An extremely short introduction to money?

Maths Institute Interdisciplinary Workshop

February 2019

Short introduction to money?

- Economists don't write a lot about money

- Economists write a lot about inflation

- Problems with money $\Rightarrow$ problems with inflation

  'The purchasing power of money depends in the first instance on demand and supply... The supply...is all the money in circulation...The demand consists of all the goods offered for sale' J.S. Mill 1852
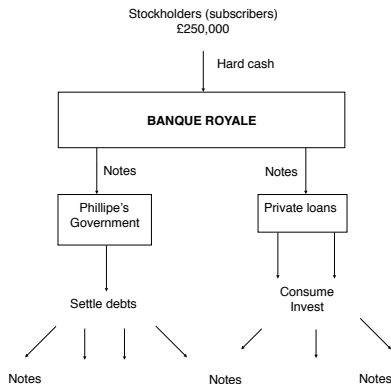
- The Quantity Theory of Money

$$mv = py$$

An extremely short introduction to banking

- Inflation is not the interest today

- Inflation failed to measure problems in the creation of money, i.e. of debt, in run up to GFC
  - ▶ A consequence of success w.r.t. inflation expectations and the central banking brief as understood from 1980s to 2008?

- Problems in finance explode 2008 and nearly destroy financial system

- What does this have to do with money?
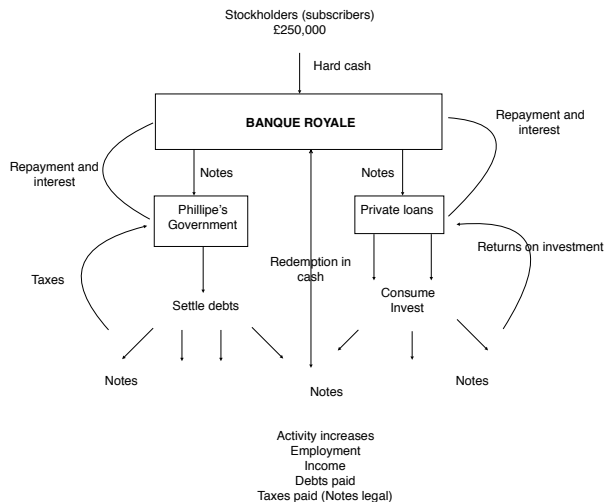
- Modern finance looks very complicated
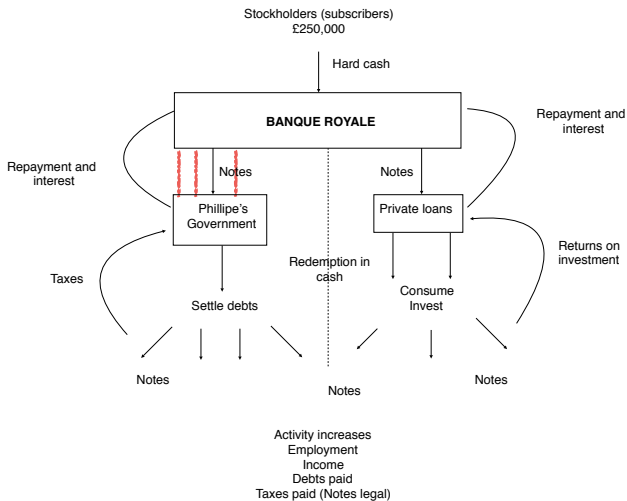
Begin at the beginning

John Law's bank: a good idea

Stockholders (subscribers)
£250,000

Hard cash

BANQUE ROYALE

Notes   Notes

Phillipe's
Government   Private loans

Settle debts   Consume
                        Invest

Notes   Notes   Notes

John Law's bank: a great success

Stockholders (subscribers)
£250,000

Hard cash

BANQUE ROYALE

Repayment and interest

Repayment and interest

Notes

Notes

Phillipe's Government

Private loans

Returns on investment

Taxes

Redemption in cash

Settle debts

Consume Invest

Notes

Notes

Notes

Activity increases
Employment
Income
Debts paid
Taxes paid (Notes legal)

John Law's bank: scandal, crisis and collapse

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Hard cash

BANQUE ROYALE

Repayment and interest

Repayment and interest

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Phillipe's Government

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Notes

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An outline for centuries to come

- A little banking is a great thing

- But no one likes a little bit of a great thing

- We always want too much from our banks
  - ▶ Too much credit
  - ▶ Too much money created
  - ▶ Too much risk
  - ▶ Too little money to satisfy original subscribers or depositors

- Modern crises contain the same mechanisms under a more complicated architecture
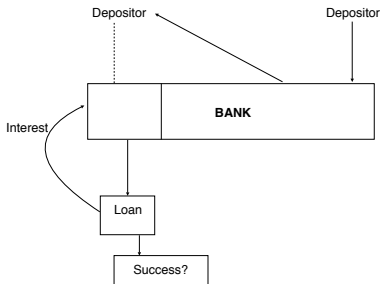
A generic bank
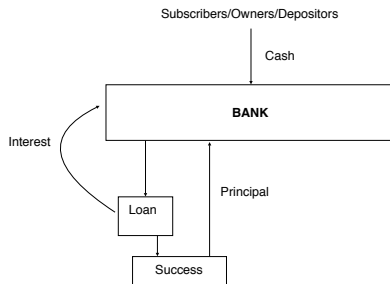
# A generic bank
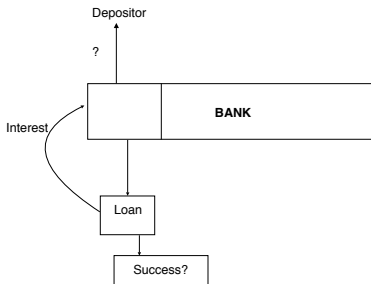
A generic bank

This is the wonder

- Investment projects are too large for individuals
- Investment is too long term for individuals
- Little capital is available through direct investment

- But the bank makes deposits available on demand
- May pay interest on them
- Uses the deposit to provide a load
  - Creates a new deposit, or money was issued, and so on
- Original depositor can be satisfied with another's deposit

- Solves a social coordination problem: big increase in economic activity

Fractional Reserve Banking
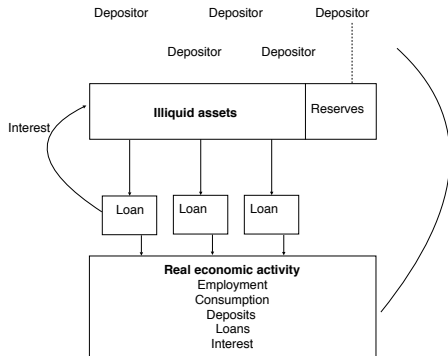
Diamond-Dybvig

- An illiquid investment project pays R period 2
- A liquid investment pays $p < R$ in period 1
- Households can invest in either
- A fraction will need their money in period 1
- But households don't know types in period 0 when investment made

- A bank solves the coordination problem
- Exploits a L.L.N. to make more capital available than if h.h. had to self-insure against liquidity risk
- Investment project can succeed
- This equilibrium is a first-best outcome

Fragile Reserve Banking
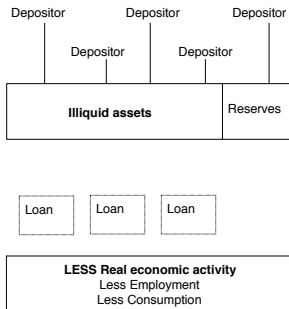
Diamond-Dybvig

- But first best is not the only equilibrium
- What if arrivals are not i.i.d?
- What should you do if there's a queue at your bank (19th Century) (UK till 2008)

Diamond-Dybvig

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- Join it

Diamond-Dybvig

- But first best is not the only equilibrium
- What if arrivals are not i.i.d?
- What should you do if there's a queue at your bank (19th Century) (UK till 2008)
- Join it
- Liquid assets satisfy first $n < N$ claims
- This equilibrium is a long way from first-best outcome
- A bank which exploits L.L.N. is socially useful
- And FRAGILE by construction
- Deposit insurance removes the coordinated, bad equilibrium

Fragile banking

- Without invoking scandal, systemically bad decision making, risk-hiding, lies, missing diversification, insider-relationships with credit ratings, public risk and private profit....

- Banking will still be fragile
- It will still need insurance

- It is very profitable (more always seems better)

- It will need regulation
- It should pay for these publicly provided goods (?)

Investment Banking

Assets		Liabilities	
Cash & reserves	7345	Deposits	336316
Repo	174090	Repo	136956
Loans (mortgages etc)	313226	Unsecured borrowing	111137
Fixed assets	2492	Trading portfolio	71874
Trading portfolio assets	177867	Derivatives	140697
Derivative contracts	188353	Other	172417
Other	183414		
	996787		969397

- Net worth (equity): A-L = 27390
- Leverage (Assets/Net worth) = 36.4
- Barclays, 2006, GBP million. Carlin Soskice *Macroeconomics*

Investment banking

- The balance sheet provides a solvency constraint on lending

- Large degree of liquidity risk:
  - Deposits versus loans
  - Repo borrowing: up to 25% of funds roll over every night!
- Extremely sensitive to interbank market
- Intuition of deposits and fractional reserve banking goes through
- There is not a 'Federal Repo Insurance' scheme
- Roll of the Central Bank here

- A lot of opportunity to advance more loans on less capital

Enjoy the day!