

University College Dublin



**The Creation of Money
and the European
Central Bank ECB**

Measuring Money

- **In some cases a wider definition is used & includes other types of deposit (saving deposits)**
- **Broad definition called M2 or M3**
- **We will return to this when we look at the ECB**
- **For the moment assume that there is only one type of deposit (D) & define the money supply (MS) currency held by the non-bank public (CU) plus bank deposits**

The Creation of Money

- **$MS = CU + D$**
- **Two types of bank: commercial (AIB, BOI) & central bank (FED, ECB)**
- **Simple balance sheet of commercial banks:**
- **Liabilities: Deposits (D)**
- **Assets: Loans (L) & reserves (RES)**
- **$D = L + RES$**

The Creation of Money

- **Loans can take many forms: overdrafts, mortgages, car loans, loans to government (bonds) etc.**
- **Assume only one type of loan: L**
- **Banks will wish to hold cash reserves for two reasons:**
- **To hold cash reserves to facilitate cash withdrawals**

The Creation of Money

- **In most banking systems the Central Bank will require commercial banks to hold a % of deposit liabilities as reserves**
- **These reserves are normally held as currency or deposits with the Central Bank**
- **Assume that banks always hold 10% of their deposit liabilities as reserves**

The Creation of Money

- **A Fractional Reserve Banking System**
 - **The ratio of reserves to deposits is less than 100%**
- **Consider the following example:**
- **Suppose there is only one commercial bank X**
- **Individual A deposits €1000 with bank X**
- **Initially X's deposit liabilities & reserves increase by €1000**

The Creation of Money

- **But bank X can use this €1000 to make a loans to the public**
- **If X has a 10% reserve ratio €100 will be added to reserves and €900 used to grant loans**
- **Suppose X approves a €900 loan to another individual B**

The Creation of Money

- **Hence bank X:**
- **Has a deposit of €1000**
- **Holds 10% or €100 as reserves**
- **Grants a loan of €900 to individual B**
- **The change in its balance sheet is:**

The Creation of Money

ASSETS	LIABILITIES
RES: +100	DEPOSITS: + 1000
LOANS: +900	
TOTAL: + 1000	TOTAL: + 1000

The Creation of Money

- **But B has taken a loan of €900**
- **B uses this to buy goods & services or to settle a debt**
- **Suppose B pays individual C €900 & C deposits this amount with bank X**
- **X has additional deposits of €900**
- **It holds 10% or €90 as reserves & grants a loan of €810 to individual D**

The Creation of Money

- **Hence:**
- **Deposits increase by: $1000+900 = 1900$**
- **Reserves increase by: $100+90 = 190$**
- **Loans increase by: $900+810 = 1710$**

The Creation of Money

ASSETS	LIABILITIES
RES: +190	DEPOSITS: + 1900
LOANS: +1710	
TOTAL: + 1900	TOTAL: + 1900

The Creation of Money

- **Hence:**
- **The initial increase of €1000 in deposits leads to an increase of €1900**
- **But this is not the end of the story:**
- **D has an €810 loan which s/he pays to E**
- **E lodges the €810 as a deposit with X**
- **X hold 10% (€81) in reserves and uses the rest (€729) to grant a loan to F who makes a payment to G etc. etc.**

The Creation of Money

- The initial injection of €1000 results in a multiple creation of deposits.
- Let rr = the reserve deposit ratio
- $rr = RES/D$
- OR: $D = (1/rr)RES$
- And: Change in $D = (1/rr)(\text{Change in } RES)$
- If RES increase by 1,000 and $rr = 10\%$ or 0.1
- The total increase in D is $1000/0.1 = €10,000$

The Creation of Money

- For each additional € of reserves the bank can create an addition $1/0.1 = €10$ in deposits.
- We call $1/rr$ the *Deposit Multiplier*
- In a fractional reserve system $rr < 1$ and the deposit multiplier > 1

The Creation of Money

- **Note: We get the same result with more than one bank providing they all have the same reserve ratio.**
- **Call a second bank: Bank Y**
- **A deposits €1000 with X**
- **X has an addition €1000 of reserves.**
- **It adds €100 (10%) to its reserve holding & gives B a €900 loan**

The Creation of Money

- **B banks with Y & deposits the €900**
- **Y's reserves increase by €900**
- **It adds €90 (10%) to its reserve holding & grants C a €810 loan etc. etc.**
- **The final increase in Deposits will be the same regardless of the bank used by each individual.**

The Creation of Money

- **Not in Text:**
- **The Money Supply is:**
- **$MS = CU + D$ (CU = currency held outside the banking system)**
- **Assume that the public hold a constant proportion k of their deposits in cash:**
- **$CU = kD$**
- **$MS = kD + D = (1 + k)D$**

The Creation of Money

- $MS = (1 + k)D$
- Define *High Powered Money* or the *Monetary Base* (MB) as the sum of CU and RES:
- $MB = CU + RES = kD + rrD = (k + rr)D$
- OR: $D = MB/(k + rr)$ which gives:
- $MS = [(1 + k)/(k + rr)]MB$

The Creation of Money

- $MS = [(1 + k)/(k + rr)]MB$
- $(1 + k)/(k + rr) = \text{Money Supply Multiplier}$
- **Change in MS for each € change in MB**
- **If $rr = 10\%$ (0.1) $k = 5\%$ (0.05)**
- **Money Supply Multiplier is:**
- $1.05/0.15 = 7$
- **Each € increase in MB \rightarrow €7 increase in MS**

The Creation of Money

- $D = (1/rr)RES$
- $MS = [(1 + k)/(k + rr)]MB$
- **Deposit multiplier is greater than the MS multiplier because k is a leakage of reserves.**
- **A deposits €1000 with bank X but withdraws €50 (5%) to hold as cash**
- **This leaves X with €950 of which it adds €95 (10%) to reserves & loans €855 to B etc.**

The Central Bank

- **The Central Bank is responsible for:**
 - **Regulation of the Banking & Financial System**
 - **Monetary policy (interest rates etc.)**
 - **Exchange rate management**
 - **Issuing the Currency**

The Central Bank

- **The Central Bank can be thought of as the “government’s bank” or the “national bank”**
 - **In the USA the FED was established by the Federal Reserve Act (1913)**
 - **In the UK the modern Bank of England is based on the Bank of England Act (1998)**
- **In the EU there is no government or parliament to pass legislation such as the Federal Reserve or the BOE Act**

The Central Bank

- **In 12 of the 15 EU states the European Central Bank (ECB) is now the central bank (Jan. 1999)**
- **The exceptions or non-euro countries are the UK, Sweden & Denmark**
- **The other 12 use the same currency (€) and have a common central bank**

The ECB

- **Euro notes & coin came into circulation in January 2002**
- **But the € actually started on 1 January 1999**
- **On that date the exchange rates between the participating currencies were irrevocably fixed and the ECB took full responsibility for monetary policy**

The ECB

- **Together with the ECB, the central banks of the EU-15: Central Bank of Ireland, Bank of France, Bundesbank etc. became the *European System of Central Banks (ESCB)***
- **The National Central Banks (NCB's) are best considered as regional branches of the ECB which is the sole policy making body**
- **Note: the Central Banks of the 3 non-euro countries are part of the ESCB's but do not participate in the decision making process**

The ECB

- **Two key bodies:**
- **The Governing Council - Governors of the NCB's (euroland) plus members of the Executive Board.**
- **The Executive Board: President & Vice-President of the ECB plus four others selected by the heads of govt. & appointed for a non-renewable eight year term**

The ECB

- **The Governing Council takes decisions on monetary policy (interest rate changes etc.) and the Executive Council issues instructions to the NCB's on how to implement policy decisions.**

The ECB

- **The ECB is an independent central bank:**
- **Maastricht Treaty:**
- **National governments and EU institutions are prohibited from giving advice to the ECB**
- **The ECB cannot lend to national governments or EU institutions**
- **However, the Treaty charges the ECB with a primary responsibility to *maintain price stability* (not defined in the Treaty but 0 – 2%)**

The ECB

- **Also, without prejudice to the price stability objective, the ECB is required to support the general economic policies of the EU - non-inflationary growth, economic convergence, employment etc.**
- **The ESCB are also responsible for day-to-day foreign exchange rate operations and exchange rate management.**
- **However: Decisions on the euro's participation in exchange rate systems are the responsibility of the European Council.**

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