Banking

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Course: Banking [2206]

Class 3 [Part I]

Disclaimer: The views expressed are my own and do not necessarily represent the views of Banco de Portugal.

To be covered today

- Risks of Financial Institutions

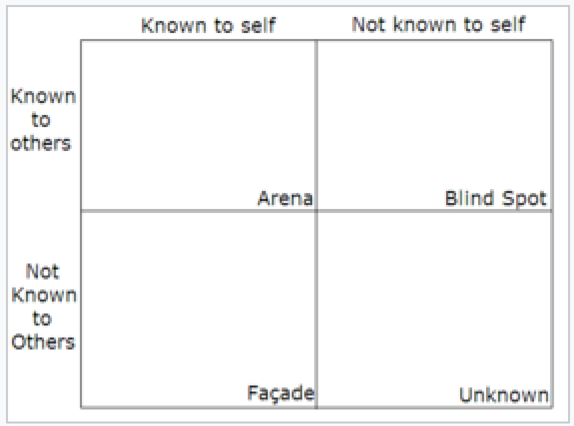
Exploring Knowledge and Uncertainty

'Reports that say that something hasn't happened are always interesting to me, because as we know, there are ***known knowns****; there are things we know we know.*

We also know there are ***known unknowns****; that is to say we know there are some things we do not know.*

But there are also ***unknown unknowns*** **-** *the ones we don't know we don't know. And if one looks throughout the history of our country and other free countries, it is the latter category that tend to be the difficult ones.'*

Donald Rumsfeld, US Secretary of Defence, 2001-2006



Johari window

Understanding Risk and Uncertainty

- **What is risk**
    - Risk is the probability of an event differing from what is expected (in the sense of “most probable”):
    - the outcome is uncertain and may change;
    - but the variance of the outcome is measurable.

- **What is uncertainty**
    - Uncertainty refers to the unmeasurable possibility of unexpected events:
    - the outcome is unexpected;
    - or the probability cannot be measurable.

- When we say that something is “unthinkable”, we mean the event or the probability?
    - if it’s “the event”, it’s pure uncertainty - there is nothing we can do;
    - if it’s “the probability”, we can’t forecast timing of occurrence or the cause, but we can be prepared to deal with the effects.

Understanding Risk and Uncertainty

BASIS FOR COMPARISON	RISK	UNCERTAINTY
Meaning	The probability of winning or losing something worthy is known as risk.	Uncertainty implies a situation where the future events are not known.
Ascertainment	It can be measured	It cannot be measured.
Outcome	Chances of outcomes are known.	The outcome is unknown.
Control	Controllable	Uncontrollable
Minimization	Yes	No
Probabilities	Assigned	Not assigned

Can risk be eliminated?

- There is no risk management that can eliminate uncertainty.
  - We are only subject to the “normal” probability distribution when the sample is infinite!
  - If reality seems not to conform to the probability distribution, the problem may be with the distribution…

- To eliminate credit risk, don’t grant any loan!

- However, you can transfer risk:
  - a Credit Default Swap (CDS) transfers credit risk to a third party;
  - to swap the risk, the lender buys a CDS from another investor who agrees to reimburse them if the borrower defaults
  - usually, we swap risks: with the CDS, now it is the solvency of the counter-party that worries me.

- Economic efficiency is achieved when each entity keeps the risk that can superiorly manage.

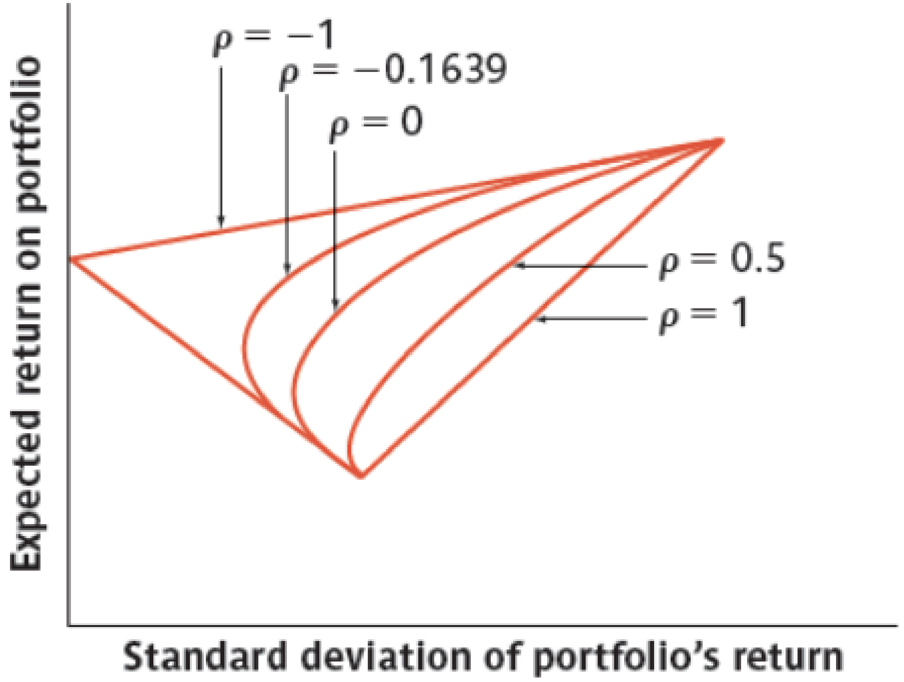
Risk and correlation

- **Risk Transfer through Insurance**
- When buying car insurance, risk can only be effectively transferred if the insurer remains financially stable and won’t go bankrupt in the event of an accident

- **Correlation of Events**
- For effective risk transfer, events must be non-correlated.
- Key Insight: A lesson from the 2008 financial crisis is that correlations tend to increase during adverse conditions, meaning that risks are more likely to manifest simultaneously.

- **Principles of Diversification**
- Effective Diversification: Works best when adding assets of similar risk levels.
- Caution: If an added asset has significantly higher risk, negative correlation is necessary to prevent total risk from increasing.

Changing correlation



Risk and correlation

FINANCIAL TIMES

US COMPANIES TECH MARKETS CLIMATE OPINION WORK & CAREERS LIFE & ARTS HTSI

Asset classes: Correlation remains at highs reached in the crisis

Izabella Kaminska OCTOBER 27 2010

Correlation – the measure of how securities move in relation to each other – shot higher during the Lehman crisis and remains stubbornly high. Some observers note it is even spreading from individual stock movements into other asset classes and equity benchmarks.

The trend is beginning to look costly for banks' structured products desks. They, it turns out, are "short correlation", which means they suffer losses when individual equities, indices or asset classes begin to move in tandem with each other.

Risk inducing behaviours

Herd behaviour

When investors prefer to simply follow wider market trends instead of carrying an adequate risk assessment

- An investor buying stock just because everybody else is buying.

Adverse selection

When there is asymmetric information between buyers and sellers (most of the times) allowing one of the parties to be better off at the expense of the other.

- A person with a risky profession getting a life insurance without fully disclosing his/her situation.

Moral hazard

Aggressive risk taking driven by the knowledge that others rather than oneself will bear the potential cost of one's actions.

- An entrepreneur with a significant leveraged business tends to invest in riskier projects.

Risk inducing behaviours

Moral Hazard

Opinion Markets Insight + Add to myFT

Federal Reserve has encouraged moral hazard on a grand scale

Chair Powell has gone from preaching about credit risks to buying junk bond funds

JONATHAN TEPPER + Add to myFT

© REUTERS

Jonathan Tepper APRIL 13 2020 102

We have never seen countrywide lockdowns to prevent the spread of a virus. It is right that governments compensate citizens for quarantines that prevent them from working and central banks prevent a short-term liquidity crisis from becoming a crisis of solvency. But the response must not be a cover to bail out bust borrowers and out-of-pocket speculators.

Risks

- Now that we have the main concepts, we can go the specific banking risks.

- **The Nature of Banking Risks**
  A bank generates profits by incurring various risks.
  Success depends on superior risk management strategies.

- **Interconnected Risks**
  Risks have interactions and correlations.

- **Understanding Residual Risk**
  The residual risk of a bank arises from a portfolio of all risks it encounters.
  Example: When a bank issues a loan, it bears credit risk, and its liquidity profile may also change.

- **Analyzing Risks Effectively**
  - Assess each risk in terms of its impact on the bank's fundamentals, including earnings and capital.

Credit Risk

- Credit
- Interest rate
- Market
- Liquidity
- Foreign Exchange
- Off-balance
- Operational
- Sovereign
- Insolvency

- **Credit risk means that a claim may not be paid as expected (in full).**
- Credit risk can be split in individual credit risk and portfolio credit risk.
- A well diversified loan portfolio suffers from **systematic risk** whereas every single loan bears **systematic and idiosyncratic risk**.

Credit Risk: an example (I)

Greek bank Alpha offloads €10.8bn bad loan book to Davidson Kempner

Drive among European lenders to ditch toxic debt creates opportunity for fund managers

The deal with the US hedge fund will reduce Alpha Bank's non-performing loans ratio from 29 per cent to 13 per cent © Kostas Tsironis/Bloomberg

22 Feb 2021

Credit Risk: an example (II)

Brussels seeks to help banks offload rising tide of bad loans

Paper will set out ideas for how to tackle forecast increase in corporate distress

European banks are facing a surge in pandemic-related corporate insolvencies © Yves Herman/Reuters

29 Nov 2020

Interest Rate Risk

- Credit
- **Interest rate**
- Market
- Liquidity
- Foreign Exchange
- Off-balance
- Operational
- Sovereign
- Insolvency

- A bank bears interest rate risk when it performs a maturity transformation function, meaning assets and liabilities have different maturities.
- A short-funded bank, with shorter maturity liabilities than assets, bears a refinancing risk.
- A long-funded banks incurs reinvestment risk.

Interest Rate Risk: an example (I)

Lloyds warns profitability to fall as low interest rates take toll

Bank chief António Horta-Osório faces 29% pay cut as part of shift to new remuneration model

Nicholas Megaw in London FEBRUARY 20 2020 27

Lloyds Banking Group has warned its profitability will drop in the next year despite signs of an improvement in the UK's economic outlook, as competition in the mortgage market and low interest rates weigh on revenues.

William Chalmers, chief financial officer, said: "There's no question that the environment presents its challenges, principally in the context of the low interest rate environment. But we do see our business model being the right one."

European banks set to benefit from rising interest rates

The strong US dollar wipes billions from US businesses with global operations

Jess Smith, Kate Duguid, Stephen Morris and Ben Hall JULY 25 2022

Market Risk

- Credit
- Interest rate
- **Market**
- Liquidity
- Foreign Exchange
- Off-balance
- Operational
- Sovereign
- Insolvency

→

- Market risk is the possible fluctuation in the price of held securities (or sold short).
- This risk assumes a trading purpose (a bond held to maturity does not incur market risk).
- Even with no trading, sometimes from the flow of business with clients might generate market risk, as the bank may have some exposure to commodities.

Market Risk: an example (I)

‘Humbling’ week in bond markets leads to fears of paradigm shift

Investors question whether a lasting and destabilising rise in yields is at hand

26 Feb 2021

Liquidity risk

- Credit
- Interest rate
- Market
- Liquidity
- Foreign Exchange
- Off-balance
- Operational
- Sovereign
- Insolvency

- Liquidity risk occurs when debt holders (deposit owners) use their right to immediate payment and the bank may not have sufficient liquid assets to honor that commitment.
- When a bank faces the need to sell assets quickly (fire-sale), this will pressure prices and very often ends in an insolvency.

Liquidity Risk: Old acquaintances

How Jamie Dimon came to rue his Bear Stearns deal, FT March 15, 2018

FT September 13, 2017

Foreign Exchange Risk

- Credit
- Interest rate
- Market
- Liquidity
- **Foreign Exchange**
- Off-balance
- Operational
- Sovereign
- Insolvency

- Foreign exchange risk arises with the portfolio or direct investment in foreign currency markets.
- The stock of foreign currency for trading in a bank suffers from market risk, not foreign exchange risk.
- The visible effect of this type of risk is the "translation risk", the accounting effect of disclosing earnings made abroad in home currency.

Off-balance Risk

- Credit
- Interest rate
- Market
- Liquidity
- Foreign Exchange
- Off-balance
- Operational
- Sovereign
- Insolvency

- In many banks, off-balance sheet items are very significative in the bank's business.
- Contingent assets and liabilities, like derivatives, have a notional value sometimes larger than the underlying business.
- Since derivatives are leveraged products (a call can be replicated as a long position on the asset financed by debt), they magnify the risk vis-a-vis an identical position in an on-balance sheet asset.

Operational Risk

- Credit
- Interest rate
- Market
- Liquidity
- Foreign Exchange
- Off-balance
- **Operational**
- Sovereign
- Insolvency

- Operational risk deals with potential losses arising from failures due to systems, people (incompetence, negligence or fraud), suppliers, procedures, reputation.
- Every single day you can expect operational failures in a bank.
- Management of this type of risk depends on frequency and severity.

Operational Risk: An example

Revlon error forces Citigroup to slash profits by $323m

Bank restates fourth-quarter earnings after losing bid to recover funds sent out by mistake

Sovereign Risk

- Credit
- Interest rate
- Market
- Liquidity
- Foreign Exchange
- Off-balance
- Operational
- **Sovereign**
- Insolvency

- Sovereign risk arises from expropriations, capital export restrictions, difficulty to deal with foreign legal systems…
- Foreign operations of a client may expose a bank to sovereign risk.
- The client may have the will and the money to pay but is restricted to do so due to foreign capital flow rules.

Sovereign Risk: An example

Argentina imposes currency controls

Government moves to prevent capital flight after peso slides in spiralling economic crisis

Demonstrators march in Buenos Aires against the economic policies of the government of President Mauricio Macri © AFP

Benedict Mander in Buenos Aires and **Colby Smith** in New York SEPTEMBER 1 2019

Interest rate risk

- Credit
- Interest rate
- Market
- Liquidity
- Foreign Exchange
- Off-balance
- Operational
- Sovereign
- **Insolvency**

- This risk happens when the value of the assets goes below the value of liabilities (and so capital is fully depleted).
- However, financial distress is a previous stage where losses are already substantial (loss of trust):
  - severe difficulty to attract deposits and other funding;
  - even before a severe situation, some investments might already been postponed, threatening the future competitiveness of the bank.

Risk Appetite Framework: General Overview

Risk Appetite Framework

- Banks should identify types of risk the they want to take on and those they wish to avoid.
- Depends on : i) appetite to take either a high or a low level of risk on board
  ii) capacity of the organisation to take the risk.
- Risk appetite/tolerance levels, thresholds and limits set for the identified material risks must be defined and monitored

Governance framework

- Banks shall provide information regarding overall governance framework and integration with risk appetite
- The governance structure must ensure integrity of overall business and risk management process.

Policies, processes, controls and systems through which risk appetite is defined, communicated, and monitored.

Material and reputational risks

Alignment with strategy

Risk Appetite Framework: components

RISK APPETITE STATEMENT

Aggregate level and types of risk that a bank is willing to accept, or to avoid, in order to achieve its business objectives.

- **Qualitative statements and quantitative measures** expressed relative to earnings, capital, risk measures, liquidity and other relevant measures as appropriate.
- Should address more difficult to quantify risks (reputation; conduct risks; money laundering; unethical practices).

RISK LIMITS

Quantitative measures relative to business lines, legal entities as relevant, specific risk categories, concentrations, and as appropriate, other levels.

RISK CAPACITY

Maximum level of risk the financial institution can assume given its current level of resources before breaching constraints determined by regulatory capital and liquidity needs.

RISK PROFILE

Risk profile: Point in time assessment of the bank's gross and net risk exposure.

RISK APPETITE

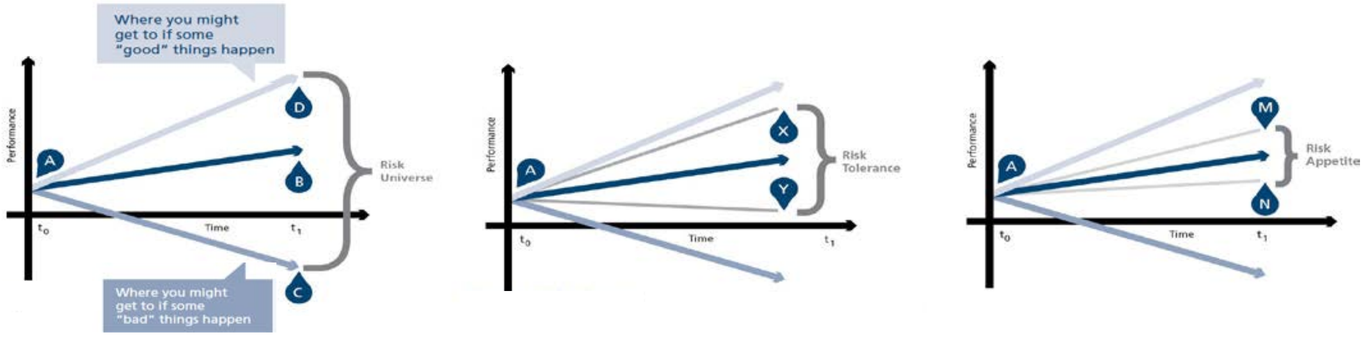
The aggregate level and types of risk a financial institution is willing to assume within its risk capacity to achieve its strategic objectives and business plan.

Risk Appetite Framework (RAF): how it works

Key point

- When approaching the risks it faces, a bank has four options available in order to control each risk:
  - Eliminate
  - Mitigate
  - Transfer
  - Accept

From risk tolerance to risk appetite



Steps required to build a RAF

Mapping of activities / functions → Identification of risks for each activity → Risk ranking impact probability → Definition and set up of control procedures → Re-evaluation of risk impact

RAF Practical example

IMPACT	
High	Event can cause substantial damaging impact to strategy/business
Medium	Event can cause visible effects but with limited impact on strategy
Low	Event may be burdensome but has no structural impact

\+

PROBABILITY	
High	Highly likely (eg: several times on every quarter)
Medium	May occur at some point in the course of the year
Low	Unlikely, very exceptional

\+

CONTROL'S EFFECTIVENESS	
Strong	Control is sufficient to nearly eliminate the risk (>90%)
Acceptable	Mitigation is acceptable (risk reduced to 80-90%)
Low	Mitigation is uncomplete (<80%)
Null	No control has been implemented

Risk Management: the 3-line of defence approach

1st LINE: FRONT-OFFICE

- Business units (front office, customer-facing activity) are the first responsible for identifying, assessing and controlling the risks of business.
- Internal policies and procedures should be clearly specified in writing and communicated to all personnel.

2nd LINE

Risk officer

- Facilitates implementation of risk management framework;
- Responsible for further identifying, monitoring, analysing, measuring, managing and reporting on risks (holistic view on all risks);
- Challenges and assists in implementation of risk management measures by the business lines
  => ensure process and controls at the first line of defence are properly designed and effective.

Compliance officer

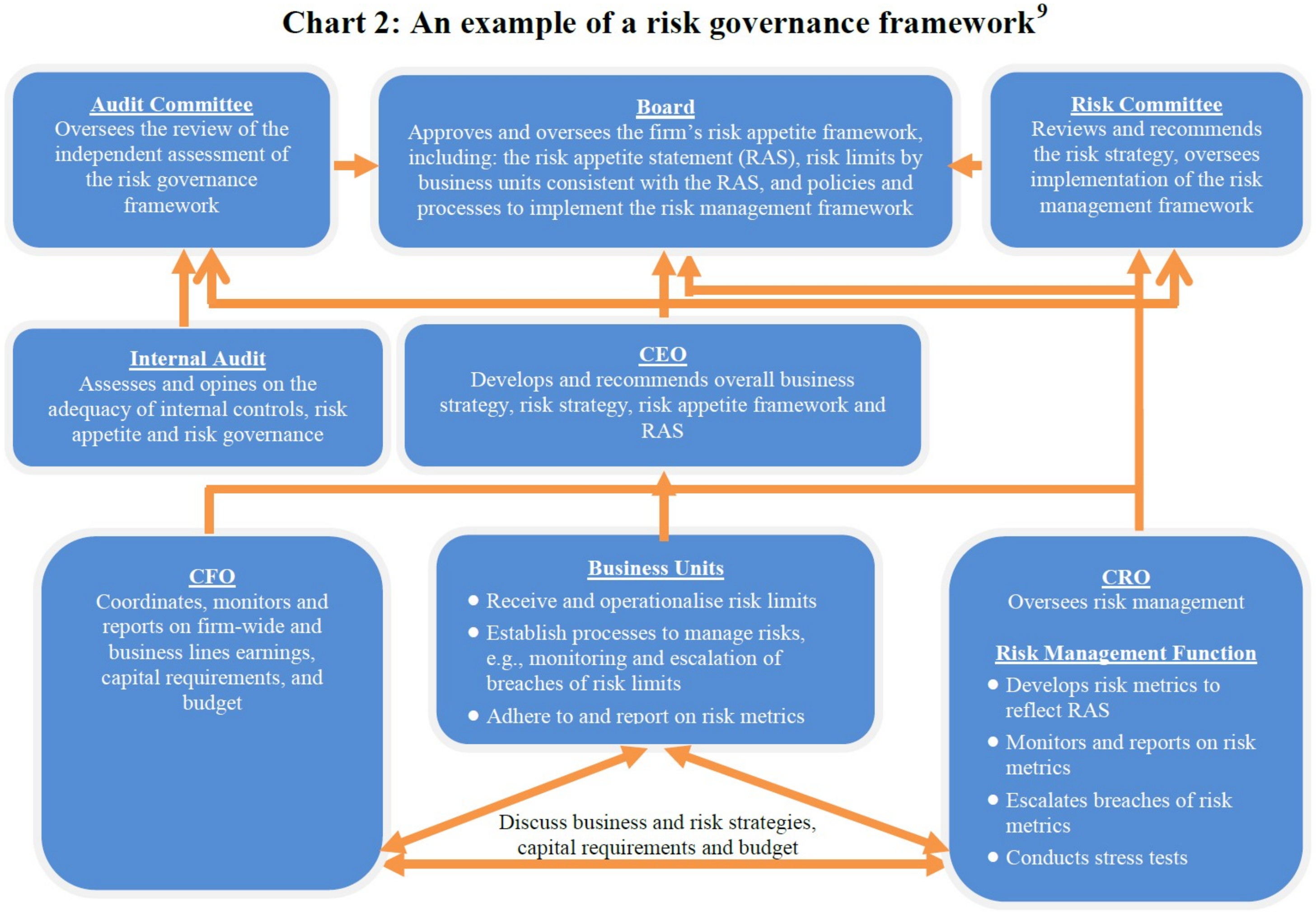
- Monitors compliance with legal and regulatory requirements and internal policies
- Provides advice on compliance to the management body and other relevant staff,
- Establishes policies and processes to manage compliance risks and to ensure compliance.

3rd LINE: INTERNAL AUDIT

- Conducts risk-based and general audits;
- Reviews internal governance arrangements, processes and mechanisms to ascertain that they are sound and effective, implemented and consistently applied.
- Carries independent review of the first two lines of defence.

All internal control functions need to be independent of the business they control, have the appropriate financial and human resources to perform their tasks, and report directly to the management body.

Risk Management: Governance



Source: FSB: Thematic Review on Risk Governance - Peer Review Report

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