pricing is everywhere!

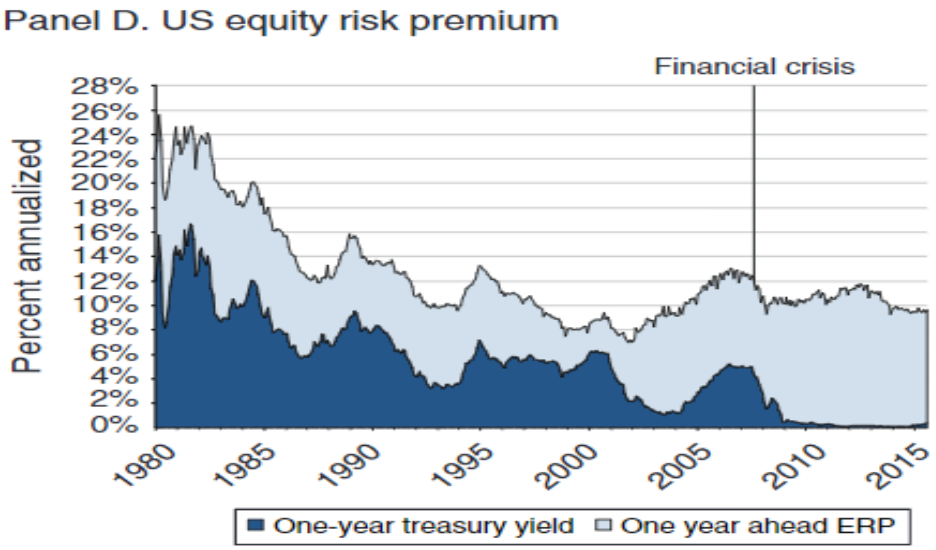
Continuous-time tools

Safe Asset (symmetrically supplied)

Free Online PhD Course: Link

From *risk-free rate* to *risk premia/price of risk*

- Portfolio choice is key (not only consumption)



- Risk-free rate moves around to accommodate risk premium
  - Basak Cuoco
- When is risk-free rate not enough
  - Two technologies ("I Theory of Money")
  - Price stickiness (Kreke & Lenel)
  - ZLB (Caballero & Simsek)

Optimal Policy & Welfare

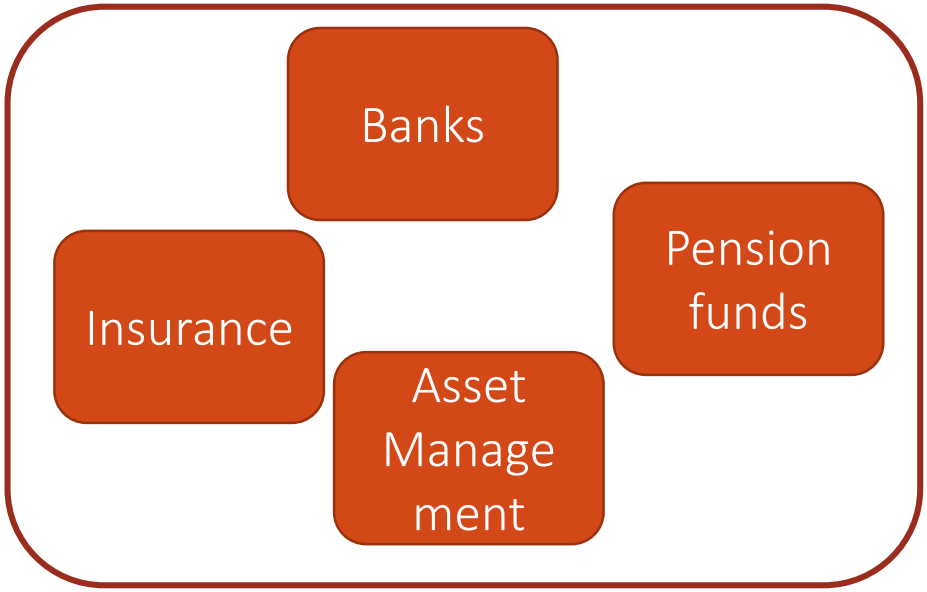
- … going beyond positive theory

- Welfare benchmark in models with financial frictions:
  - NK-DSGE Focus: quadratic loss function
  - Risk-disutility

- Interaction of Monetary Policy with
  - Macroprudential policy
    - Limit portfolio choice *Asset Pricing*
  - Fiscal policy

Heterogeneity within financial sector

- Open up financial/intermediary sector
  - E.g. Yield curve affects different institutions differently



- Modeling
  - Challenge: Many state variables (η-net worth shares)
  - Answer: Machine learning approach
    - Approximate large multi-dimensional grid with neural net

The big changes & challenges

1. Central bank activism
   - Asset Purchasing Programs/QE
   - Yield Curve management
   - LTRO, Repo distortions

   New experiments ➡ new data

2. Big puzzles
   - Lowflation
   - low/negative risk-free rate

role of money and asset pricing

3. Technological revolution
   - Digitalization of money (Libra et al.)
   - (AI-Robo-advisors, recommender systems)

3. Technological (R)evolution

- Ubiquitous digital money, M-Pesa, Alipay, Libra
  - So far: digital inside money (liability of issuer)
  - Now: digital outside money/ “currencies”
    + linked to a digital platform (smart contracts)
- Question: Will cash be driven out? A: CBDC.

3. Technological (R)evolution

- Ubiquitous digital money, M-Pesa, Alipay, Libra
  - So far: digital inside money (liability of issuer)
  - Now: digital outside money/ "currencies"
    + linked to a digital platform (smart contracts)

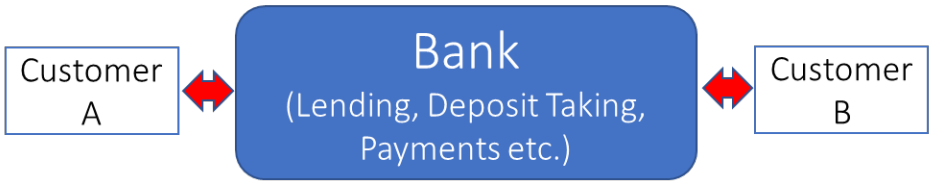
- Question: Will cash be driven out? A: CBDC.
- Will asset take on some money roles & earn extra service premium (convenience yield)?
  - ⇒ liquidity premia, bubble, …

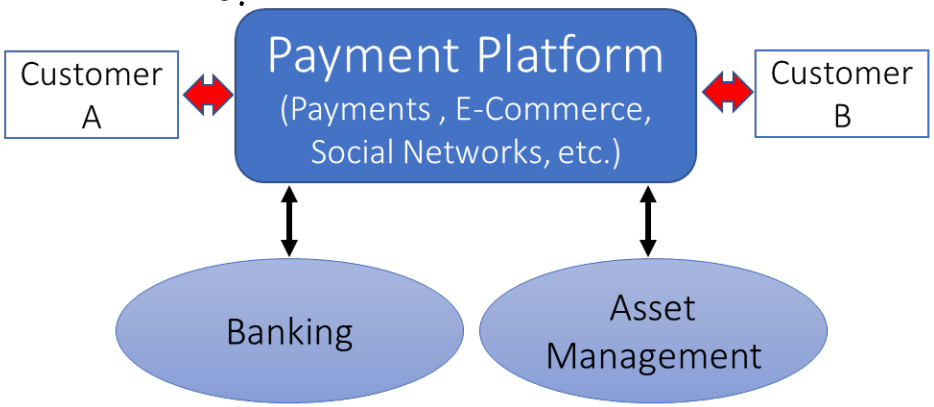
3. Technological Revolution

- Ubiquitous digital money, M-Pesa, Alipay, Libra
  - So far: digital inside money (liability of issuer)
  - Now: digital outside money/ "currencies"
    + linked to a digital platform (smart contracts)

- Inversion of IO of financial activities
  - Who controls the *big data*? The importance of digital platforms

Bank-centric — *Optimal bundling of services?* — *Payment-centric*





Brunnermeier, James, Landau (2019)
The Digitalization of Money

3. Technological Revolution

- Ubiquitous digital money, M-Pesa, Alipay, Libra
  - So far: digital inside money (liability of issuer)
  - Now: digital outside money/ "currencies"
    + linked to a digital platform (smart contracts)

- Assets with extra services
- Inversion of IO of financial activities

- Digital Dollarization
  - Take over small/open country's currency
  - Will central banks lose their grip on monetary policy?
- Digital Currency Areas

Using international Finance tools

… to sum up: Macro, Monetary & AP

1. Central bank activism
   - Asset Purchasing Programs/QE

2. Big puzzles
   - Lowflation
   - low/negative risk-free rate

Intermediary asset pricing (endogenous risk dynamics + price of risk)
+ real investment + growth
+ intermediaries as "money creators"/safe asset creators
+ welfare

3. Technological revolution: Digitalization of Money
   - Unbundling: store of value, medium of exchange, unit of account
     - Certain asset take on extra roles ⇒ bubbles, liquidity pricing
   - Re-bundling: digital platform, smart contracts, …