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**3ºE2 - Spring 2025**

**Mercados Financieros**

L1 – The Financial System

January 20<sup>th</sup>, 2026

# Summary of previous class

**Principal aim:** to know and understand the financial system

**Structure:** 9 lessons

**Methodology:** The importance of participation

For next week I need three voluntaries:

- From Bretton Woods to Vietnam.
- Germany hyperinflation
- How did George Soros "break the Bank of England"?

#	Lesson
1	The financial system (1 week)
2	Central Banks (1 week)
3	Money markets and interest rate risk (1 week)
4	Credit institutions (2 week)
5	Other financial institutions (1 week)
6	Capital markets and fixed income (3 week)
7	Equity markets (2 week)
8	Sovereign debt market (1 week)
9	Derivatives (1 week)

## Financial assets classification

### Governments

Government budget  
Incomes - Expenses

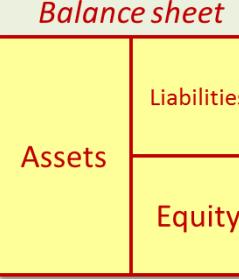
### Central banks



### Financial entities



### Companies



### Derivatives

#### Basic products



#### Structured products



Can we predict the future?

- Classical models
- Cycles
- Chaos theory
- Behavioral finance
- Black swans



# What we are going to do today?

## L1. The financial system (I)

- **The importance of information**
    - Efficient markets
    - Arbitrage      What is an instant?
  - **First steps with accounting**
  - **Spanish financial system**
  - **Time and money**
    - First steps
- 
- 



# Before starting

## Calendar:

	L	M	X	J	V	S	D
Enero	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	1
Febrero	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	1
Marzo	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31	1	2	3	4	5
Abril	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26

Midterm?



# Information. Efficient-market

- **Efficient-market hypothesis (Fama, 1965).**
  - A market in which prices always “**fully reflect**” available information is called “**efficient**”. Nobody can know the future price
  - **Weak form:** market reflect all information regarding **historical prices**. **Technical analysis** doesn't work.
  - **Semi-strong form:** market reflect also all public information regarding the company. **Fundamental analysis** doesn't work.
  - **Strong form:** market reflect all information... **There are no insiders.**



# Information. Arbitrage

- **What is arbitrage?**
  - Stocks of the same company are traded in two different markets. ¿What if the stock have different prices in each market? An example of arbitrage is to take advantage of the situation and get a gain without risk.
- **Is there any relationship between arbitrage and efficient markets?**

## Nathan Rothschild

### Waterloo legend (18 June 1815)

After Waterloo battle a Rothschild agent fly to London (beating Wellington's envoy by many hours)

Nathan made the market believe that Waterloo was lost, and took advantage of his exclusive Information.



1815 – Many hours

## Flash Boys

### Spread Networks (2010)

The construction of \$300 million project, a 827-mile cable running as straight as possible, through mountains and under rivers, from Chicago to New Jersey, that would reduce the journey time for data from 17 to 13 milliseconds.

They connected the Chicago Mercantile Exchange (futures and options) to Carteret, New Jersey (home to the Nasdaq data center)

How long does an instant take?

High-frequency trading

2010 – 4 milliseconds



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# First steps with accounting

## How do we create a company?

1. Register the name in the business register.
2. In the case of a limited liability company (S.L), we need, at least an equity of 3.000€.
3. We go to the notary with the **statutes**.
4. Tax authorities: inscription (IAE) and fiscal number.
5. Inscription in the **business register**.

We ask for a 2.000€ loan

2.000€	Cash	Loan	2.000€
--------	------	------	--------

Assets	Liabilities & Equity
Cash: 3.000€	Equity: 3.000€
Loan: 2.000€	
Cash: 5.000€	Equity: 3.000€
Cash: 1.000€	Loan: 2.000€
Asset A: 4.000€	Equity: 3.000€

We buy an asset A for 4.000€

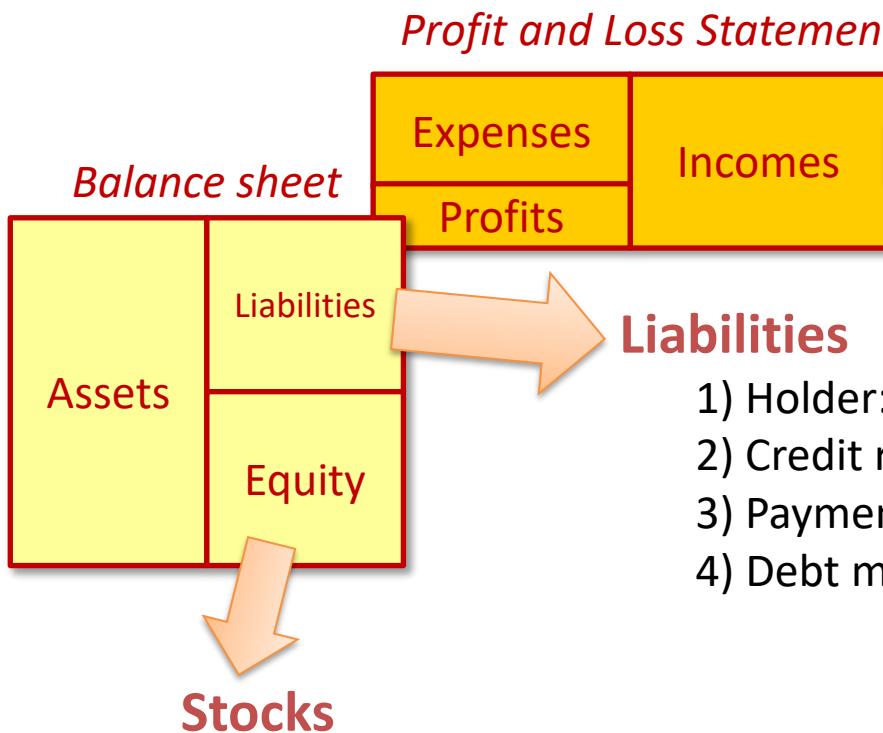
4.000€	Asset A	Cash	4.000€
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¿What is the difference between Equity & Liabilities?



# First steps with accounting

## Differences between Stocks and Liabilities



### 5) Taxes

Dividend is paid (when paid) after Company taxes. Bonds payments are paid as financial expenses.

### 6) Return and risk

1) Holder: Creditor (debt)

2) Credit risk: relative priority

3) Payments: fixed or at least certain payment

4) Debt markets

**Liabilities:** The creditor has to be paid.

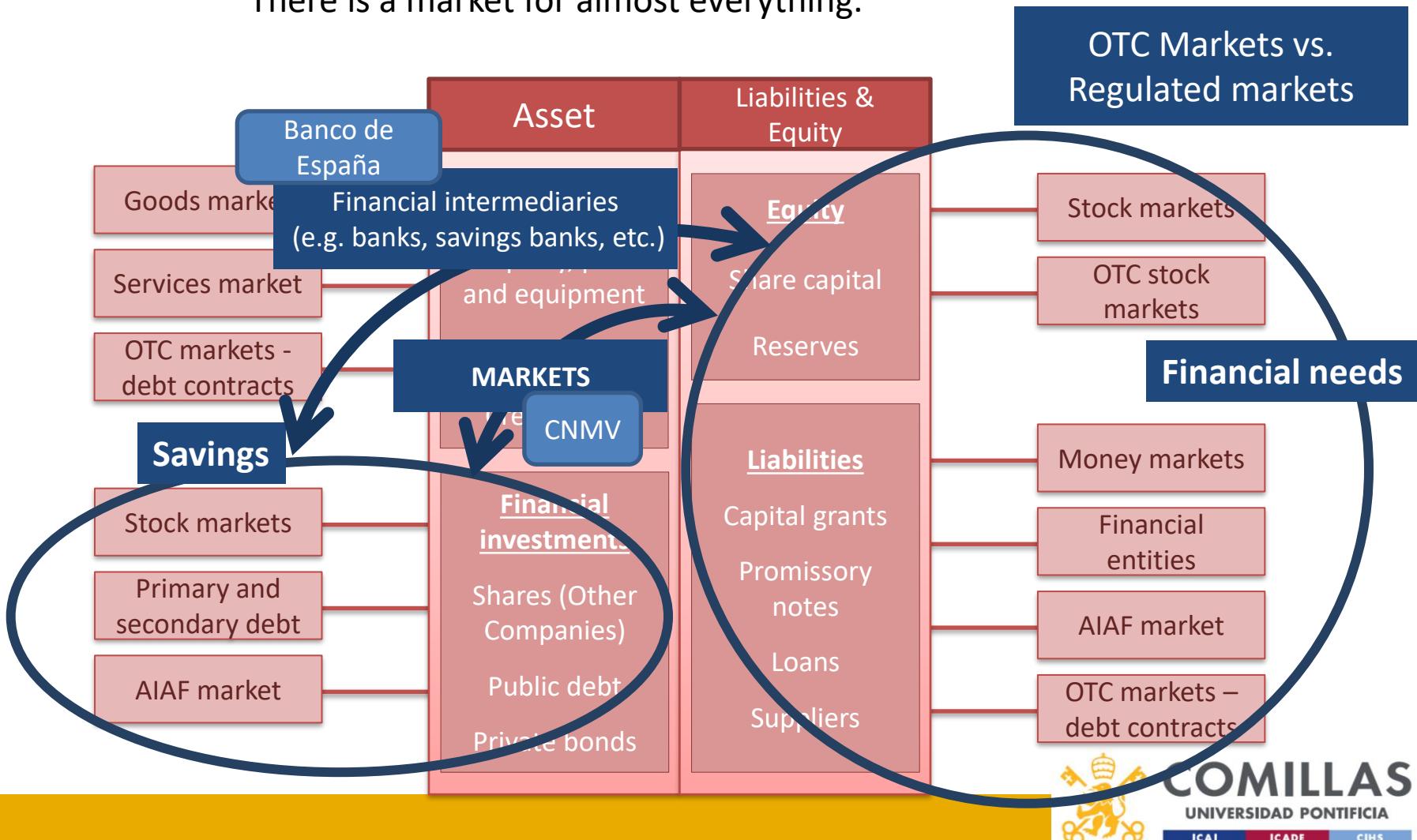
**Stocks:** There is no obligation to pay out dividends

- 1) Holder: Ownership
- 2) Credit risk: last on the list
- 3) Payment: dividends
- 4) Stock markets

# First steps with accounting

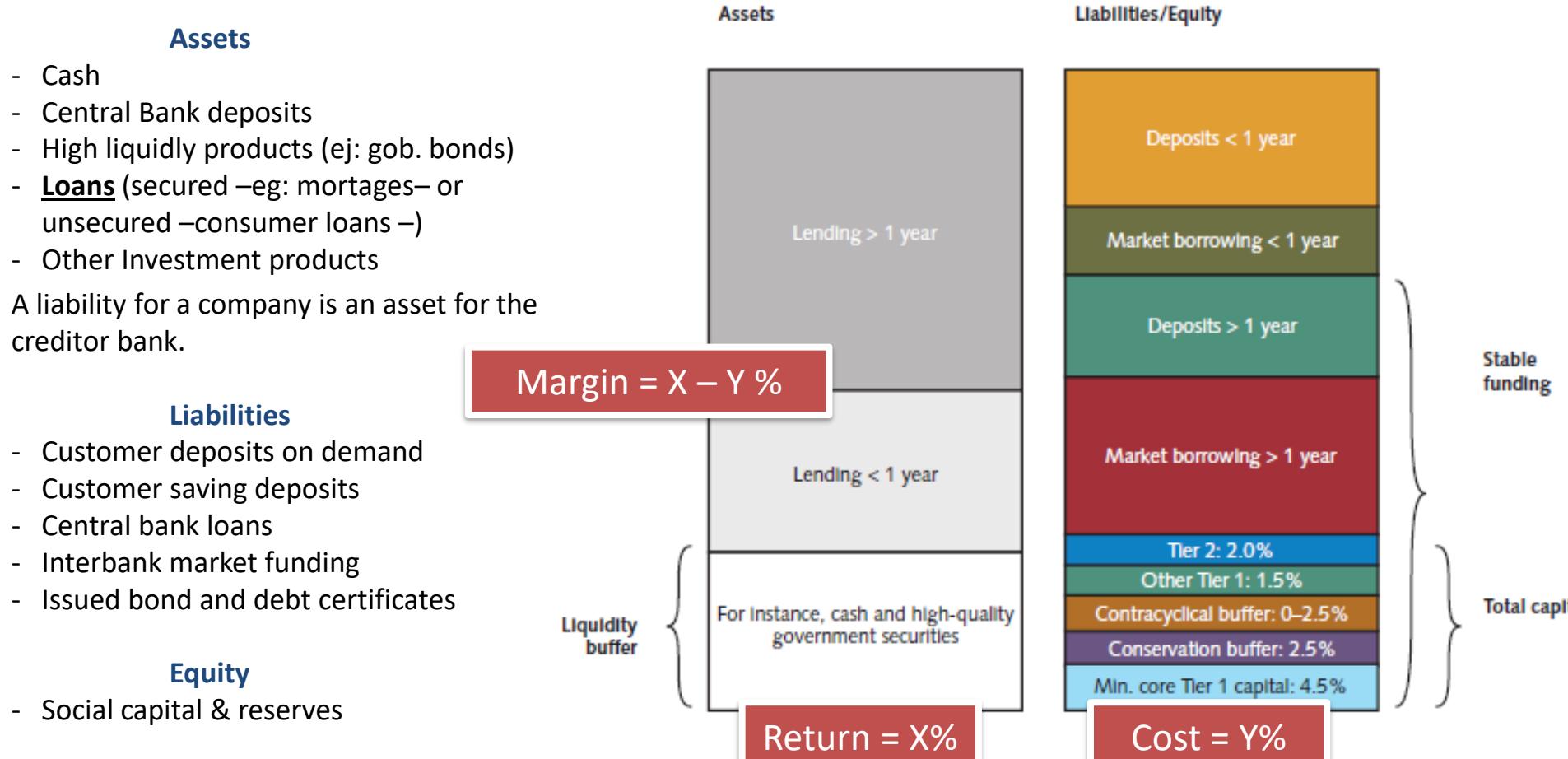
Which balance sheet elements could be traded in a market?

There is a market for almost everything.

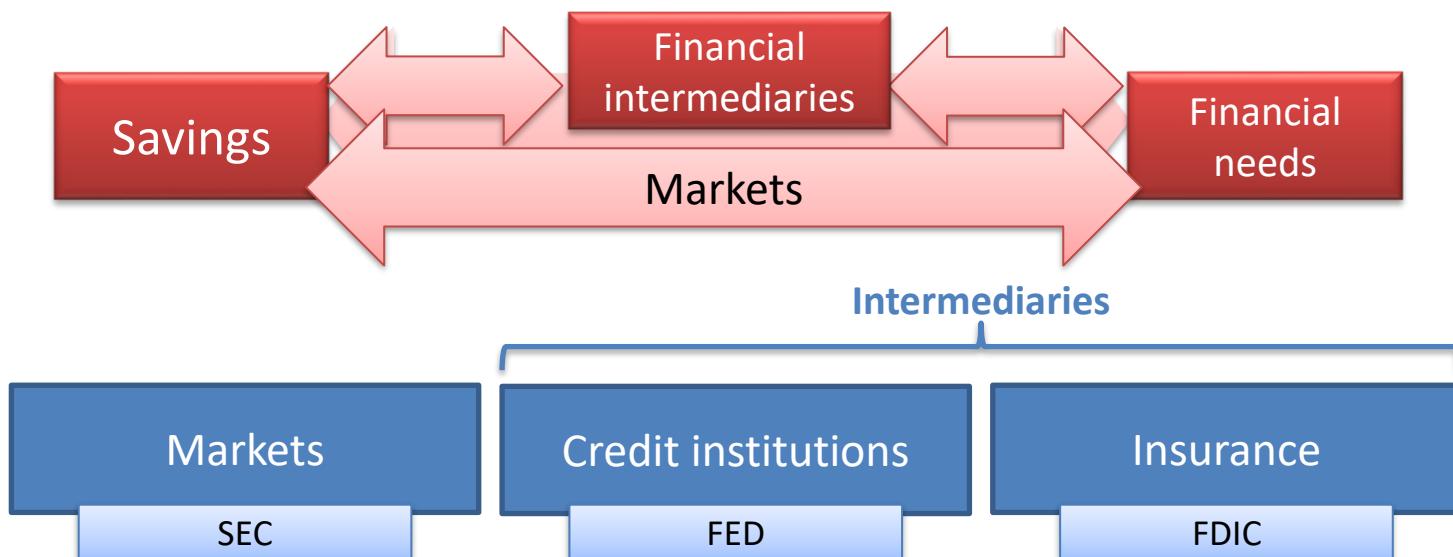


# First steps with accounting

## How is the balance sheet of a credit institution (banks and equivalents)?



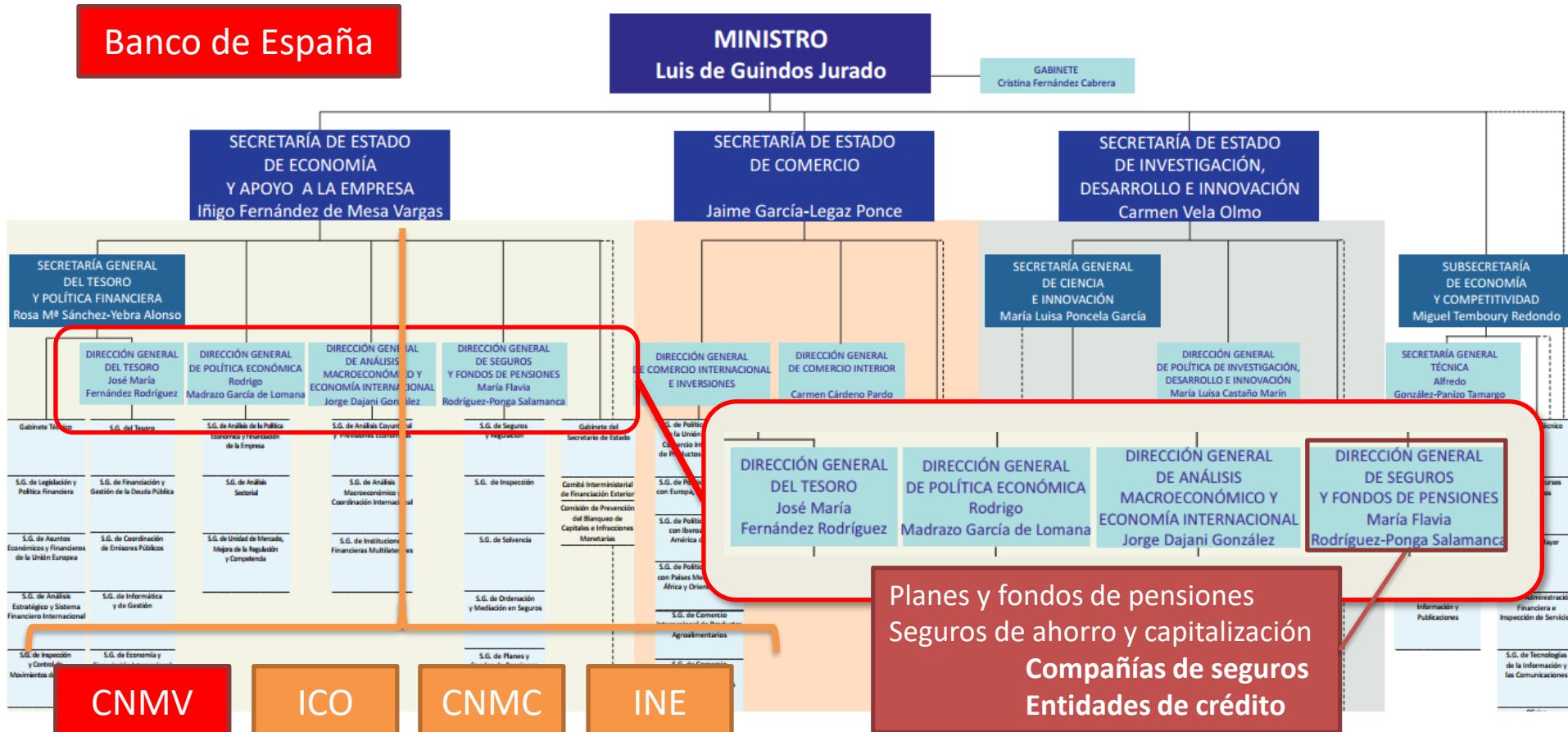
# Summary



Who supervises what?	Credit institutions	Markets	Insurance companies
FED	Practically all their activity is supervised by the Federal Reserve (FED) except when...	...the interbank market and the public debt market.	
SEC	...they operate as Investment Services Firms (ISFs)	The SEC (Securities Exchange Comission) supervises all markets except...	...except when they operate as Investment Services Firms (ISFs)
FDIC	.....or sell insurance or pension funds.		Insurance companies are supervised by the FDIC (Federal Deposit Insurance Corporation)...



# Spanish financial system



**CNMV: Comisión Nacional del Mercado de Valores**

# Spanish financial system

## Banco de España. Competences

As member of the EBS

As central bank

- Defining and implementing the Eurosystem's monetary policy
- Foreign exchange transactions consistent
- Payment systems in the euro area  
(emergency liquidity assistance (ELA) operations.)
- Issuing legal tender banknotes (emision de billetes)

To be seen in Lesson 2 and 3

Markets

Interest rate risk

Interbank market

Financial assets

EURIBOR

Term Structure of Interest Rates (TSIR)

Financial entities related with markets

- mutual guarantee societies.
- counterguarantee societies
- appraisal companies

Financial institutions

Banks

Official Lenders

Saving banks

Corporate saving

financial establishments

- Spanish banks
- EU bank branches
- Non EU bank branches

ICO

- Saving banks (cajas de ahorro)
- CECA (now banking asoc.)

- Cajas Rurales
- Credit unions (cooperativas de crédito)

- Mortgage loans companies.
- Leassing companies.
- Renting companies
- Funding agencies

Most savings banks are bailed out and transformed into banks

As a Central Bank is responsible for overseeing things related to **currency, Interest Rate Risk and financial intermediaries** (banks , saving banks ... ) ([Link](#))



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# Spanish financial system

## CNMV (Comisión Nacional del Mercado de Valores). Competences

Financial assets markets

- Stock market
- Public debt (national issues performance and supervision is competence of Banco de España)
- AIAF: Corporative debt.
- MEFF: Option and futures
- MEFF: Option and futures of companies

The purpose of the CNMV is to ensure the **transparency** of the Spanish market and the **correct formation of prices** in them, and to **protect investors**.

Investment services companies

- Sociedades de valores (brokers and servicers that can operate on their own – they can buy)
- Agencia de valores (brokers and servicers that can not operate on their own)
- Portfolio management company (they can only do portfolio management)
- EU and non EU investment services companies.

Credit institutions

- Spanish credit institutions
- EU credit institutions
- Non EU credit institutions

Credit institutions give also investment services.

Other financial institutions

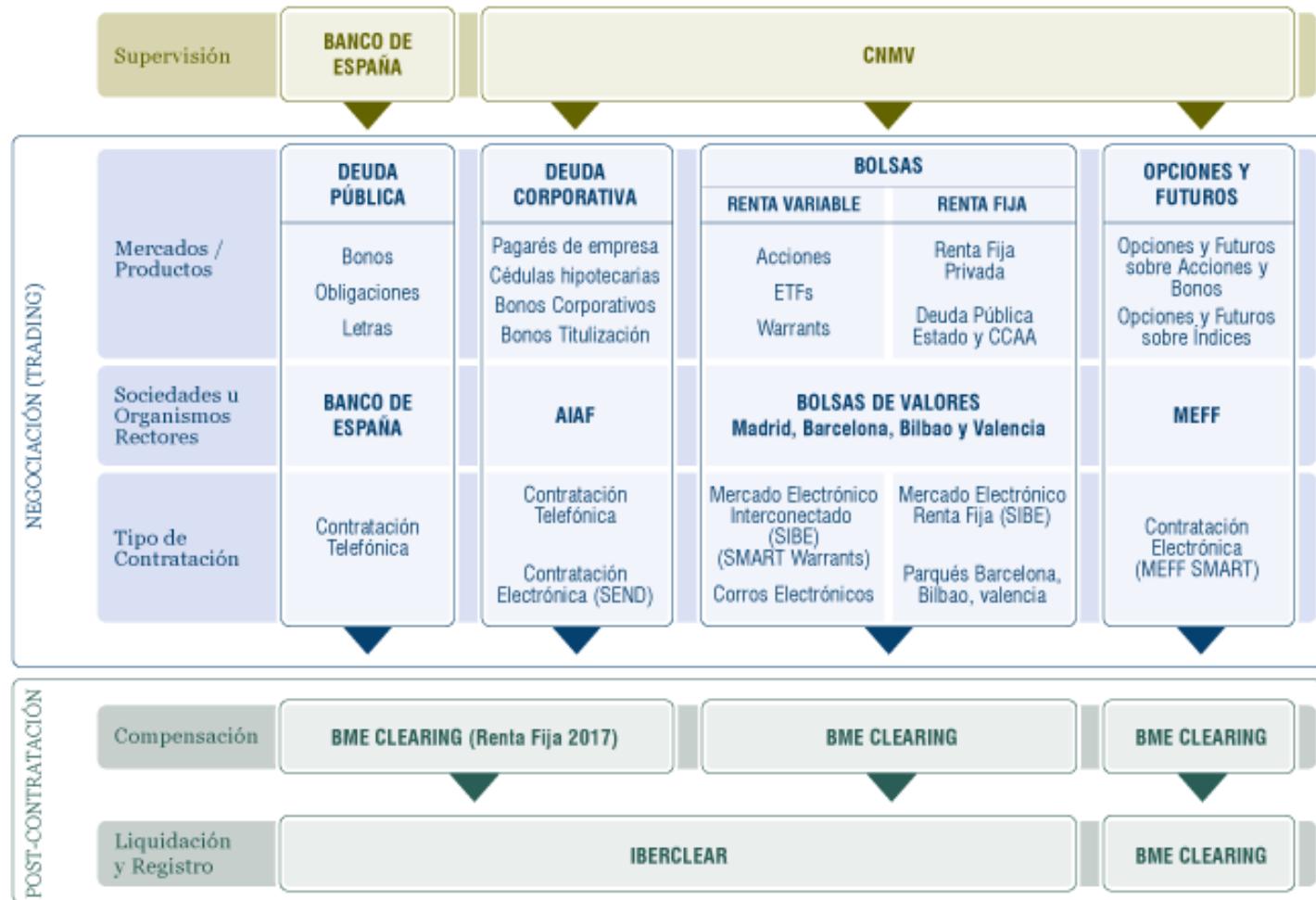
- Collective Investment Institutions
- Sociedades y fondos de capital riesgo (Venture Capital and Private Equity)
- Securitization funds (Gestoras de fondos de Titulización)
- Investment guarantee funds.



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# Spanish financial system

## EL MERCADO DE VALORES ESPAÑOL: MERCADOS REGULADOS



FUENTE: Bolsa de Madrid



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# First steps. Time and money

What do you prefer? 100€ now or 100€ within a year.

Simple interest:

$$I = P \cdot r \cdot n$$

Compound interest:  $S = P \cdot (1 + r)^n$

Non-annual compounding: the **effective rate of interest**.

Annual Percentage Rate (APR – TAE in spanish)

$i_x$ : **Nominal rate** payable in  $x$  periods.

$$1 + r = \left(1 + \frac{i_x}{x}\right)^x$$

n	1	2	3	4	5
Deposit	100,00	100,00	100,00	100,00	100,00
Interest	10,00	10,00	10,00	10,00	10,00
Take out	10,00	10,00	10,00	10,00	10,00

n	1	2	3	4	5
Deposit	100,00	110,00	121,00	133,10	146,41
Interest	10,00	11,00	12,10	13,31	14,64
Take out	-	-	-	-	14,64

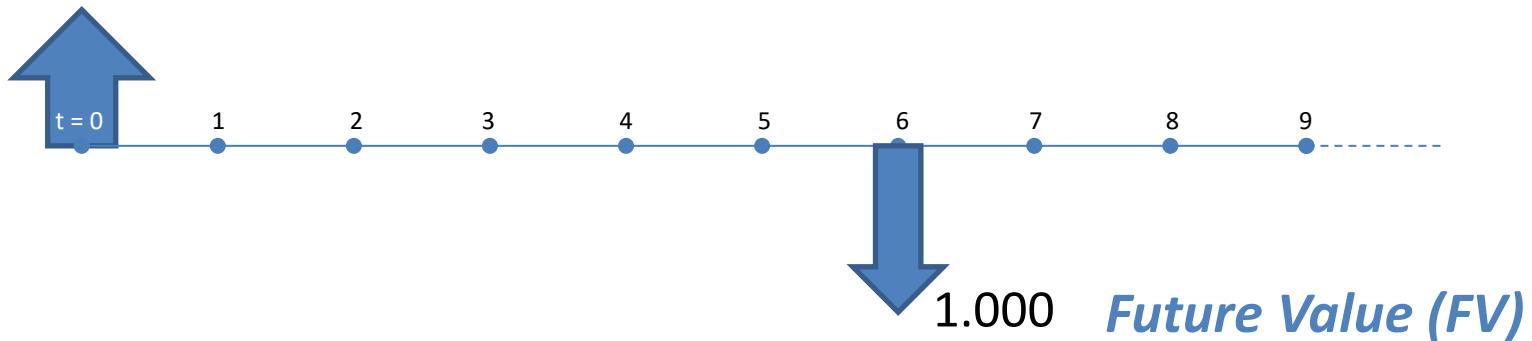
Example:

rate (r): 10%

periods (n): 5

amount (P): 100€

# First steps. Time and money

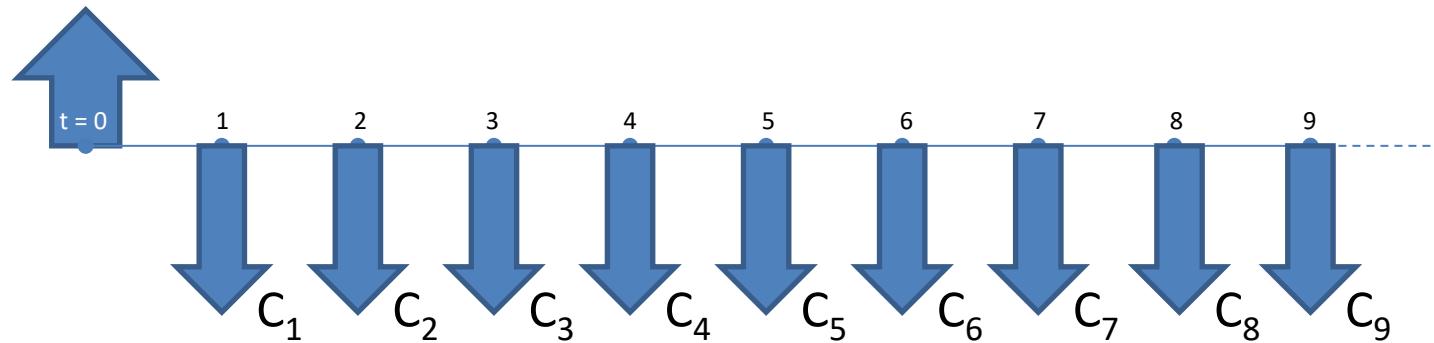


How much must I invest at a rate of 6% payable annually  
to obtain 1.000€ after 6 years?

$$I = \frac{1.000}{(1 + 0,06)^6} = 704,96$$

*Present Value (PV)*

# First steps. Time and money



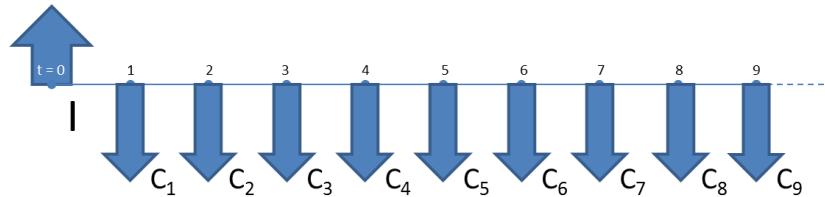
## Cash flow

$$PV = \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + \dots + \frac{C_9}{(1+r)^9} = \sum_{n=1}^9 \frac{C_n}{(1+r)^n}$$

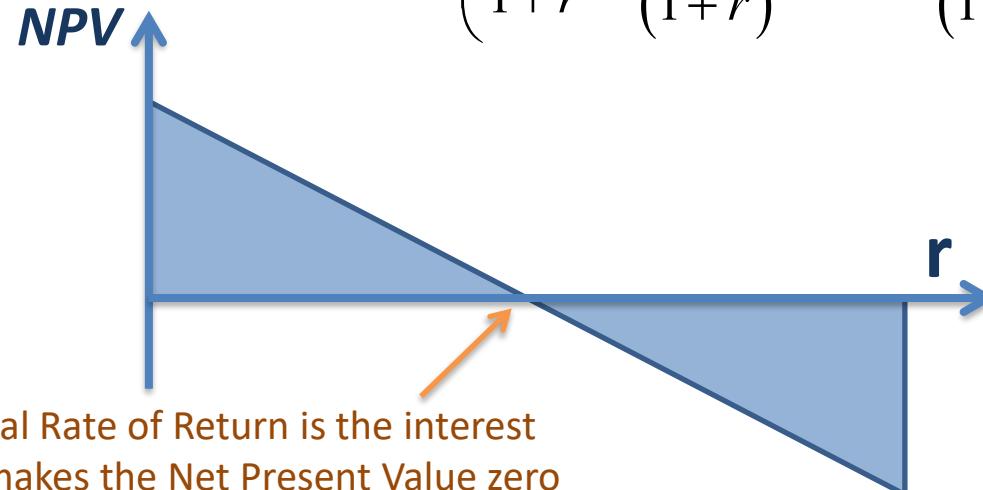
$$\sum_{n=1}^{13} \frac{1}{(1+r)^n} = \frac{1 - (1+r)^{-13}}{r}$$

# Continuing with the time

## Internal rate of return (IRR)



$$NPV = \left( \frac{C_1}{1+r} + \frac{C_2}{(1+r)^2} + \dots + \frac{C_9}{(1+r)^9} \right) - I$$



The Internal Rate of Return is the interest rate that makes the Net Present Value zero

# What will we do next week?

We will talk about money

How does the monetary policy work?

Both in theory and in practice

Also, we will talk about the instruments of the Eurosystem

I need three voluntaries:

- From Bretton Woods to Vietnam.
- Germany hyperinflation
- How did George Soros "break the Bank of England"?

- No more than 5 minutes.
- It has to fit with the subject.
- We have to learn a moral.
- It has to be exciting.

# Thanks