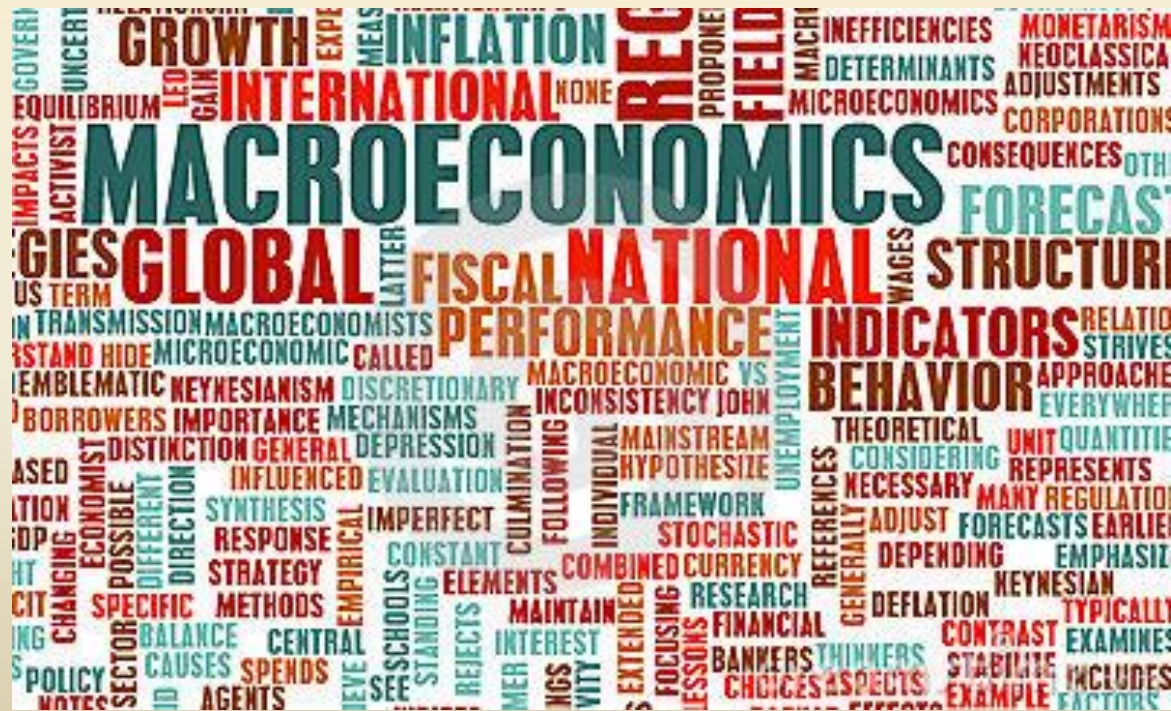


# presentation 17

## central bank



## Central bank

The central bank, also known as the “national bank” in some countries, is responsible for overseeing the monetary system of a country e.g. CH: it is the role of the Swiss National Bank (SNB).

Key responsibilities:

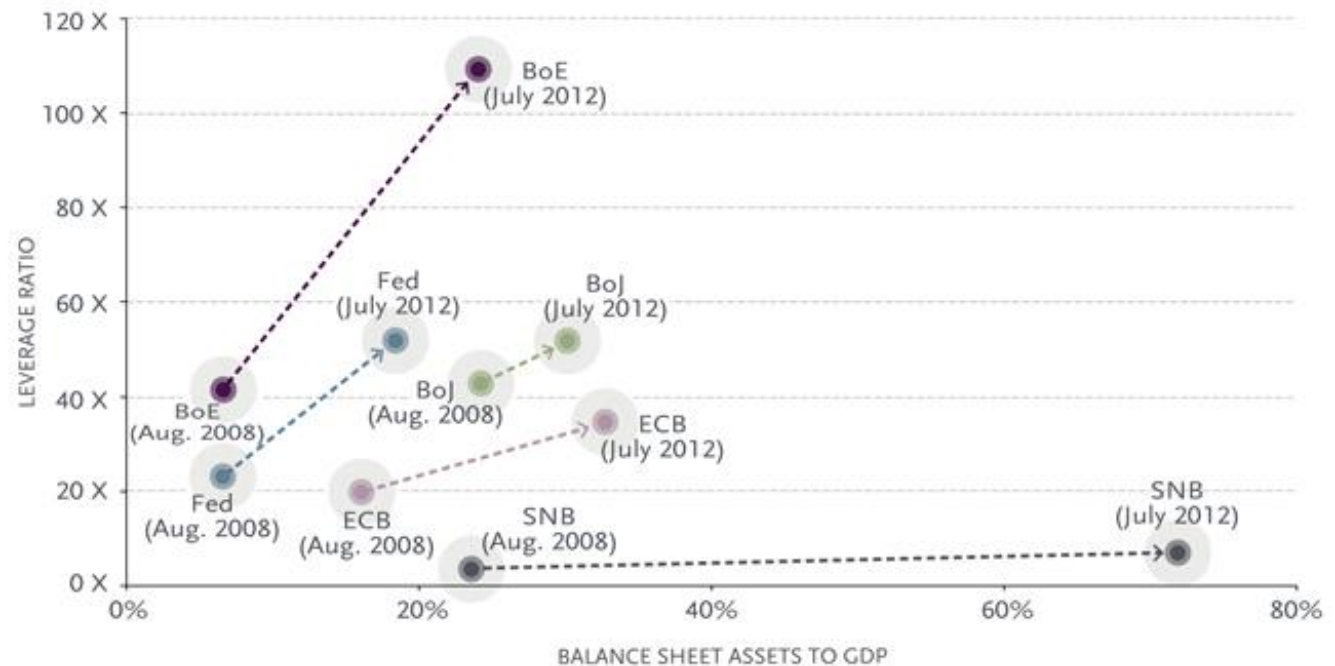
- Coordinate the financial & banking sectors
- Issue notes and coins
- Supply the economy with money as the economy needs
- Decide to intervene on e-rate
- Decide on i-rates
- Manage foreign reserves
- Assure average price stability



The assets of central banks have increased to face the economic downturn:

### THE FED IS NOT ALONE: MAJOR CENTRAL BANK BALANCE SHEET EXPANSIONS SINCE 2008

The central banks of England (BoE), Japan (BoJ), and the European Central Bank (ECB) now have balance sheets as a percentage of GDP of 24%, 31%, and 33% respectively, and leverage ratios of 109-to-1, 53-to-1, and 35-to-1. Even Switzerland's storied central bank (SNB), often regarded as the last vestige of orthodox monetary practices, printed the equivalent of \$61 billion – roughly 10% of its nominal GDP – in June of this year.

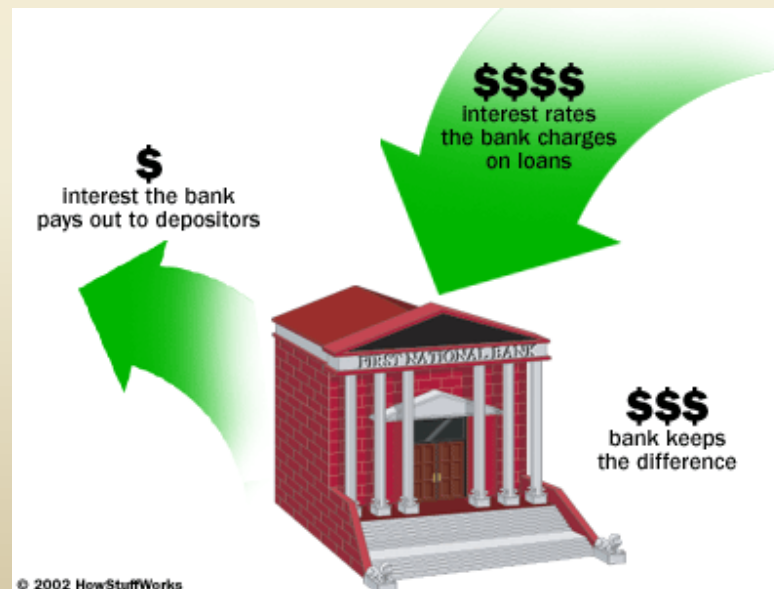


Source: National Central Banks, Bloomberg, Guggenheim Investments. Data as of 7/31/2012.

## Credit generation

In the multiplier model of credit creation (exogenous model) credit is generated by

- the state issuing a certain amount of cash to commercial banks
- banks transforming reserves into bank money through a multiple expansion: fractional reserve banking.



Example: suppose a deposit  $K$  of Fr. 1'000.00 and that the legal reserve requirement (liquidity ratio)  $R = 10\%$  and that the difference ( $I$ ) is invested within the banking system (i.e. deposited in another bank):

Bank 1	assets	liabilities
Reserve	100	1'000
Investment	900	
total	1'000	1'000

Bank 2	assets	liabilities
Reserve	90	900
Investment	810	
total	900	900

Bank N	assets	liabilities
Reserve	1'000	10'000
Investment	9'000	
total	10'000	10'000

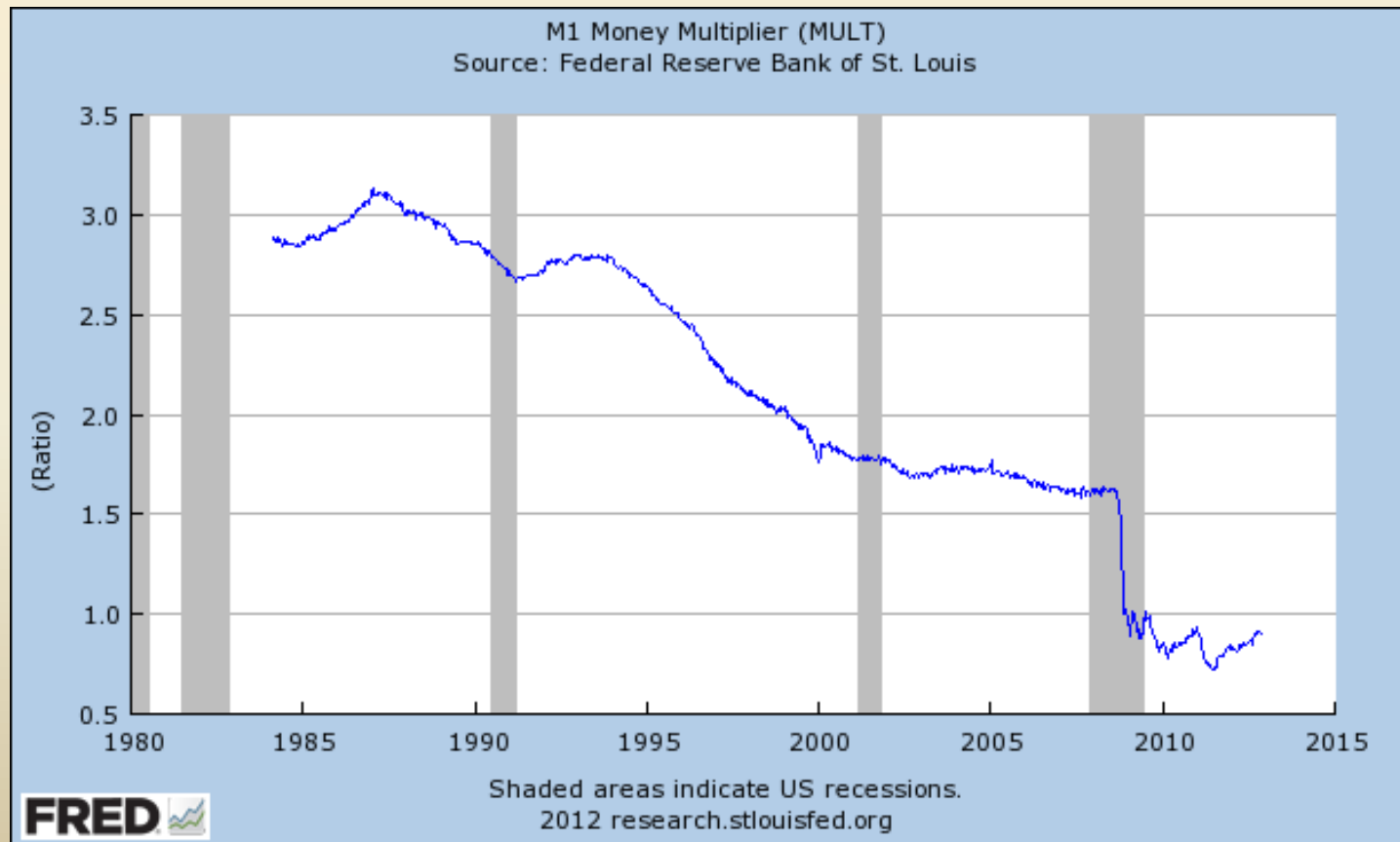
In other words, a deposit of Fr. 1'000.00 has generated a total flow of Fr. 10'000.00, which is the total amount that the banking system has in aggregate. Put differently, for any additional franc in reserves, the banking system creates Fr. 10.00 of additional deposits. Thus for a liquidity ratio of 10%, the amount of money has multiplied tenfold:  $10 = 1/0.1$ . Thus if  $r$  decreases (say at 9% = 0.09), the amount of credit increases by 1 point:  $11 = 1/0.09$ .

Hence, the money multiplier,  $M = 1/r$ , expanded to include public cash deposits  $c$ :  $M = (1+c)/(r+c)$

The multiplier describes the relationship between money at the central bank (the monetary base)  $M_0$ , and public money ( $M_1 = \text{currency}$ ,  $M_2 = M_1 + \text{savings}$ ,  $M_3 = M_2 + \text{deposits}$ ).

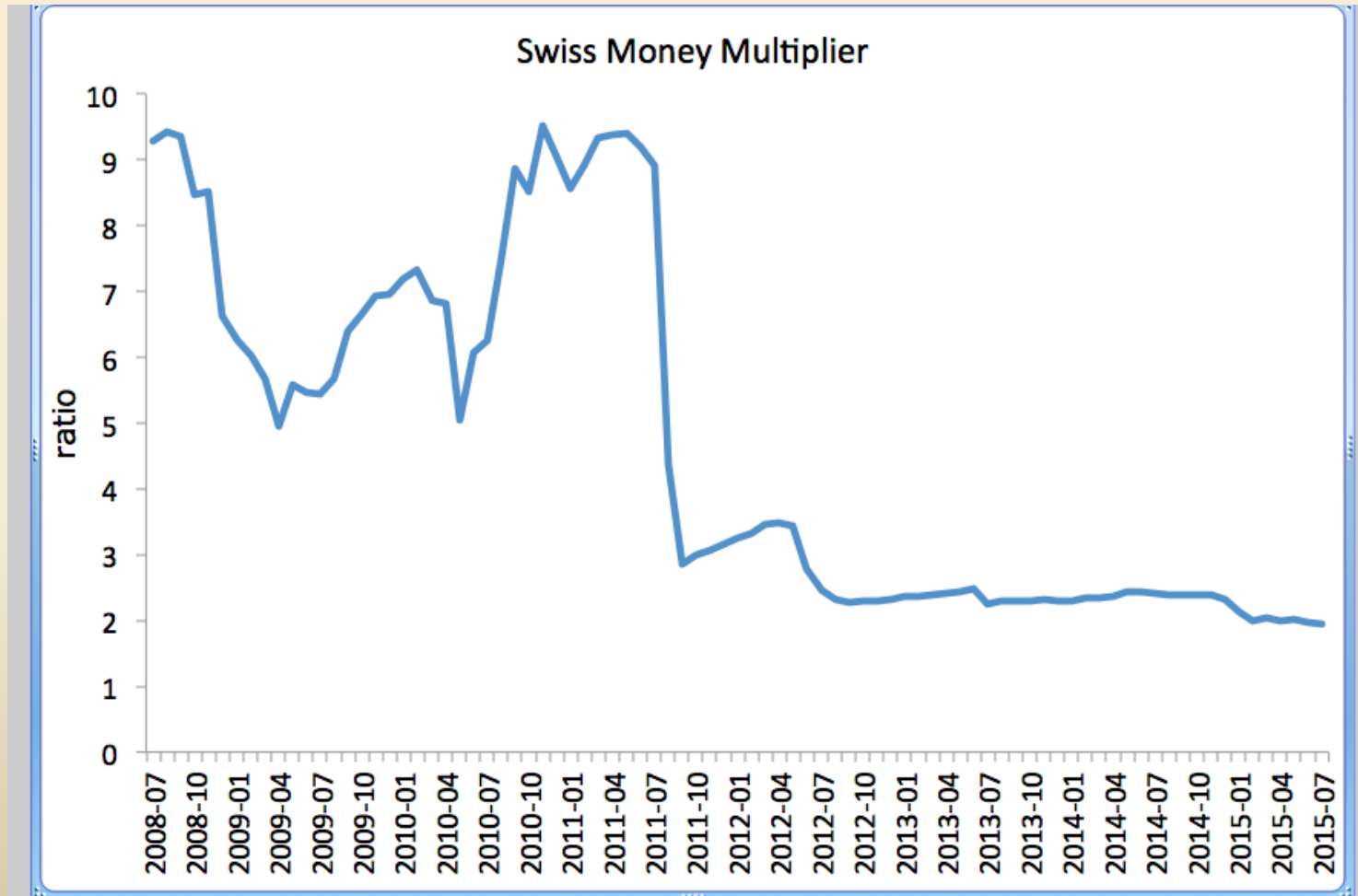
$M$  is typically high, i.e. bigger than 2, during periods of big growth and high interest rates; it is low (smaller than 2) during phases of slow growth.

e.g.US:  $M < 1 \Rightarrow$  1 printed dollar leads to less than one dollar in the real economy

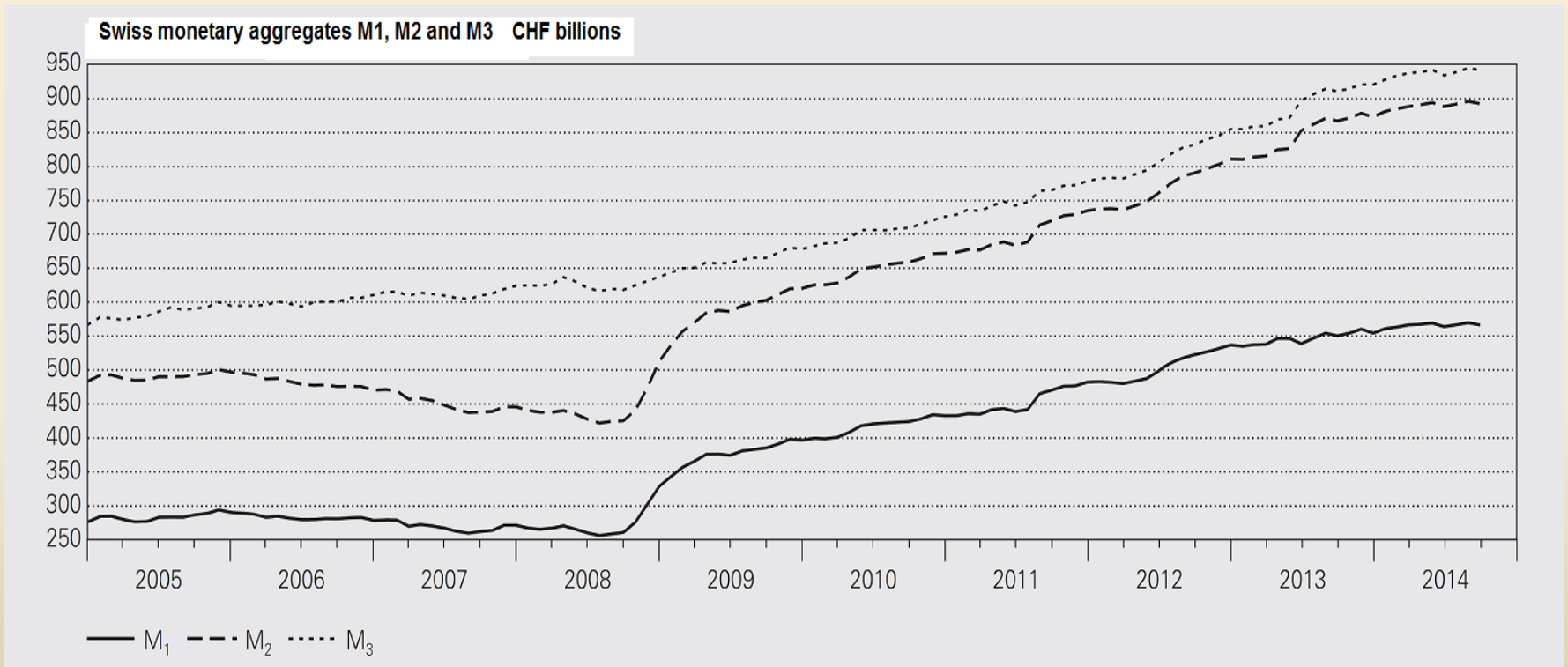




e.g. CH after 2008, the multiplier is falling



... and more money is made available



## Managing the supply of money

---

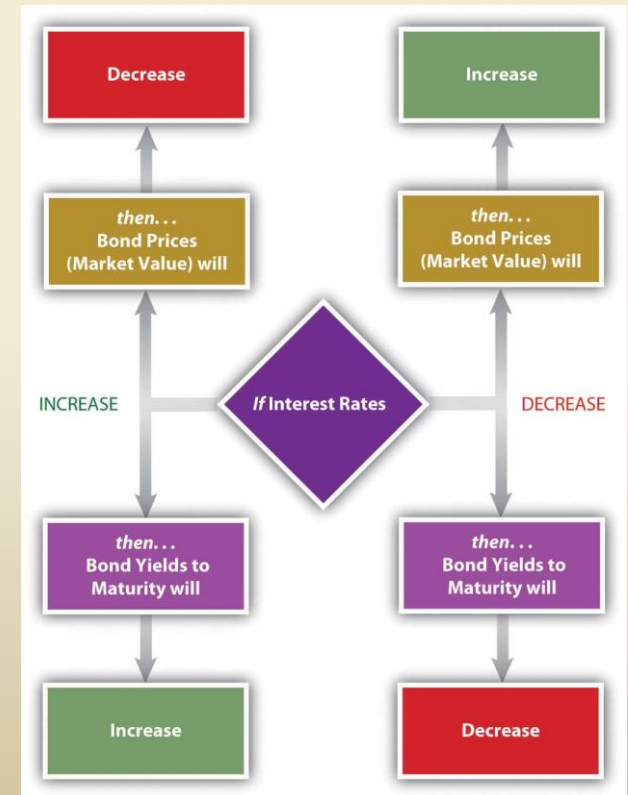
In order for the central bank to determine whether to increase/decrease the rate of interest ( $r$ ) directly or indirectly by increasing/decreasing the supply of money ( $M$ ), it determines

- the liquidity available on the money market by measuring the main money categories  $M1$ ,  $M2$ ,  $M3$  and
- estimates the demand for money.

Since the demand for money (L) cannot be accurately predicted (let alone accounted for), the central bank may take a wrong decision concerning (M) (and (r)).

If (M) is low, money can be printed, but what happens if there is excess supply of money?

The central bank it can issue bonds to mop up the excess supply.



e.g.CH: since the Swiss financial and banking sectors are often taken to be safe havens for investors, the capital inflow increases the supply of money beyond what the SNB has decided, bringing about the disequilibrium relative to the demand for money.

This means that supply of money must be reduced so as to keep the same rate of interest and hence the SNB can issue bonds.

Alternatively it may mop up the market by hosting the excess supply as foreign reserves (and increasing its liabilities)

## Price stability

---

The monetary policy is put into use for keeping prices stable.

Suppose the state seeks to offset an inflationary surge. It will need to understand its nature since inflation can either be demand-pull or cost-push:

- In the case of a demand-pull inflation (AD shift) it will need to contract the aggregate demand (AD) by discouraging mainly consumption expenditure. The central bank will then increase i-rate.

However, higher interest rates have a dual effect on

- Borrowers face higher costs for credits, mortgages or debt-financing firms.
- Lenders and in particular international investors will see it as a short-run opportunity thus increasing the capital inflow and the money supply.

- In the case of a cost-push inflation (leftward shift of the SRAS) mainly due to raises in wages and increased prices of imported factors of production, may lead to unemployment if the firms want to keep the prices of their goods/services unchanged.

In this case the central bank can also seek to use its monetary policy to deal with the issue in a similar fashion as that of demand-pull inflation.

However, since demand-side policies are likely to cause unemployment to rise, the supply-side policies are preferred.