COMILLAS
UNIVERSIDAD PONTIFICIA
ICAI ICADE CIHS

ICADE International
Fall 2024
Financial Markets

L4 – Credit Institutions

October 15th, 2025

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Summary of previous classes

Lesson 1.
Introduction
Spanish financial sector

Function of Financial Markets and financial intermediaries
Financial Market instruments
Understanding financial markets through the Financial Crisis (Subprime)
An overview of Financial Risks

Evolution of the financial system

Lesson 2.
EMU and
monetary policy

Central Banks: origins, structures and functions
The European Central Bank (ECB) and the Monetary policy
The creation of money: What is money?
Supply and demand: monetary base

Monetary policy

Lesson 3.
Interest rate risk and money markets

Concepts and classes
Understanding interest rates
The yield curve (risk and term structure)
Interbank market
Commercial paper and repos

What is the interest rate?
- EURIBOR / LIBOR
- Yield Curve
- Central bank interest rate

Interest rates

What are we going to do this week?

- **Continuing with the time value of money**
  - Internal rate of return (IRR)
  - Weight Average Cost of Capital (WACC)
- **Introduction to credit institutions**
  - What is a bank?
  - A Bank balance sheet
  - What are the risks Banks have to manage? –first approach–
- **Credit institutions' products**
  - Loans
  - Line of credit
  - Bills of exchange
  - Letter of credit
- **Regulation of credit institutions**
- **Evolution of the Spanish banking sector**
- **Exercises and notions review**

L4. Credit institutions

Midterm (22nd Oct.)

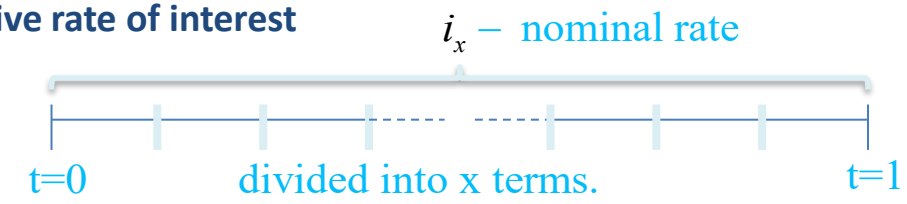
- 20 test questions
- 2 short questions
- 1 exercise

Continuing with the time value of money

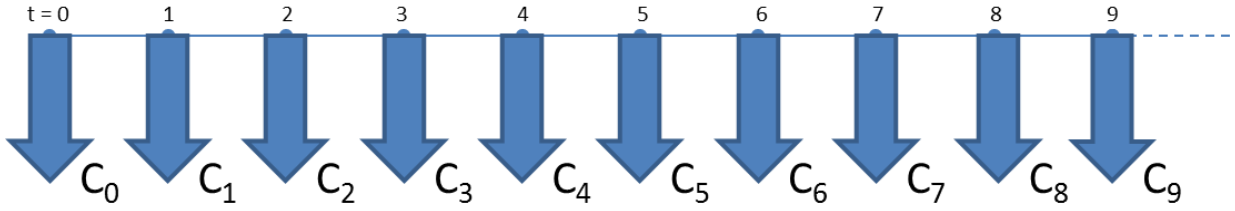
Interest rate

Non-annual compounding: the effective rate of interest

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



Cash flow



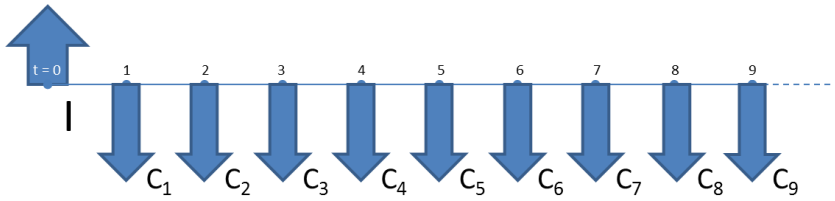
Net Present Value (NPV)

$$NPV=C_0+\frac{C_1}{1+r}+\frac{C_2}{(1+r)^2}+\ldots+\frac{C_9}{(1+r)^9}$$

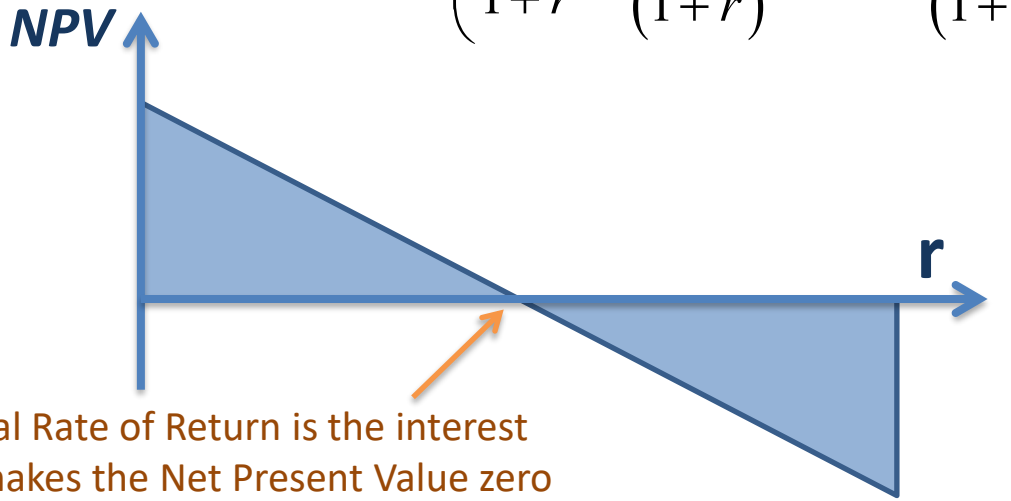
$$\sum_{n=1}^{13}\frac{1}{(1+r)^n}=\frac{1-(1+r)^{-13}}{r}$$

Continuing with the time value of money

Internal rate of return (IRR)



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



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

Continuing with the time value of money

POTENCIA(1+i;n)

=D2/POTENCIA(1+Rate;D1)

POTENCIA(número; **potencia**)

	C	D	E	F
	1	2	3	4
	4.000	4.000	4.000	4.00
	3.636	l+Rate;D1)	3.005	2.73

	A	B	C	D	E	F	G
1	Time	0	1	2	3	4	
2	Q	- 10.000	4.000	4.000	4.000	4.000	
3	Q/(1+i)^n	- 10.000	3.636	3.306	3.005	2.732	
4							
5		Rate	10,00%				
6							

VNA =VNA(Rate;B2:F2)

VNA(**tasa**; valor1; [valor2]; [valor3]; ...)

	A	B	C	D	E	F
1	Time	0	1	2	3	4
2	Q	- 10.000	4.000	4.000	4.000	4.000
3	VAN	=VNA(Rate;B				
4						
5		Rate	10,00%			

VNA(i;Q1:Qn)

VNA =TIR(B2:F2)

TIR(**valores**; [estimar])

	A	B	C	D	E	F
1	Time	0	1	2	3	4
2	Q	- 10.000	4.000	4.000	4.000	4.000
3	VAN	=TIR(B2:F2)				

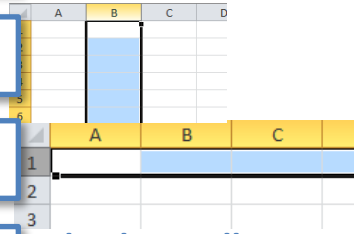
TIR(Q1:Qn)

=B1 relative cell reference

=$B1

=B$1

=B1 absolute cell reference



Continuing with the time value of money

TIR
11,03%

Año	0	1	2	3	4	5	6	7	8	9	10
FCF	- 1.000.000	170.000	170.000	170.000	170.000	170.000	170.000	170.000	170.000	170.000	170.000

TIR
6,00%

Año	0	1	2	3	4	5	6	7	8	9	10
FCF	- 500.000	118.698	118.698	118.698	118.698	118.698	-	-	-	-	-

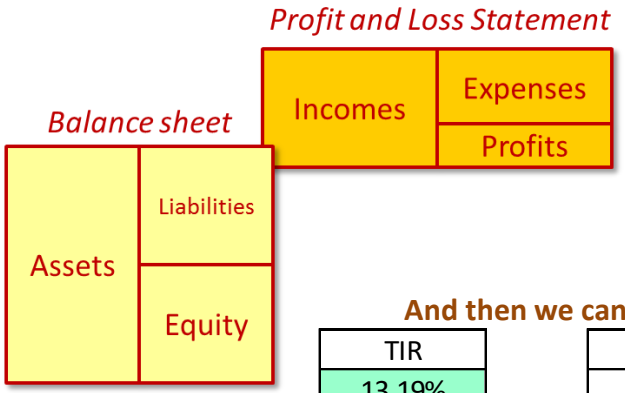
TIR
13,19%

Año	0	1	2	3	4	5	6	7	8	9	10
FCF	- 500.000	51.302	51.302	51.302	51.302	51.302	170.000	170.000	170.000	170.000	170.000

What investment do you prefer?

Depends on the risk… imagine 6% investment is less risky… and 11,03% or 13,19% depends on your performance and work.

We are anticipating several classes:



Company project:

TIR
11,03%

Año	0	1	2	3
FCF	- 1.000.000	170.000	170.000	170.000

We go to the bank and we ask for a 6% loan of 0,5M€

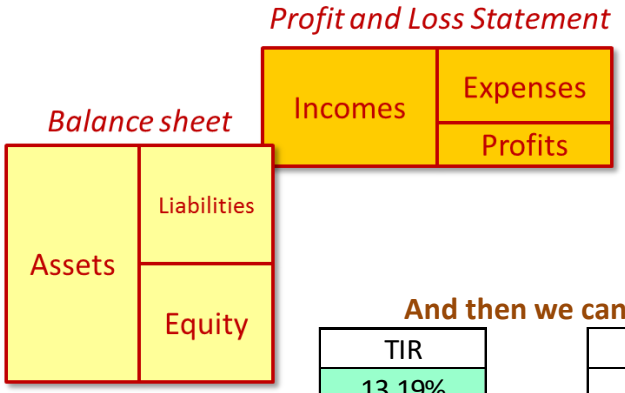
TIR
6,00%

Año	0	1	2	3
FCF	- 500.000	118.698	118.698	118.698

And then we can get:

TIR
13,19%

Año	0	1	2	3	4	5	
FCF	- 500.000	51.302	51.302	51.302	51.302	51.302	170



Company project:

TIR
11,03%

Año	0	1	2	3
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We go to the bank and we ask for a 6% loan of 0,5M€

TIR
6,00%

Año	0	1	2	3
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And then we can get:

TIR
13,19%

Año	0	1	2	3	4	5	
FCF	- 500.000	51.302	51.302	51.302	51.302	51.302	170

Talking about the **Past**

ROA: 11,03%

Return of Asset

Kd: 6%

Cost of debt

ROE: 13,19%

Return of Equity

Talking about the **Future**

We know:

- Equity (E): 0,5M€
- Debt (D): 0,5M€
- Cost of debt (Kd): 6%
- Taxes rate (t)

We don't know:

- WACC
- Ke (Expected return)

$$WACC = K_e \frac{E}{D+E} + K_d(1-t)\frac{D}{D+E}$$

(WACC): Weight Average Cost of Capital

We go to the bank and ask for money

What is a bank?

Some general notions:

- Commercial banking, retail banking, corporate banking, and private banking… and investment banking,
- Who do you think you are talking with? regional office, committees, decision makers…
- Importance of the procedure: follow the procedure is often more important than not taking risks.
- Business plan: make it easy to them and let them chalk it up (*que se apunten un tanto*).

5* hotel built in 2007
Inversion cost: 50M€
25.500sqm built + Golf + Spa

Lets review what is a loan…

2011 – Bankruptcy procedure
€49M debt with Privileged senior debt Claims of 34,7m€
34,7M€ privileged senior debt.
27M€ syndicated credit (5 banks) sled cats

Offer: Cash vs assumption debt

Loan calculation

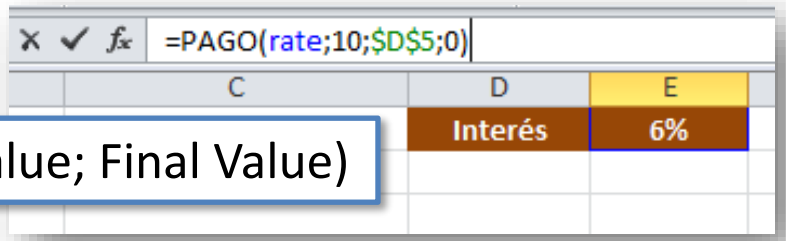
Loan repayments

According to the **type of collateral**, lending can be divided into:
Unsecured lending – e.g. consumer loans
Secured lending – e.g. mortgage loans
According to the **interest rate**: fixed or floating rate

- **Initial loan =** 1.000.000€
- **Interest rate =** 6%
- **Loan term =** 10 years
- Fully-amortized, level annual debt service payments consisting of interest and principal payments payable at the end of each year
- **Annual Constant** to be calculated using excel

Calculate for each year using excel:

- Annual constant to be paid.
- Financial expenses to be paid each year.
- Principal payments to be paid each year.



PAGO(rate; term; Initial Value; Final Value)

Loan calculation

Loan repayments

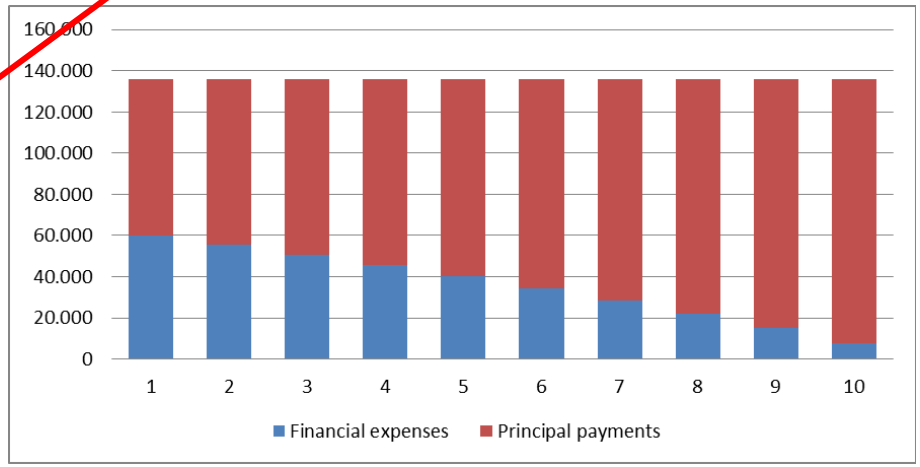
Time	0	1	2	3	4	5	6	7	8	9	10
Cash flow / Debt service	- 1.000.000	135.868	135.868	135.868	135.868	135.868	135.868	135.868	135.868	135.868	135.868
Financial expenses		60000	55447,923	50622,72	45508,006	40086,409	34339,516	28247,809	21790,601	14945,959	7690,6391
Principal		75.868	80.420	85.245	90.360	95.782	101.528	107.620	114.077	120.922	128.177
Outstanding debt	1.000.000	924.132	843.712	758.467	668.107	572.325	470.797	363.177	249.099	128.177	- 0

What is the IRR of the Cash Flow/Debt Service?

What is the relation between financial expenses and principal payments?

Why is it important to separate financial expenses and principal payments?

Debt Service	135.868
Financial expenses	28.248
Principal payments	107.620



Other banking products

- **Line of credit:** An arrangement between a financial institution and a customer that establishes a maximum loan balance that the bank will permit the borrower to maintain. The borrower can draw down on the line of credit at any time, as long as he does not exceed the maximum set in the agreement.
- **Credit cards**

Example:

Maintenance cost	0,10%	0,008%	(monthly)
Interest rate	10%	0,797%	(monthly)
Quota	5.000 €		
Drawable limit	60.000 €		

New debt$_t$
Quota
Financial Expenses$_t$ = Od$_{t-1}$. Kd
Od$_t$ = Od$_{t-1}$ + New debt$_t$ – Quota + Financial Expenses$_t$
Od = Outstanding debt = Total owed

Month	1	2	3	4	5	6	7	8	9	10
Disposal	0 €	10.000 €	20.000 €	0 €	0 €	30.000 €	0 €	0 €	0 €	0 €
Total owed	0 €	10.000,00 €	25.079,74 €	20.279,73 €	15.441,44 €	40.564,58 €	35.888,04 €	31.174,22 €	26.422,81 €	21.633,51 €
Financial expenses	0 €	0,00 €	79,74 €	199,99 €	161,71 €	123,13 €	323,47 €	286,18 €	248,59 €	210,70 €
Quota	0 €	0 €	5.000 €	5.000 €	5.000 €	5.000 €	5.000 €	5.000 €	5.000 €	5.000 €
Maintenance cost	5,00 €	5,00 €	5,00 €	5,00 €	5,00 €	5,00 €	5,00 €	5,00 €	5,00 €	5,00 €

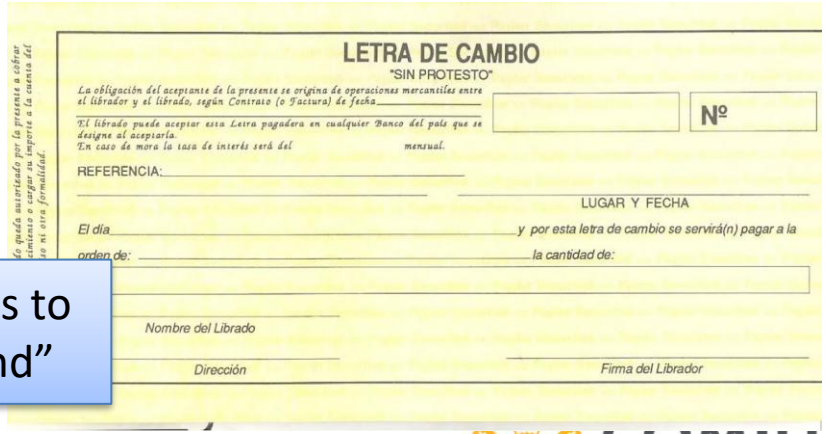
Other banking products

- **Bills of Exchange (letra de cambio):** A non-interest-bearing written order that binds one party to pay a fixed sum of money to another party at a predetermined future date. They are generally transferable by endorsements. Bills of exchange can be discounted at banks.

  - The person who writes out the order to pay is called the drawer (librador)
  - The person upon whom the bill of exchange is drawn (who is ordered to pay) is called the drawee (librado o aceptante).
  - The drawee may "accept" the bill.
  - The person who is entitled to receive the money from the acceptor is called the "payee“ (beneficiario o tomador)

Check, commercial paper (pagarés), bank endorsement…

Regarding bank endorsements: it has to be written: “payable on first demand”


LETRA DE CAMBIO

"SIN PROTESTO"

La obligación del aceptante de la presente se origina de operaciones mercantiles entre el librador y el librado, según Contrato (o Factura) de fecha

El librado puede aceptar esta Letra pagadera en cualquier Banco del país que se designe al aceptarla.
En caso de mora la tasa de interés será del mensual.

Nº

REFERENCIA:

LUGAR Y FECHA

El día y por esta letra de cambio se servirá(n) pagar a la orden de: la cantidad de:

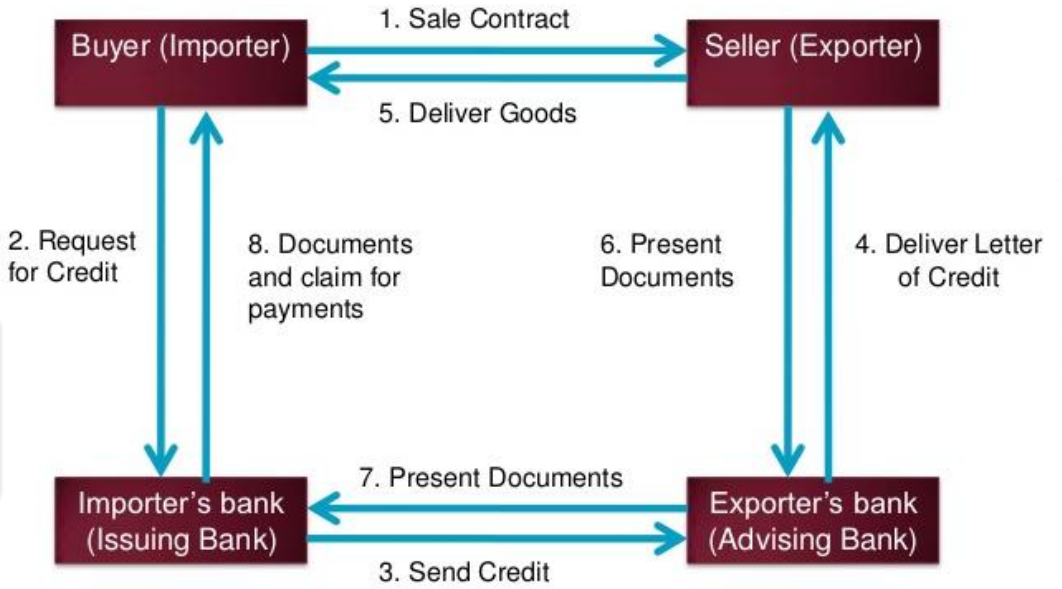
Nombre del Librado

Dirección

Firma del Librador

Other banking products

- **Letter of credit.** A letter of credit is a letter from a bank guaranteeing that a buyer's payment to a seller will be received on time and for the correct amount.
- **Documentary letter of credit.**



It is recommended to be unconditional, irrevocable and payable at sight, issued by a Spanish bank.

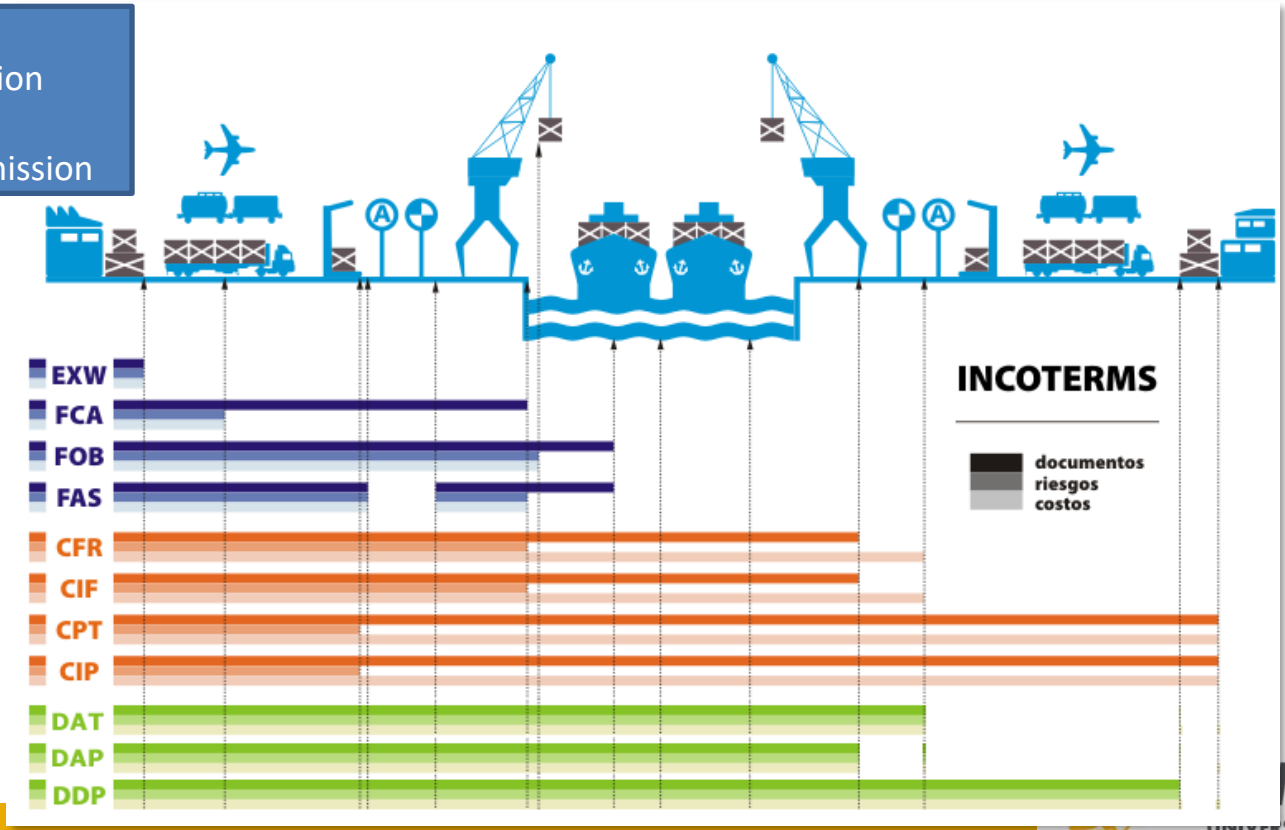
These contracts could include following documents:

- Bill of lading (BOL) is normally the document accepted by banks as proof that goods have been shipped
- Insurance documents
- SGS, AENOR, Bureau Veritas certificate

Other banking products

- **Documentary letter of credit.** (Annex: INCOTERMS)
- INCOTERMS (International Commercial Terms) are a series of pre-defined commercial terms published by the International Chamber of Commerce relating to international commercial law.

Cost
Documentation
Risks
Property transmission



Credit institutions

- In groups of two:

What are the main tasks performed by Banks?

What relations do these task have with their balance sheet?

What are the risk Banks have to manage?

Credit institutions

Credit institutions collect deposits from the public and channel these resources towards investment projects, i.e. lending to companies and individuals.

Credit institutions in Spain: Banks, Savings Banks – have almost disappeared following the 2008 financial crisis- and Credit Cooperatives.

What are the main tasks performed by credit institutions?

Off-Balance Sheet products
- Bank endorsements
- Letters of Credit

Assets
- Cash
- Central Bank deposits
- High liquidly products (ej: gob. bonds)
- Loans (secured –eg: mortages– or unsecured –consumer loans –)
- Other Investment products

Liabilities
- Customer deposits on demand
- Customer saving deposits
- Central bank loans
- Interbank market funding
- Issued bond and debt certificates

Securitizations

Equity
- Social capital & reserves

Banking services
Payment services: bank transfers, credit and debit cards, etc. "Universal banking": distribution and even manufacturing of non-lending products: mutual funds, pension funds, insurance products, etc.

What risks do you see?
How to control the risk?

What are the risk Banks have to manage?

- **Liquidity risk.** Caused by the bank's inability to meet all its due obligations
- **Credit risk.** Caused by borrower's default on its obligations to the bank.
- **Market risk.** includes interest rate and foreign exchange risk.
  - **Interest rate risk.** Changes in interest rates.
  - **Foreign exchange risk.** Caused by changes in exchange rates.

Basel II – June 2004

- **Reputational risk** is the risk of loss caused by a negative impact on the market positioning of the bank.
- **Exposure risks.** Bank's exposure to a single entity or to a group of related entities.
- **Operational risk** caused by omissions in the work of employees, inadequate internal procedures and processes, inadequate management of information and other systems, and unforeseeable external events.
- **Investment risks** Bank's investment in non-financial sector entities, fixed assets and investment real estate.
- **Country risk.** Includes political and economic risk, and transfer risk.
- **Legal risk** from court disputes due to breach of contractual and legal obligations, and penalties and sanctions pronounced by a regulatory body.
- **Strategic risk** is the risk of loss caused by a lack of a long-term development component in the bank's managing team.

Source: http://www.nbs.rs/internet/english/55/55_6/

First steps with accounting

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

Assets

- Cash
- Central Bank deposits
- High liquidly products (ej: gob. bonds)
- **Loans** (secured –eg: mortages– or unsecured –consumer loans –)
- Other Investment products

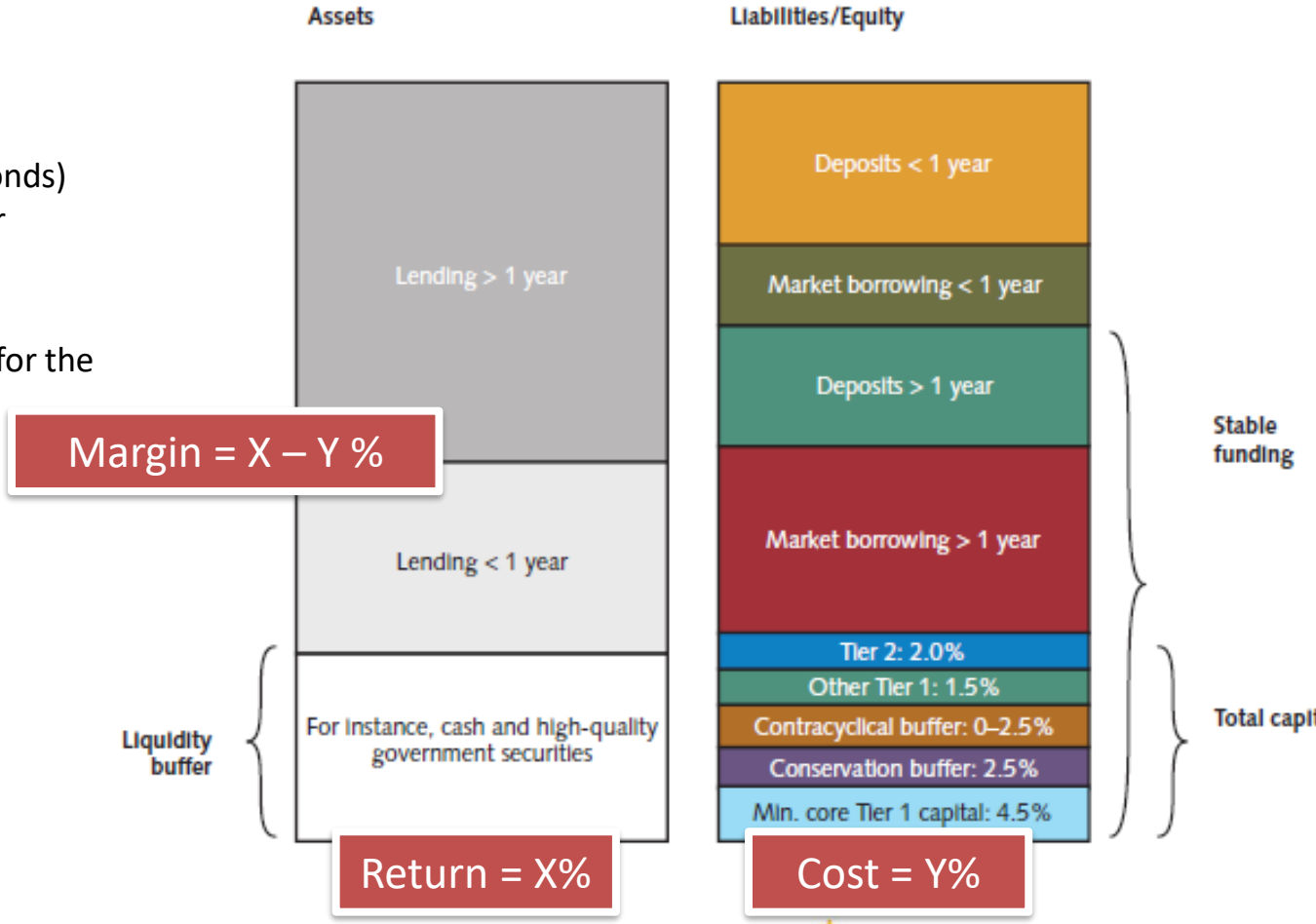
A liability for a company is an asset for the creditor bank.

Liabilities

- Customer deposits on demand
- Customer saving deposits
- Central bank loans
- Interbank market funding
- Issued bond and debt certificates

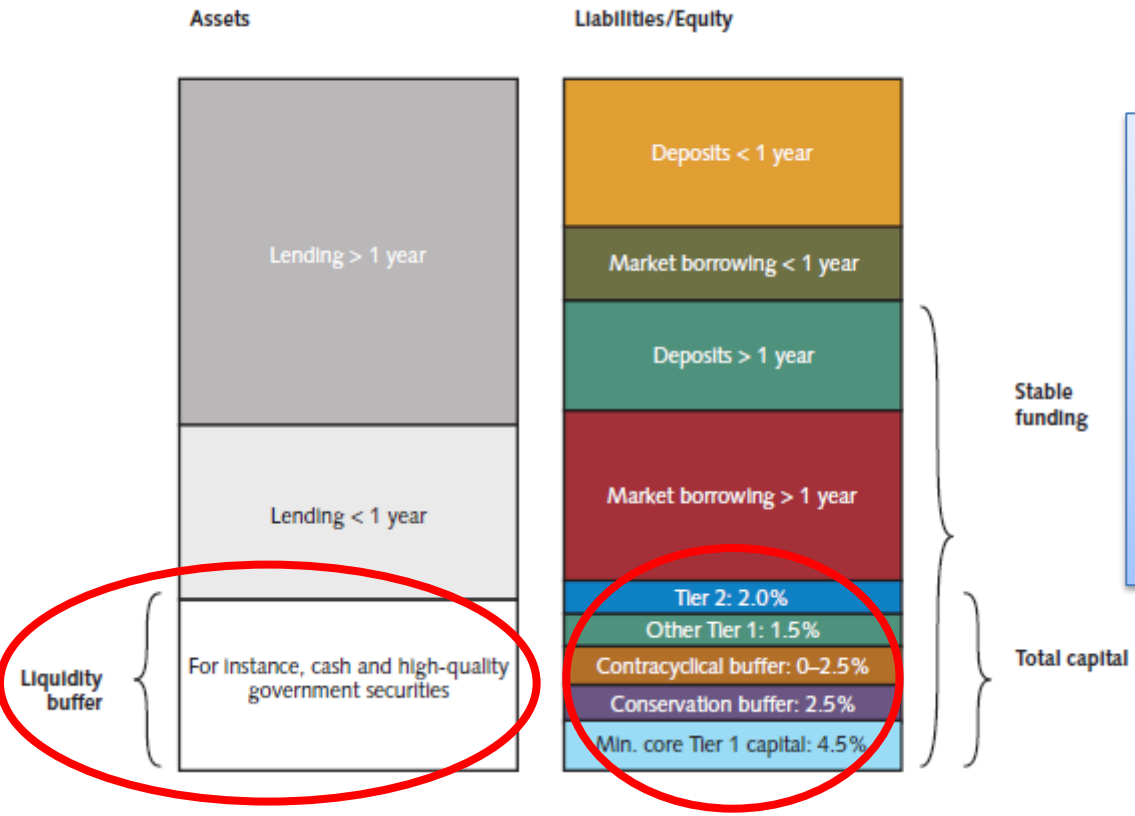
Equity

- Social capital & reserves



What are the risk Banks have to manage?

Basel III – Dec 2010



Liquidity and credit risk.

- Requirements for common equity and Tier 1 capital will be 4.5% and 6%, respectively.
- The liquidity coverage ratio(LCR) will require banks to hold a buffer of high quality liquid assets sufficient to deal with situations like "Bank Run".
- Leverage Ratio > 3%:The leverage ratio was calculated by dividing Tier 1 capital by the bank's average total consolidated assets;.

Just an introduction, we will see it with more detail.

Source: Asymptotix (The Riksbank: Basel III - tougher rules for banks)

Regulation of credit institutions – Basel

Who control Central Banks?

They control themselves through the BIS

Formerly, the Basel Committee consisted of representatives from central banks and regulatory authorities of several countries. The committee does not have the authority to enforce recommendations. A summary of its recent recommendations:

- **Basell I** (Publish in 1988) Minimal capital requirements depending on the risk exposure. Capital = 8% assets weighted (5 categories with different weights: 0%, 10%, 20%, 50%, 100% -)
- **Basel II international regulation** (Basel II framework agreement approved by the Basel Committee on Banking Supervision on June 26th 2004) and incorporated into Spanish law through Real Decreto 216/2008 and Circular del Banco de España 3/2008
- **Basel III framework agreement**, approved by the Basel Committee on Banking Supervision in December 2010 and partly reflected into Spanish law through RD 2/2011. Basel III is completely reflected into European Law through REGULATION (EU) Nº 575/2013, issued on June 26th 2013

Regulation of credit institutions – Basel I

1988 - Why Basel I was needed? The reason was to create a level playing field for "internationally active banks" Banks from different countries competing for the same loans would have to set aside roughly the same amount of capital on the loans. (Became effective at the end of 1992).

- Capital was set at 8% and was adjusted by a loan's credit risk weight.
- Credit risk was divided into 5 categories: 0%, 10%, 20%, 50%, and 100%.

0% Risk Weight:

- Cash,
- Claims on central governments and central banks denominated in national currency and funded in that currency
- Other claims on OECD countries, central governments and central banks
- Claims collateralized by cash of OECD government securities or guaranteed by OECD Governments

20% Risk Weight

- Claims on multilateral development banks and claims guaranteed or collateralized by securities issued by such banks
- Claims on, or guaranteed by, banks incorporated in the OECD
- Claims on, or guaranteed by, banks incorporated in countries outside the OECD with residual maturity of up to one year
- Claims on non-domestic OECD public-sector entities, excluding central government, and claims on guaranteed securities issued by such entities
- Cash items in the process of collection

Regulation of credit institutions – Basel I

50 % Risk Weight

- Loans fully securitized by mortgage on residential property that is or will be occupied by the borrower or that is rented.

100% Risk Weight

- Claims on the private sector
- Claims on banks incorporated outside the OECD with residual maturity of over one year
- Claims on central governments outside the OECD (unless denominated and funded in national currency)
- Claims on commercial companies owned by the public sector
- Premises, plant and equipment, and other fixed assets
- Real estate and other investments
- Capital instruments issued by other banks (unless deducted from capital)
- All other assets

At National Discretion (0,10,20 or 50%)

- Claims on domestic public sector entities, excluding central governments, and loans guaranteed by securities issued by such entities

- The approach in setting credit risk weights is too simplistic
- it ignored other types of risk

Regulation of credit institutions – Basel II

Implementation of the Basel II Framework took place between 2007 and 2009. Basel-II consisted of three pillars:

- **Minimum capital requirements** for credit risk, market risk and operational risk—expanding the 1988 Accord (Pillar I)
- **Supervisory review** of an institution's capital adequacy and internal assessment process (Pillar II)
- **Effective use of market discipline** as a lever to strengthen disclosure and encourage safe and sound banking practices (Pillar III)

PILLAR I: Minimum Capital Requirement

1) Capital Measurement: New Methods
2) Market Risk: In Line with 1993 & 1996
3) Operational Risk: Working on new methods

$$MCR = \frac{Capital}{Credit\ Risk + Market\ Risk + Operational\ Risk} \geq 8\%$$

PILLAR 2: Supervisory Review Process

1) Banks are advised to develop an *internal capital assessment process* and set targets for capital to commensurate with the bank's risk profile
2) Supervisory authority is responsible for evaluating how well banks are assessing their capital adequacy

PILLAR 3: Market Discipline

Aims to reinforce market discipline through enhanced disclosure by banks. It is an indirect approach, that assumes sufficient competition within the banking sector.

Regulation of credit institutions – Basel III

Capital

Pillar 1

	Capital	Risk coverage	Containing leverage	Pillar 2: Risk management and supervision	Pillar 3: Market discipline
All Banks	**Quality and level of capital** Greater focus on common equity. The minimum will be raised to 4.5% of risk-weighted assets, after deductions. **Capital loss absorption at the point of non-viability** Contractual terms of capital instruments will include a clause that allows – at the discretion of the relevant authority – write-off or conversion to common shares if the bank is judged to be non-viable. This principle increases the contribution of the private sector to resolving future banking crises and thereby reduces moral hazard. **Capital conservation buffer** Comprising common equity of 2.5% of risk-weighted assets, bringing the total common equity standard to 7%. Constraint on a bank's discretionary distributions will be imposed when banks fall into the buffer range. **Countercyclical buffer** Imposed within a range of 0-2.5% comprising common equity, when authorities judge credit growth is resulting in an unacceptable build up of systematic risk.	**Securitisations** Strengthens the capital treatment for certain complex securitisations. Requires banks to conduct more rigorous credit analyses of externally rated securitisation exposures. **Trading book** Significantly higher capital for trading and derivatives activities, as well as complex securitisations held in the trading book. Introduction of a stressed value-at-risk framework to help mitigate procyclicality. A capital charge for incremental risk that estimates the default and migration risks of unsecuritised credit products and takes liquidity into account. **Counterparty credit risk** Substantial strengthening of the counterparty credit risk framework. Includes: more stringent requirements for measuring exposure; capital incentives for banks to use central counterparties for derivatives; and higher capital for inter-financial sector exposures. **Bank exposures to central counterparties (CCPs)** The Committee has proposed that trade exposures to a qualifying CCP will receive a 2% risk weight and default fund exposures to a qualifying CCP will be capitalised according to a risk-based method that consistently and simply estimates risk arising from such default fund.	**Leverage ratio** A non-risk-based leverage ratio that includes off-balance sheet exposures will serve as a backstop to the risk-based capital requirement. Also helps contain system wide build up of leverage.	**Supplemental Pillar 2 requirements.** Address firm-wide governance and risk management; capturing the risk of off-balance sheet exposures and securitisation activities; managing risk concentrations; providing incentives for banks to better manage risk and returns over the long term; sound compensation practices; valuation practices; stress testing; accounting standards for financial instruments; corporate governance; and supervisory colleges.	**Revised Pillar 3 disclosures requirements** The requirements introduced relate to securitisation exposures and sponsorship of off-balance sheet vehicles. Enhanced disclosures on the detail of the components of regulatory capital and their reconciliation to the reported accounts will be required, including a comprehensive explanation of how a bank calculates its regulatory capital ratios.
SIFIs	In addition to meeting the Basel III requirements, global systemically important financial institutions (SIFIs) must have higher loss absorbency capacity to reflect the greater risks that they pose to the financial system. The Committee has developed a methodology that includes both quantitative indicators and qualitative elements to identify global systemically important banks (SIBs). The additional loss absorbency requirements are to be met with a progressive Common Equity Tier 1 (CET1) capital requirement ranging from 1% to 2.5%, depending on a bank's systemic importance. For banks facing the highest SIB surcharge, an additional loss absorbency of 1% could be applied as a disincentive to increase materially their global systemic importance in the future. A consultative document was published in cooperation with the Financial Stability Board, which is coordinating the overall set of measures to reduce the moral hazard posed by global SIFIs.				

Liquidity

Global liquidity standard and supervisory monitoring

Liquidity coverage ratio
The liquidity coverage ratio (LCR) will require banks to have sufficient high-quality liquid assets to withstand a 30-day stressed funding scenario that is specified by supervisors.

Net stable funding ratio
The net stable funding ratio (NSFR) is a longer-term structural ratio designed to address liquidity mismatches. It covers the entire balance sheet and provides incentives for banks to use stable sources of funding.

Principles for Sound Liquidity Risk Management and Supervision
The Committee's 2008 guidance *Principles for Sound Liquidity Risk Management and Supervision* takes account of lessons learned during the crisis and is based on a fundamental review of sound practices for managing liquidity risk in banking organisations.

Supervisory monitoring
The liquidity framework includes a common set of monitoring metrics to assist supervisors in identifying and analysing liquidity risk trends at both the bank and system-wide level.

Regulation of credit institutions – Basel III

Given the basic equation: $\frac{Capital}{Credit\ Risk} \geq 8\%$

Basel III modify the definition of three concepts.
(Capital, credit risk and the minimum level of capital)

New definition of capital (quality)

Total capital = Tier 1 + Tier 2
Tier 1 Capital = Common equity Tier 1 + Additional Tier 1
Common equity Tier 1: common shares, retained earnings, disclosed reserves
Additional Tier 1: includes unsecured perpetual hybrid instruments, junior to subordinated debt
Tier 2: unsecured subordinated debt, minimum maturity of 5 years

	Common Equity Tier 1	Tier 1 Capital	Tier 2 Capital	Total Capital
Minimum level of capital	4.5	6.0	2.0	8.0
(within parentheses Basel II requirements)	(2.0)	(4.0)	(4.0)	(8.0)

Credit risk
Enhanced coverage for:
- Securitisation.
- Trading book.
- Counterparty credit risk

Conservation buffer: 2.5% composed of common equity
To smooth banks' idiosyncratic pro-cyclicality: banks are not obliged to raise new capital but they re-build the buffer by limiting distribution of earnings
Countercyclical buffer: 0% – 2.5% of fully loss absorbing capital instruments
To smooth system-wide pro-cyclicality

Other relevant regulation

Single Banking License at the European Union: The single license authorizes a bank established in a Member State to open branches without any other formalities or to propose its services in the partner countries.

Banking Union process in the UE (Day 4)

1) The **Single Supervisory Mechanism (SSM)**, based in Frankfurt.
2) The **Single Resolution Mechanism (SRM)**
3) The **Single Rulebook**. One single regulation as regards capital requirements and bank insolvency procedures to be implemented throughout all member states.

Deposit Guarantee Fund

The aim of the Deposit Guarantee Fund is to protect account holders

The Fund is a legal entity managed by a Comisión Gestora, whose members are appointed by the Bank of Spain and the member banks

Member banks contribute annually to the Fund with a percentage of their total deposits

The 2009 EU Directive unified the minimum coverage level of guaranteed deposits. Therefore, at present, all national funds must guarantee minimum deposits of €100,000 per saver and bank

Other relevant regulation

Credit risk and Provisions (provisiones específicas y genéricas)

- Plan general contable
- IFRS 9 Financial Instruments (replacement of IAS 39)
- Circulares del Banco de España

Importance of provisions in decision making

Accounting for expected credit losses—example

Portfolio of home loans originated in a country.

12-month expected credit losses are recognised for all the loans on initial recognition (Stage 1).

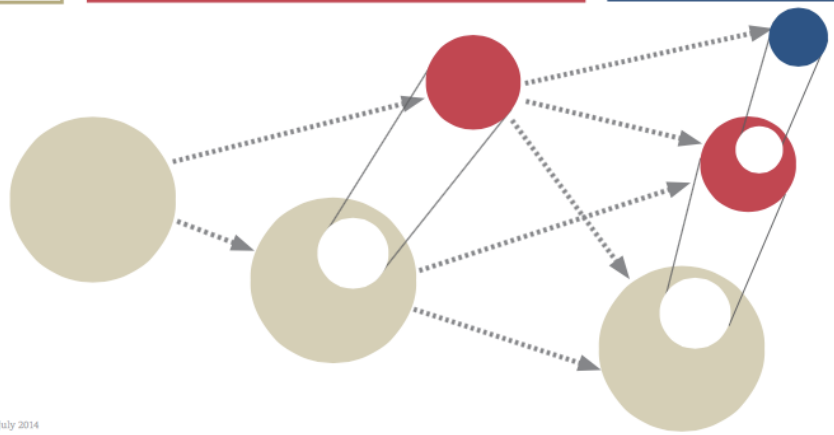
Information emerges that a region in the country is experiencing tough economic conditions.

Lifetime expected credit losses are recognised for those loans within that region (Stage 2) and 12-month expected credit losses, including any changes in that estimate, for other loans (Stage 1).

More information emerges and the entity is able to identify the particular loans that have defaulted or will imminently default (Stage 3).

Lifetime expected credit losses continue to be recognised and interest revenue switches to a net interest basis.

- Stage 1
- Stage 2
- Stage 3



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From IAS39

Other relevant regulation

El Reglamento (UE) n.º 575/2013 del Parlamento Europeo y del Consejo, de 26 de junio de 2013, sobre los requisitos prudenciales de las entidades de crédito y las empresas de inversión, y por el que se modifica el Reglamento (UE) n.º 648/2012.

Ley 10/2014, de 26 de junio, de ordenación, supervisión y solvencia de entidades de crédito.

Ley 26/1988, de 29 de julio, sobre Disciplina e Intervención de las Entidades de Crédito (derogada)

28th of December, 1993 – BANESTO

"Hole" of 4.000M€

Bank bailout through two ways:

- Fondo de Garantía de Depósitos bought assets for 1.700M€ and gave a loan of 1.900M€
- The bank was sold to Banco Santander

28th of March, 2008 – Caja Castilla la Mancha

Bailout of 9.000M€.

Artículo 31

1. Cuando una entidad de crédito se encuentre en alguna de las situaciones descritas en la Ley 9/2012, de 14 de noviembre, de reestructuración y resolución de entidades de crédito, podrá acordarse la sustitución provisional de su órgano de administración en los términos previstos en esta Ley y con las particularidades recogidas en la citada Ley.
2. También podrá acordarse la intervención de una entidad de crédito o la sustitución provisional de su órgano de administración en los términos previstos en esta Ley cuando existan indicios fundados de que aquella se encuentre en una situación de excepcional gravedad que ponga en peligro su estabilidad, liquidez o solvencia.

Similarities and differences between two situations

Regulation: stress test

The objective of the EU-wide stress test is to provide supervisors, banks and market participants with a common analytical framework to consistently compare and assess the resilience of large EU banks and the EU banking system to adverse economic shocks. The 2016 EU-wide stress test does not contain a pass fail threshold and is designed to be used as a crucial input into the SREP (Supervisory review and evaluation) in 2016, with the primary aim of setting Pillar 2 capital guidance although no supervisory actions are precluded.

The stress test exercise is based on a common methodology and scenarios, and is accompanied by uniform data templates that capture starting point data and stress test results to allow a rigorous and comparable assessment of the banks in the sample. The EBA was responsible for coordinating the exercise and for the final dissemination of the results in line with its commitment to enhancing the transparency of the EU banking sector. Competent authorities were responsible for assuring the quality of the results and are responsible for any necessary supervisory follow-up measures as part of the SREP.

Recovering the confidence in the system

- The adverse scenario implies EU real GDP growth rates over the three years of the exercise of -1.2%, -1.3% and 0.7% respectively –a deviation of 7.1% from its baseline level in 2018.
- It assesses 51 banks from 15 EU and EEA countries – 37 from SSM countries and 14 from Denmark, Hungary, Norway, Poland, Sweden and the UK. **(29 of July 2016)**

Regulation: one thought

Regulation will continue to broaden and deepen

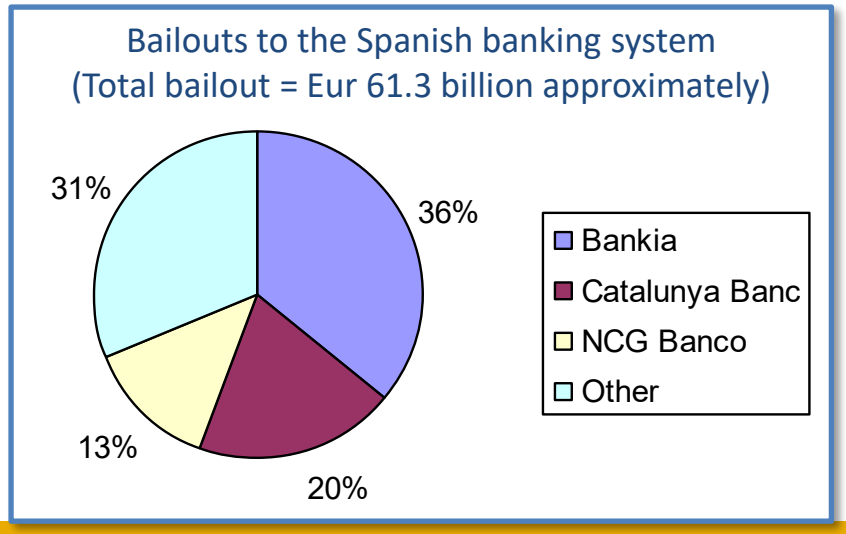
- Basilea regulation tries to mend what happened in 2008 (regulation generation process is slow, more if we are in Europe)
- Experience shows how important is central banks' governors managing.

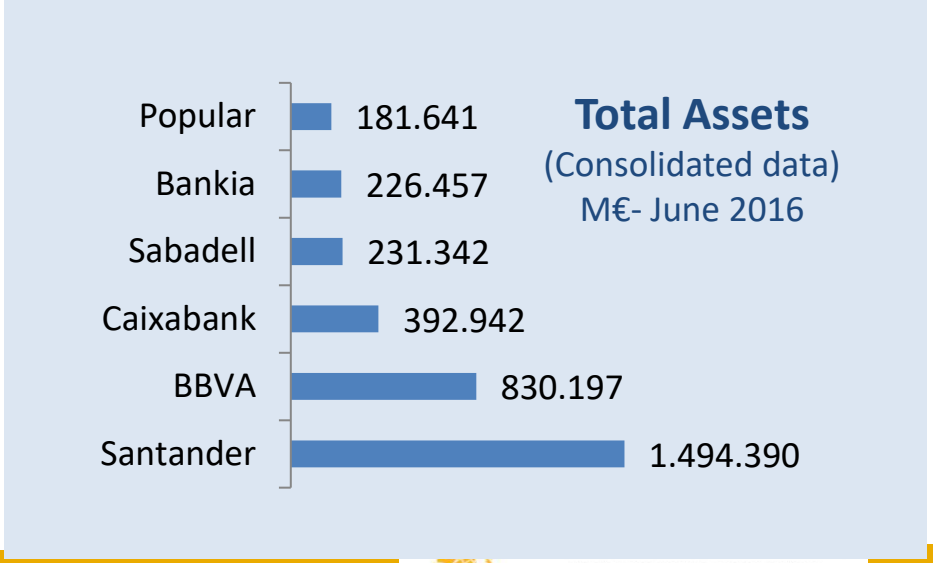
Technology and advanced analytics are evolving (Big Data, machine learning, crowdsourcing…)

- **And new risks are emerging…** as example (from McKinsey&Company):
  - **Model risk.** Banks' increasing dependence on business modeling requires that risk managers understand and manage model risk better. Although losses often go unreported, the consequences of errors in the model can be extreme. For instance, a large Asia–Pacific bank lost $4 billion when it applied interest-rate models that contained incorrect assumptions and data-entry errors. Risk mitigation will entail rigorous guidelines and processes for developing and validating models, as well as the constant monitoring and improvement of them.
  - **Cybersecurity risk.** Most banks have already made protection against cyberattacks a top strategic priority, but cybersecurity will only increase in importance and require ever greater resources. As banks store an increasing amount of data about their customers, the exposure to cyberattacks is likely to further grow.
  - **Contagion risk.** Banks are more vulnerable to financial contagion in a global market. Negative market developments can quickly spread to other parts of a bank, other markets, and other involved parties. Banks need to measure and track their exposure to contagion and its potential impact on performance. Measures to reduce a bank's total risk can reduce its capital requirements, as contagion risk is one of the main drivers for classification as a global systemically important bank (G-SIB).

General view of the sector: Spain

- Types of credit institutions:
  - **Banks**
  - **Savings banks** (have almost disappeared following the 2008-2013 crisis)
    - **CECA.** Confederación Española de Cajas de Ahorro – Now Asociación Bancaria)
  - **Credit Co-operatives.** are linked either to the rural or professional environments: "Cajas Rurales", Caja Laboral, etc.
  - **ICO.** is a Public entity whose aim is to finance selected projects and business sectors at a cost below market. ICO cannot fund itself with deposits
  - **Establecimientos Financieros de Crédito (EFC)**





General view of the sector: Europe

Rank	Bank	Country	Total assets, US$b (June 30, 2016)
1	HSBC Holdings	UK	2,608.15
2	BNP Paribas	France	2,417.00
3	Deutsche Bank	Germany	2,006.71
4	Credit Agricole Group	France	1,970.40
5	Barclays PLC	UK	1,819.61
6	Societe Generale	France	1,624.97
7	Banco Santander	Spain	1,494.39
8	Groupe BPCE	France	1,357.34
9	Royal Bank of Scotland	UK	1,214.11
10	Lloyds Banking Group	UK	1,142.22
11	UBS Group AG	Switzerland	1,010.34
12	UniCredit S.p.A.	Italy	992.040
13	ING Group	Netherlands	985.566
14	Credit Suisse Group	Switzerland	838.547
15	BBVA	Spain	830.197

Rank	Company	Country	Market cap, EUR billion
1	HSBC Holdings	UK	117.06
2	Banco Santander	Spain	63.22
3	Lloyds Banking Group	UK	62.11
4	BNP Paribas	France	58.14
5	UBS	Switzerland	56.85
6	ING Group	Netherlands	43.94
7	BBVA	Spain	41.19

Establecimientos Financieros de Crédito

- EFCs are not allowed to collect deposits.
- **Main activities:** consumer finance, factoring, leasing, issuance of credit cards, guarantees, etc…
- Factoring is a financial transaction whereby a business sells its accounts receivable (i.e., invoices) to a third party (called a factor) at a discount. The factor provides financing to the seller of the accounts in the form of a cash "advance," with the balance of the purchase price being paid, net of the factor's discount fee (commission) and other charges, upon collection from the account client.
  - Factoring differs from a bank loan in several ways. The emphasis is on the value of the receivables, whereas a bank focuses more on the value of the borrower's total assets.
  - Non Recourse Factoring: the factor takes responsibility for collection of payments from the debtor and the risk of the debtor not paying.
  - Recourse factoring: Under recourse factoring, the client is not protected against the risk of bad debts.

Evolution of the Spanish banking sector

Tabla 5. Ranking bancario en España en 1986

			Cuota de mercado	Núm de oficinas
1	Central	Santander	11,6	2.783
2	Vizcaya	BBVA	11,2	1.718
3	Banesto	Santander	10,0	2.689
4	Hispano	Santander	10,0	1.693
5	Bilbao	BBVA	9,5	1.628
6	Santander	Santander	8,4	1.477
7	Exterior	BBVA	7,7	651
8	Popular		6,0	1.596
9	March		1,5	251
10	Citibank		1,3	89
11	BNP		1,1	48
12	Barclays	BARCLAYS	1,1	77
13	Zaragozano	BARCLAYS	1,0	244
14	Arabe Español		0,7	32
15	Herrero	Sabadell	0,7	159

Fuente: ONTIVEROS y VALERO: "El sistema financiero" (1988).

Private Banks

Grupo Banesto (14 bancos) — Santander
- Español de Crédito
- Madrid
- Desarrollo Económico Español
- Vitoria
- Abel Matutes Torres-Blanco de Ibiza
- General
- Peninsular
- Albacete
- Alicantino de Comercio

Grupo Central (8 bancos) — Santander
- Central
- Fomento
- Valencia
- Granada
- Internacional de Comercio
- Crédito e Inversiones
- Noroeste
- Sevilla

Grupo Hispano (6 bancos) — Santander
- Hispano Americano
- Urquijo-Unión
- Mercantil de Tarragona
- Hispano Industrial
- Jerez
- Norte

Grupo Bilbao (9 bancos) — BBVA
- Bilbao
- Industrial de Bilbao
- Más Sardá
- Comercio
- Promoción de Negocios
- Huesca
- Oeste
- Extremadura
- Latino

Fuente: ONTIVEROS y VALERO: "El sistema financiero" (1988).

The first modern private bank in Spain was Banco de Barcelona (1844). During the 1900's Spanish private banks played a leading role in financing the development of industry. Although in the second half of the 1980s Spain had about 100 private banks--a quarter of which were industrial banks--the field had long been dominated the Big Seven, seven large commercial institutions (these banks had direct or indirect control of approximately 80 percent of the country's banking resources).

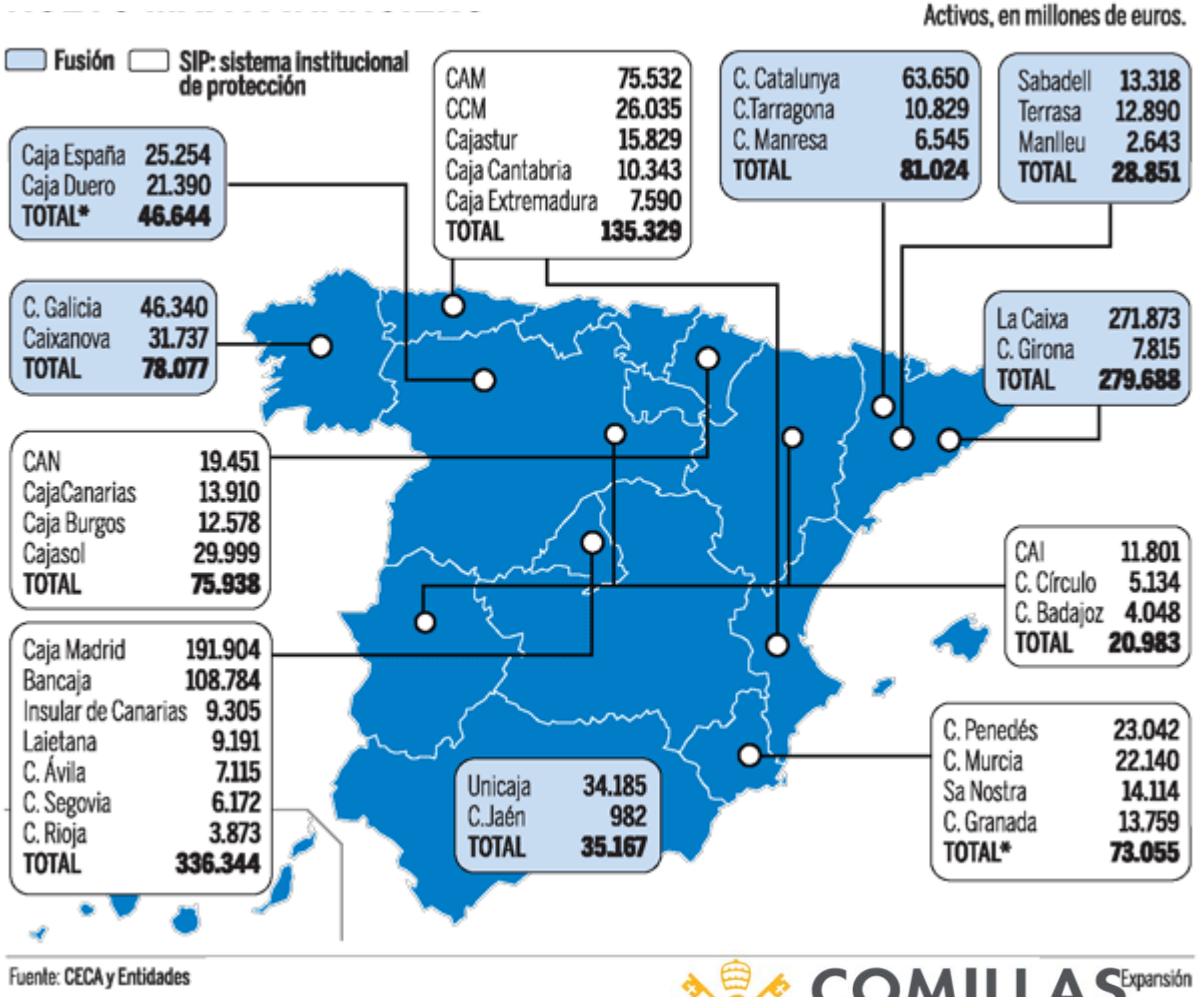
Evolution of the Spanish banking sector

Saving banks

- ***1839-1926: The charitable phase***
- ***1926-1964: The social phase***
- ***1964-2009: The economic/financial phase***
- *1964 – 1976: Increasing level of state controls over the Savings Banks, relating to the establishment and expansion of branches and to how they invested their funds.*
- *1977 – 1985: Harmonisation of the organisational and administrative systems of Spanish Savings Banks, and recognition of their activities on the part of the banks. In sum freedom of action in business, reduction of quotas of obligatory investments and freedom to open branches out from their origin regions.*
- *1985 – 2009: Liberalisation of Savings Banks investments, transforming them into genuine universal banks, and controls over their administrative bodies, affected via the growing involvement of public institutions.*
- ***2010 – Now: New Regulation***

Source: http://www.savings-banks.com/Who-we-are/History/Pages/Spain.aspx

Saving Banks (2011)



Evolution of the Spanish banking sector

The restructuring of the Spanish banking sector as a result of the economic crisis

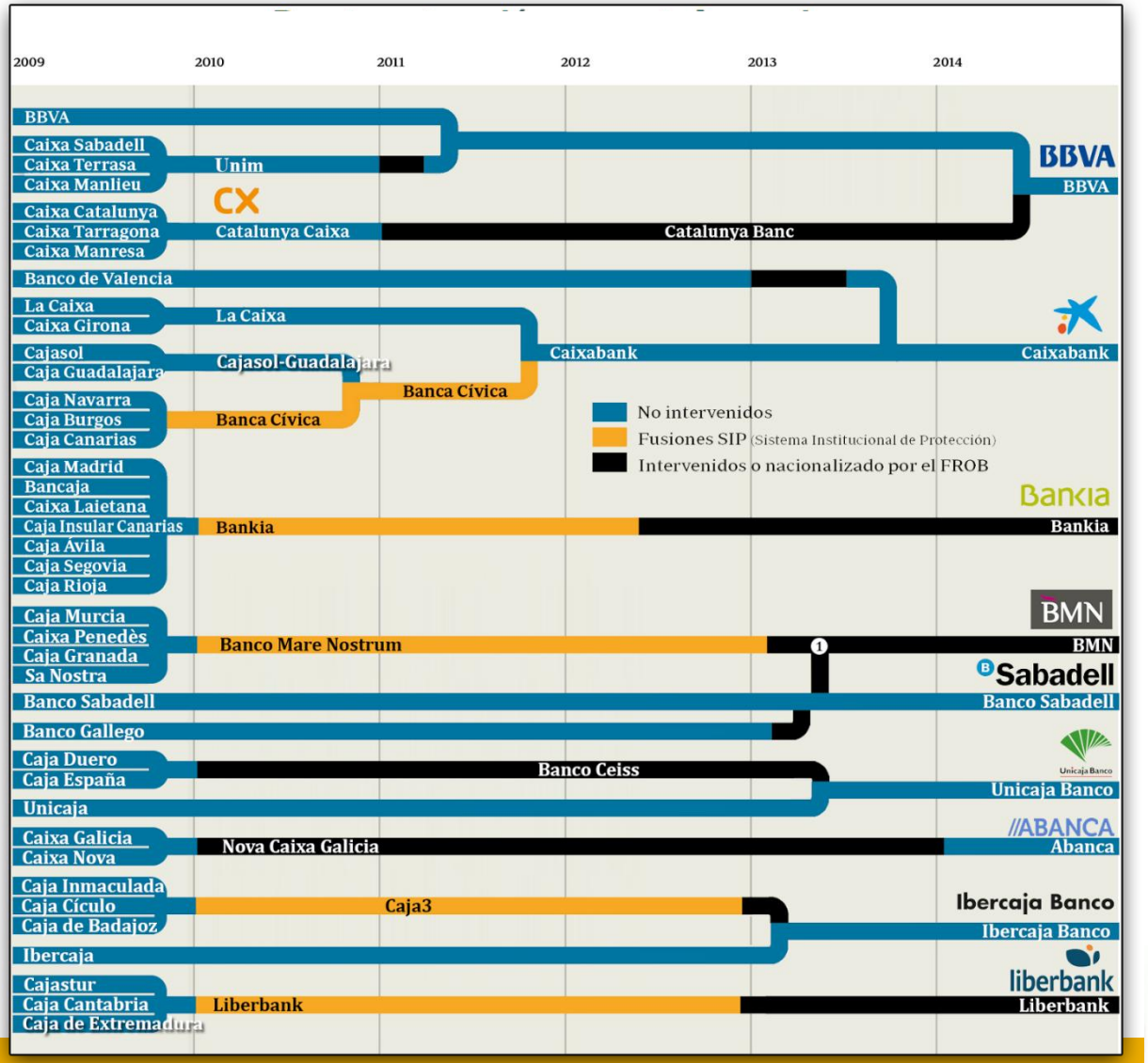
Main Problems

- Access to global markets deteriorated in 2007 = liquidity constrains
- Increasing level of Non Performing Loans in Spain, mainly in the Real Estate sector
- Greek sovereign debt crisis impacted the Spanish bond yields and consequently the banking sector
- The Irish and Portuguese sovereign debt crisis added more pressure

Measures taken

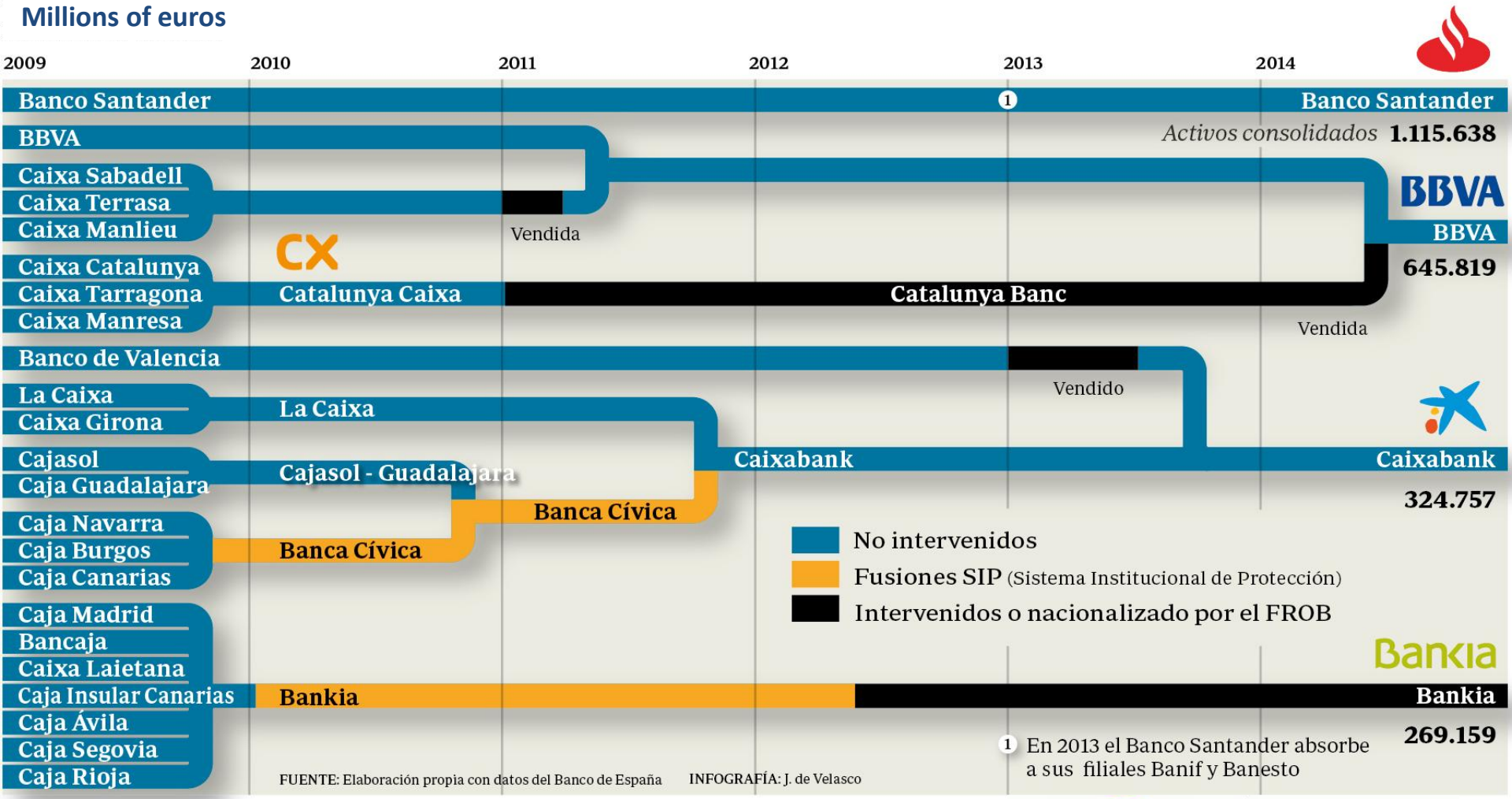
- Spanish Treasury guarantees on banking debt placements
- Establishment of the FROB
- Restructuring of the savings banks sector: new regulation and mergers
- RD 2/2011 – higher capital requirements
- Significant effort in terms of additional provisioning
- Establishment of the “Bad Bank” known as SAREB and transfer of the impaired assets
- Banking Union project at the EU (please refer to Chapter 2)

Evolution of the Spanish banking sector



Banco Santander (0049)
Banco Bilbao Vizcaya Argentaria (0182)
Banco Sabadell (0081)
Banco Popular (0075)
Bankinter (0128)
Banca March (0061)
Deutsche Bank, SAE (0019)
Banco Cooperativo Español (0198)
Evo Banco (0239)
Banco Caixa Geral (0130)
Banco Caminos (0234)
Banco Mediolanum (0186)
Bankoa (0138)
Banca Pueyo (0078)
UBS Bank (0226)
Renta 4 Banco (0083)
Andbank España (1544)
RBC Investor Services España (0094)
Banco Pichincha (0235)
Banco Cetelem (0225)
EBN Banco de Negocios (0211)
Allfunds Bank (0011)
Citibank España (0122)
BNP Paribas España (0058)
Banco Alcalá (0188)
A&G Banca Privada (0241)
Privat Bank Degroof (0200)

Evolution of the Spanish banking sector



Consolidation process of principal Spanish financial institutions (from ABC)

First part – Exercises review

Calculate NPV of following cash flow: biannual perpetuity of 1.000€. First payment to be received in 1 year time. (Discounting rate: 10% yearly)

Time in years:	0	0,5	1	1,5	2	2,5	3	3,5	4	
Cash flow:		0	1.000,00	1.000,00	1.000,00	1.000,00	1.000,00	1.000,00	1.000,00	1.0

$$i_{biannual} = \sqrt{1 + 10\%} - 1 = 4{,}88\%$$

$$VA = \frac{1}{1 + 4{,}88\%} \cdot \frac{1}{4{,}88\%} \cdot 1.000 = 19.534{,}63$$

You can take to the midterm one sheet with all formulas you want. You will have to deliver this sheet with the rest of the exam.

What is NPV of following perpetuity? (Discounting rate: 10%)

Time in years:	0	1	2	3	4	5	6	7
Cash flow:	1.000,00	1.000,00	1.000,00	1.000,00	1.000,00	1.000,00	1.000,00	1.000,00

$$VA = \frac{1.000}{10\%} + 1.000 = 11.000€$$

First part – Exercises review

You plan on taking a cruise every 2 years, starting a year from now and ending in 41 years (i.e., cruises at t = 1, 3, 5, …, 41). You expect each cruise to cost 3,000€. **How much do you need to deposit today, in an account that pays 10%, annual compounding, to fund these vacation plans?**

Time in years:	0	1	2	3	4	5	…	39	40	41
Cash flow:	-	3.000,00	-	3.000,00	-	3.000,00	-	3.000,00	-	3.000,00

The length of a period is 2 years, so r = (1+10%)2 – 1 = 21%.
There are 21 cash flows in the annuity.
The annuity valuation formula gives the value 1 period (2 years) before the first cash flow, i.e., at year -1. Therefore the annuity value needs to be brought forward 1 year at 10%.

$$PV = C\left[\frac{1}{r} - \frac{1}{r(1+r)^t}\right](1+10\%) = 3,000\left[\frac{1}{0.21} - \frac{1}{0.21(1+0.21)^{21}}\right](1+0.10) = 15,427.34€$$

First part – Exercises review

Consider a bond that pays an annual coupon of $40, has a face value of $1000 and a maturity of 6 years. With a discount rate of 3%, calculate **a) the price and b) duration. Suppose that the interest rate decrease to 2,5%. Estimate the c) impact in the price by using modified duration. Calculate d) new price and comment results.**

1	2	3	4	5	6
40	40	40	40	40	1.040

Loans are also important

a) $\frac{40}{1+0{,}03} = 38{,}83$

$\frac{40}{(1+0{,}03)^2} = 37{,}70$

$\frac{40}{(1+0{,}03)^3} = 36{,}61$

$\frac{40}{(1+0{,}03)^4} = 35{,}54$

$\frac{40}{(1+0{,}03)^5} = 34{,}50$

$\frac{1.040}{(1+0{,}03)^6} = 870{,}98$

$$Price(3\%) = 38{,}83 + 37{,}70 + 36{,}61 + 35{,}54 + 34{,}50 + 870{,}980 = 1054{,}17€$$

b)

$$Duration = \frac{38{,}83 + 2 \cdot 37{,}70 + 3 \cdot 36{,}61 + 4 \cdot 35{,}54 + 5 \cdot 34{,}50 + 6 \cdot 870{,}980}{38{,}83 + 37{,}70 + 36{,}61 + 35{,}54 + 34{,}50 + 870{,}980} = 5{,}46 \text{ years}$$

c)

$$Modified\ duration = \frac{Duration}{(1+r)} = \frac{5{,}46}{(1{,}03)} = 5{,}3\%$$

$$Estimated\ price\ (2{,}5\%) = 1054{,}17(1 + 2{,}65\%) = 1.082{,}10$$

d)

$$\text{New Price } (2{,}5\%) = \frac{40}{1{,}025} + \frac{40}{1{,}025^2} + \frac{40}{1{,}025^3} + \frac{40}{1{,}025^4} + \frac{40}{1{,}025^5} + \frac{1.040}{1{,}025^6} = 1.082{,}62€$$

First part – Most important concepts

- Difference between Price and value
- Principal characteristics of financial assets
- Efficient market-hypothesis (understanding)
- Arbitrage concept
- Competences:
  - Of each central bank (credit institutions)
  - Market supervisor (markets except interest rate risk markets)
- Three principal uses of money
- Monetary base, M2 and monetary multiplier.
- Instruments of a central bank related with monetary policy
- Interest rate risk
- Difference between yield curve, EURIBOR and central bank interest rate
- Duration
- Risk and Banks: credit and liquidity risk
- Basel regulation

Thanks