Essex EC248-2-SP
Lecture 4

Central Banking and the Supply of Money

Alexander Mihailov
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Plan of Talk

- **Introduction**
1. Free Banking or a Central Bank?
2. Central Banks: Functions and Independence
3. The Money Supply Process
4. Determinants of the Money Supply
- **Wrap-up**

Aims and Learning Outcomes

- **Aims**
  - Understand what is special about central banking
  - Characterise the supply of money
- **Learning outcomes**
  - Describe the origins and justify the role(s) of central banks
  - Discuss the pros and cons of the free banking alternative
  - Motivate the need for central bank independence
  - Define and analyse the money supply process

Free Banking or a Central Bank?

- Prior to 1900, most economic analysis of the role of central banks concentrated on the issue of
  - Whether the note issue should be centralised, and if yes:
    - How controlled by the central bank
- Free (or competitive) banking = banking freed from the presence of a central bank: Hayek, *Denationalisation of Money – the Argument Refined*, 1978
- Central banking => what regime:
  - Discretion: *optimal* monetary policy
  - Rule, e.g. fixed rate of money supply growth: Friedman, *A Program for Monetary Stability*, 1959
- The gold standard (Napoleonic Wars – World War I) was characterised by:
  - severe shortages of money
  - expanding paper credit

Banking and Currency Schools

- in 19 C. in UK, debate on what is money and what would determine the mean rate of growth of credit expansion
  - Banking School: "expansionist" vision
    - favour free banking as a means of holding down interest rates
    - real bills doctrine: banks should discount bills, i.e. make loans, for "productive" purposes (production and sale of goods and services)
  - Currency School: succeeded in enacting the Peel Bank of England Act in 1844 which
    - placed restrictions on note issue
    - consolidated the monopoly of BoE as the only issuer of bank notes
    - initiated the noncompetitive, non-profit-maximising central bank
- Due to the nature of banking business (and risks) and to
  - impracticability of private insurance to protect depositors
  - need for a public-sector backed regulation to avoid moral hazard

  1844 BoE model seemed attractive => was copied in virtually all major countries
    - the transition from profit maximisation to a non-profit role was hard
    - => most of these central banks were established by government legislation

First Central Banks: Origins and Ownership

- **Private**
  - Riksbank (1668), founded in Sweden as a private institution in 1656 but not called by this name (meaning "national bank") until 1867
  - Bank of England (1692)
  - Banque de France (1800), founded by Napoleon; *Caisse des Comptes Courants* (1797), founded by Paris bankers to provide quasi-central banking functions and note issue but forced to merge, as well as other note issuing banks by 1803, with Banque de France
  - Banca d'Italia (1893), resulting of a merger of earlier note issuing banks in Genoa and Turin
- **State**
  - Prussian State Bank, founded by Frederick the Great and transformed later into Reichsbank (1875), with *mixed* ownership
  - Austro-Hungarian Bank (1816, as Chartered Austrian National Bank)
  - Bank of Belgium (1835), founded following separation from Holland in 1830 and as a rival to the earlier *Société Générale* controlled by the Dutch
  - Bank of Japan (1882), adapting the model of Bank of Belgium
- **Mixed**
  - Swiss National Bank (1905)
  - Federal Reserve System (1913)

How Central Banks Became Unique

- Most central banks were created
  - To serve the government in its financial matters
  - To unify what had become – in Germany, Switzerland and Italy – a chaotic system of *note issue*
    - By centralising, managing and protecting the metallic reserve ⇔ **banker of the government**
    - Thus facilitating and improving the payments system ⇔ **bankers' bank**: reserve keeping plus liquidity provision (*clearing house* role)
- The full ramifications of their role as bankers' bank were only dimly perceived; these functions developed naturally from the context of **relationships** within the system
  - Initially, the role of central banks in **maintaining convertibility** of the notes they issue into gold or silver was no different from that of any other bank
  - Their **privileged legal position**, as a banker to the government and in note issue, brought about a degree of centralisation of reserves within the banking system in the central bank, so it became a bankers' bank

Still Alternatives to Central Banking?

- central banks developed their particular art of **monetary management**, which has *two interrelated aspects*:
  - a *macro* function: direction of monetary conditions in the economy
  - a *micro* function: health and well-being of the individual members of the banking system => **lender of last resort**: regulatory and supervisory role
- arguments in favour of **free banking**
  - analogy with **free trade**:
    - if free competition is beneficial in other economic activities
    - what is so special about banking that justifies imposing special external controls, regulations or supervision upon banks?
  - the **inherent inflationary tendencies** of a central bank: combining
    - the designation of a currency as legal tender
    - with fixing its value in terms of some other asset, e.g. gold,

    provides a clear incentive for overissue – Klein (1974), "The Competitive Supply of Money", *Journal of Money, Credit and Banking* Vol. 6, No. 4.

Central vs Free Banking Thought in UK

- **Henry Thornton**, *An Inquiry into the Nature and Effects of Paper Credit of Great Britain*, 1802: saw the merits of a centralised, correspondent system, and argued against attempts to divide the responsibility for the stability of the system
- **Walter Bagehot**, *Lombard Street*, 1873: preferred a natural, laissez-faire system of banking in theory

  In practice, **both** sought to reform the operations of the Bank of England, on the grounds that a more fundamental change (i.e. to free banking) was not realistic politics
- **Vera Smith**, *The Rationale for Central Banking*, 1936: a proponent of free banking
- **Charles Goodhart**, *The Evolution of Central Banks*, 1985; *The Central Bank and the Financial System*, 1995: a proponent of central banks

Central Bank Independence

Factors making Fed independent

1. Members of Board have long terms
2. Fed is financially independent: This is most important

Factors making Fed dependent

1. Congress can amend Fed legislation
2. President appoints Chairmen and Board members and can influence legislation

Overall: Fed is quite independent

Other Central Banks

1. Bank of England least independent until 1997: Government made policy decisions; much more independent now, after the reform of 1997
2. European Central Bank: most independent—price stability primary goal
3. Swiss National Bank: slightly less independent than ECB
4. Bank of Canada and Japan: fair degree of independence, but not all on paper
5. Trend to greater independence: New Zealand, European nations

Players in the Money Supply Process

1. Central bank, e.g. in US:

   Federal Reserve System

   1. Conducts monetary policy
   2. Clears checks
   3. Regulates banks
2. Banks
3. Depositors
4. Borrowers from banks

The Fed's Balance Sheet

Federal Reserve System

Assets	Liabilities
Government securities	Currency in circulation
Discount loans	Reserves

Monetary Base, MB = C + R

Control of the Monetary Base…

Open Market Purchase from Bank

The Banking System

Assets	Liabilities
Securities – $100 Reserves + $100	

The Fed

Assets	Liabilities
Securities + $100	Reserves + $100

Open Market Purchase from Public

Public

Assets	Liabilities
Securities – $100 Deposits + $100	

The Fed

Assets	Liabilities
Securities + $100	Reserves + $100

Banking System

Assets	Liabilities
Reserves + $100	Checkable Deposits + $100

***Result: R* ↑ $100, *MB* ↑ $100**

…If Check Cashed by the Public

Public

Assets	Liabilities
Securities – $100 Currency + $100	

The Fed

Assets	Liabilities
Securities + $100	Currency + $100

***Result*: *R* unchanged, *MB* ↑ $100**
Effect on *MB* certain, on *R* uncertain

Shifts From Deposits into Currency

Public

Assets	Liabilities
Deposits – $100 Currency + $100	

The Fed

Assets	Liabilities
	Currency + $100 Reserves – $100

Banking System

Assets	Liabilities
Reserves – $100	Deposits – $100

***Result*: *R* ↓ $100, *MB* unchanged**

Discount Loans

Banking System

Assets	Liabilities
Reserves + $100	Discount loan + $100

The Fed

Assets	Liabilities
Discount loan + $100	Reserves + $100

***Result: R* ↑ $100, *MB* ↑ $100**

Conclusion:* Fed has better ability to control *MB* than *R

Deposit Creation: Single Bank

First National Bank

Assets		Liabilities	
Securities Reserves	– $100 + $100		

First National Bank

Assets		Liabilities	
Securities Reserves Loans	– $100 + $100 + $100	Deposits	+ $100

First National Bank

Assets		Liabilities	
Securities Loans	– $100 + $100		

Deposit Creation: Banking System

Bank A

Assets		Liabilities	
Reserves	+ $100	Deposits	+ $100

Bank A

Assets		Liabilities	
Reserves	+ $10	Deposits	+ $100
Loans	+ $90		

Bank B

Assets		Liabilities	
Reserves	+ $90	Deposits	+ $90

Bank B

Assets		Liabilities	
Reserves	+ $ 9	Deposits	+ $90
Loans	+ $81		

The Money Multiplier

Money Multiplier

$M = m \times MB$

Deriving Money Multiplier

$R = RR + ER$

$RR = r \times D$

$R = (r \times D) + ER$

Adding *C* to both sides

$R + C = MB = (r \times D) + ER + C$

1. Tells us amount of *MB* needed support *D*, *ER* and *C*
2. $1 of *MB* in *ER*, not support *D* or *C*

$MB = (r \times D) + (e \times D) + (c \times D) = (r + e + c) \times D$

Determinants of the Money Supply: Theory

$$D = \frac{1}{r + e + c} \times MB$$

$M = D + (c \times D) = (1 + c) \times D$

$$M = \frac{1 + c}{r + e + c} \times MB$$

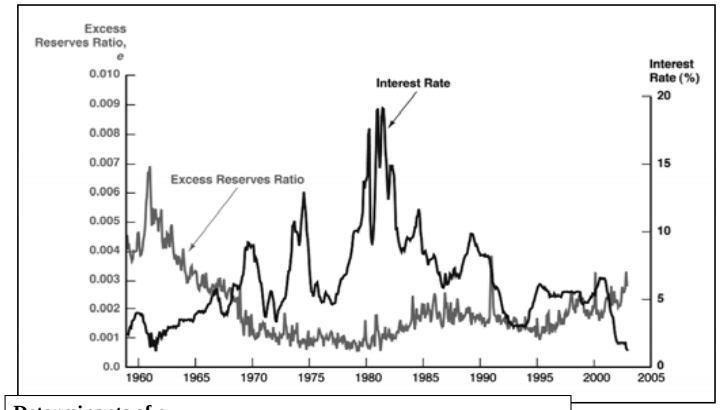
$$m = \frac{1 + c}{r + e + c}$$

$m < 1/r$ since no multiple expansion for currency and $D \uparrow \Rightarrow ER \uparrow$

Full Model

$M = m \times (MB_n + DL)$

Excess Reserves Ratio



Determinants of *e*

1. ***i*** **↑, relative** ***R*** ^{e} **on** ***ER*** **↓ (opportunity cost ↑),** ***e*** **↓**
2. **Expected deposit outflows,** ***ER*** **insurance worth more,** ***e*** **↑**

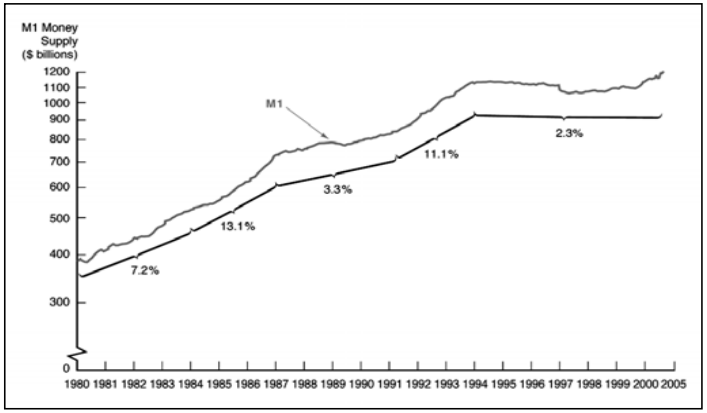
Factors Determining Money Supply

SUMMARY Table 1 Money Supply (M1) Response

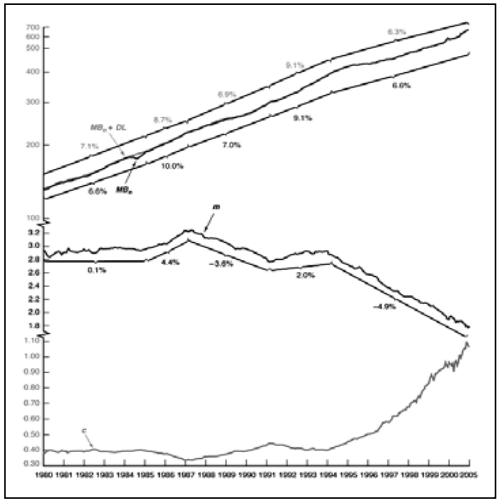
Player	Variable	Change in Variable	Money Supply Response	Reason
Federal Reserve System	r	↑	↓	Less multiple deposit expansion
	MB_n	↑	↑	More *MB* to support *D* and *C*
	DL	↑	↑	More *MB* to support *D* and *C*
Depositors	c	↑	↓	Less multiple deposit expansion
Depositors and banks	Expected deposit outflows	↑	↓	e ↑ so fewer reserves to support *D*
Borrowers from banks and the other three players	i	↑	↑	e ↓ so more reserves to support *D*

Note: Only increases (↑) in the variables are shown. The effects of decreases on the money supply would be the opposite of those indicated in the "Money Supply Response" column.

Money Supply



Determinants of the Money Supply: Data



Concluding Wrap-Up

- **What have we learnt?**
  - How central banks originated and what are their key roles
  - What the free banking alternative offers
  - Why central bank independence matters
  - What the determinants of the money supply process are
- **Where we go next:** to the other side of the market for money/credit, i.e the demand for money, and to monetary theory