

Economic Capital: A Coherent and Neutral Risk Metrics for Assessing Performance

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The three parts of my presentation

1. The competing financial management frameworks of Financial Institutions
2. Specific benefits of the Economic Capital framework
3. Implementation: The seven founding guidelines

The management of Financial Institutions is based upon several competing frameworks

➤ Four competing frameworks

ACCOUNTING
REGULATORY
RATING AGENCIES
ECONOMIC



- Each framework has its own objective and underlying assumptions
- The Economic Framework is the widest and the more complex
 - Meaning that it MAY provide a better representation of reality IF it can be calibrated and fed with adequate data
 - In the meantime, at least, it contributes asking the right questions, and notably it revisits the link between RISK, RETURN and CAPITAL

Competing management frameworks

Increasingly sophisticated frameworks 

	Accounting	Regulators (Basel2)	Ratings agencies	Investors (Economic Capital)
Size of the concerned stakeholders	Very large: Tax beneficiaries	Large: Users of the banking system	Smaller: Bondholders	Smaller still: Shareholders
Are searching for	Accountability	Limits to the ability to take risk	Solvency	Value
Target	Deliver taxes (and jobs?)	A minimum regulatory capital for a given RWA	A minimum T1 capital for AA rating	An optimal balance between risk and return
Expect from management	Reasonable transparency	More capital	More capital	Value creation
Articulates	Return and Capital	Risk and Capital	Risk and Capital	<u>Return, Risk and Capital</u>

Only the Economic Capital framework offers a coherent articulation of risk, return and capital.

In regards to the economic representation of reality, Accounting has serious internal inconsistencies

➤ Conflicting goals...

- Reflect the economic reality -> fair-value, mark-to-market
- AND form a solid base to assess taxes -> stable

... result into a twisted solution

- Historical/accrued for certain assets and liabilities, mark-to-market for others
 - Example: Depending on the instrument, one single event, the downgrade of a counterpart, is treated differently:

Instrument:	Cash in/out	P&L impact	Capital impact
Loan	No	No	No
Bond AFS	No	No	Yes
Sale of a CDS	No	Yes	Yes
Bond trading	Yes	Yes	Yes



➤ Consequence: A biased framework

- Correction: Homogeneous rules for assessing the value of assets and liabilities

The Regulatory framework does articulate Risk and Capital, but with serious inconsistencies

- Incoherence between the regulatory framework and laws?
 - What capital if banks are not « allowed » to default?
- How can local regulators manage global players?
 - How can national regulators regulate an international actor?
 - Intragroup guarantees move risks to the less severe places
- Conflict #1: Sovereignty or Safety ?
 - Investment Grade sovereigns, Ländesbanken, Mutual banks,...
- Conflict #2: « More capital » or « More credit »?
 - Don't you dare...
- Contradiction across regulatory frameworks
 - Commercial and Investment Banks: Different regulators
 - Banking and Insurance: Different severity levels
 - Financial Institutions and Hedge funds: Different constraints



The Ratings Agencies work-outs are constrained by available information and their challenging posture

- Ratings agencies work out a link between Risk and Capital on the basis of available data
 - Most available data are from the accounting and the regulatory frameworks, both of which are biased
 - Even with a good dose of intelligence and extra internal information, ratings agencies can hardly generate a better risk assessment than what Financial Institutions are capable of building up for themselves
- Ratings agencies also suffer from potential conflicts of interests
 - Being paid (at least partially) by those being rated
 - Rating of their own work, like ABS tranches
 - More than 50% of Moody's revenue in 2007
 - And observers that become (involuntarily?) actors
 - Being downgraded often creates a black hole



There are currently two major risk metrics available

➤ Regulatory Capital is simple and applies to a restrictive perimeter

- Banking perimeter only
- Focused on well known risks; largely ignores less obvious risks
- Simplified models; for instance ignores concentrations
- Pro-cyclical by construction



➤ Economic Capital has a wider scope and depth but it requires models and data that may not be available

- Consolidated rather than banking perimeter
- Aims at covering all risks
- Methodology that can identify concentration
 - more data needed
- Through the cycle



What risk metric for management purposes?

- The regulatory framework can be understood as a minimum standard for those enterprises that want to be recognised as a bank
 - Prove the ability to classify and rate those who want to borrow money
- The economic framework is what each institution should build up to measure and aggregate all potential risks across all activities, as well as they can do
 - Meaning **all risks** across all activities are to be identified
 - Structured products, hidden obligations, pension funds,...
 - Meaning using risk **models** AND knowing their limitations
 - Constant volatility models; distribution assessment (binomial,...); applicability (return to the mean FX different from IR);...
 - Meaning the disposal of **databases** to describe reality
 - Data definition, completeness, freshness, reliability
- Endogeneous risk assessment « confidence » remains quite limited
 - ↳ Moment of truth:
ON WHICH RISKS ARE YOU READY TO BET YOUR CAPITAL?

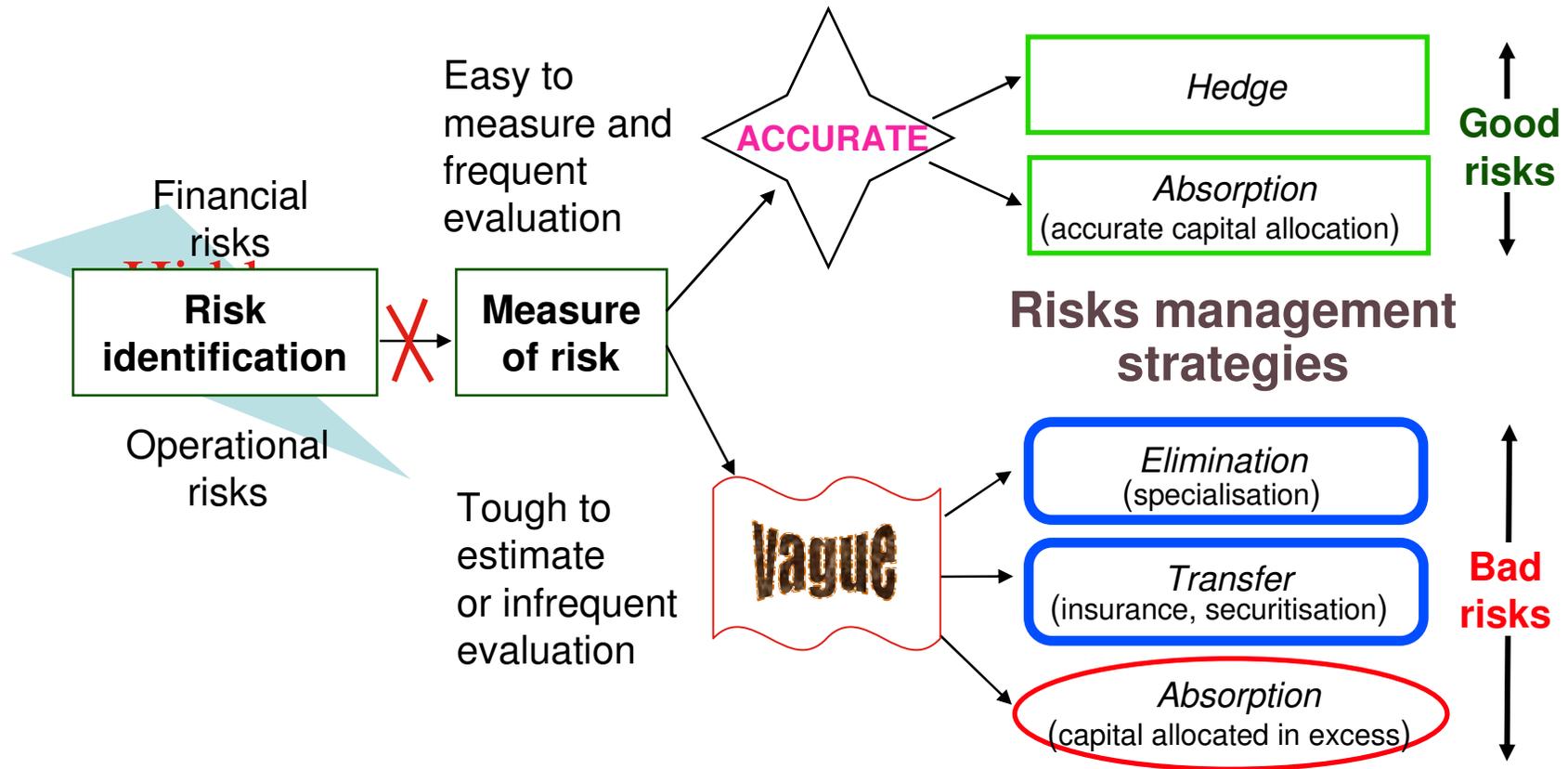
1. The competing financial management frameworks of Financial Institutions



2. Specific benefits of the Economic Capital framework

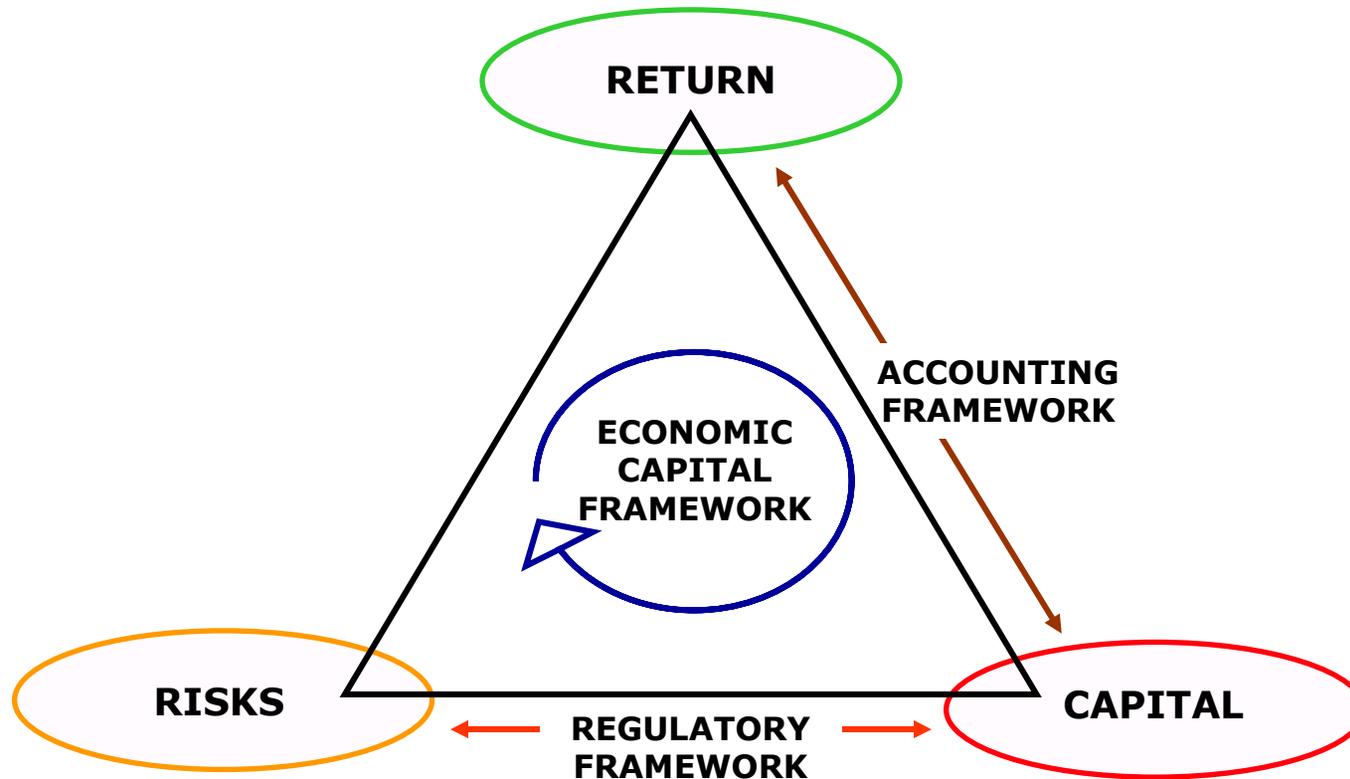
3. Implementation: The seven founding guidelines

The availability of an trustful risk metric should be a prerequisite for investing capital, shouldn't it?



**Beware!!! Some very bad risks that are hidden in this picture
Where are they, and how to chase them in real life? (return)**

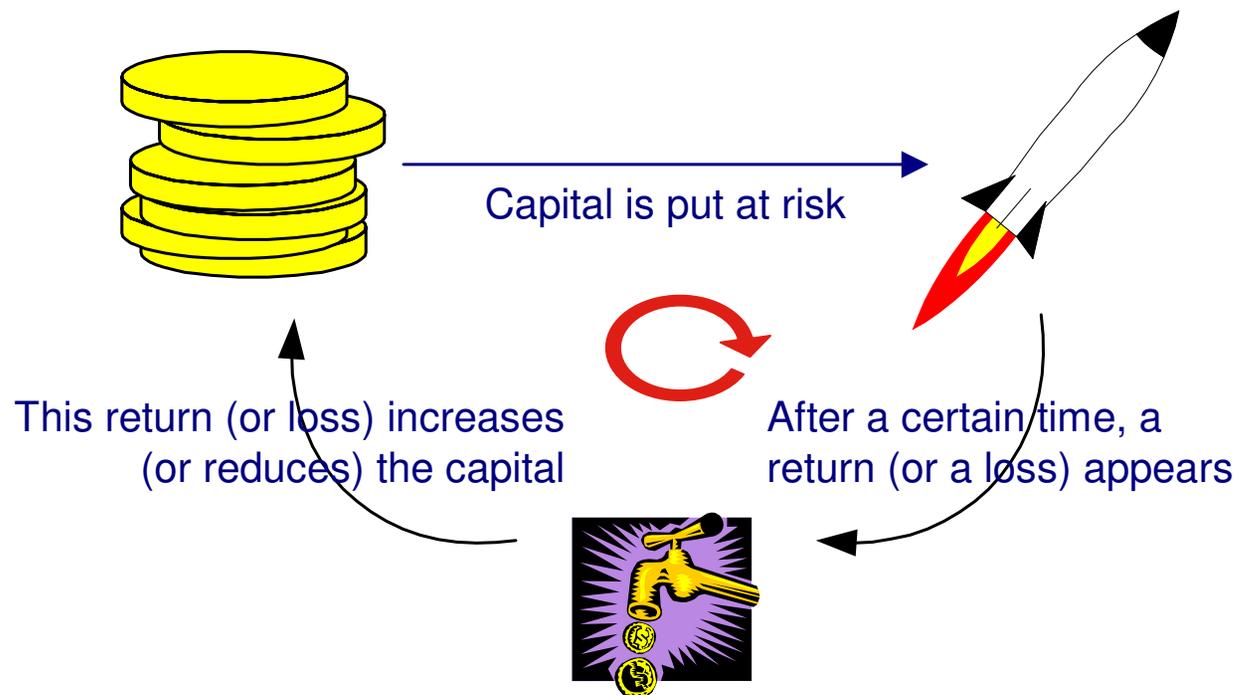
Towards the magic triangle?



- Among the existing alternative management frameworks, only one requires coherence between risk, return and capital

Why a tight articulation of Risk, Return and Capital?

- Because Risk, Return and Capital are *different views in time* of only ONE single recurring process



➤ **To track the Risks, follow the Profits**

How can profit analysis contribute to tracking risks?

➤ Where does profit (value) come from?

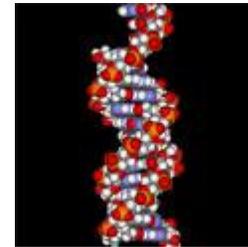
- **HARD WORK**

- Human intensive jobs; for banks retail networks



- **SPECIFIC EXPERTISE**

- Value of information no one else has



- **CAPITAL HOLDING**

- Risk-taking ability

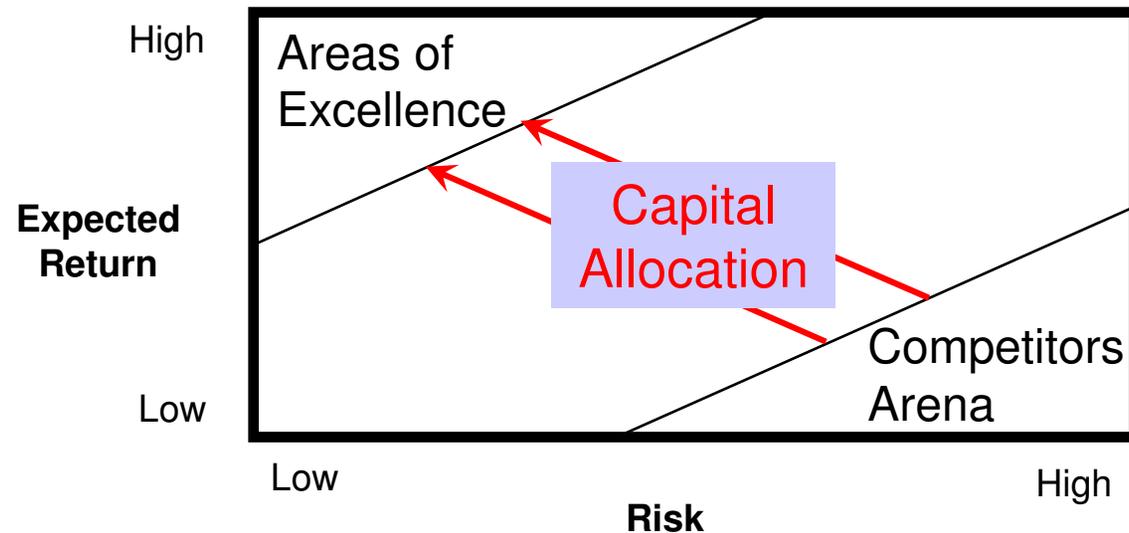


➤ In Financial Institutions profit usually comes from expertise or capital

- Analyzing profit sources should then reveal either expertise or capital

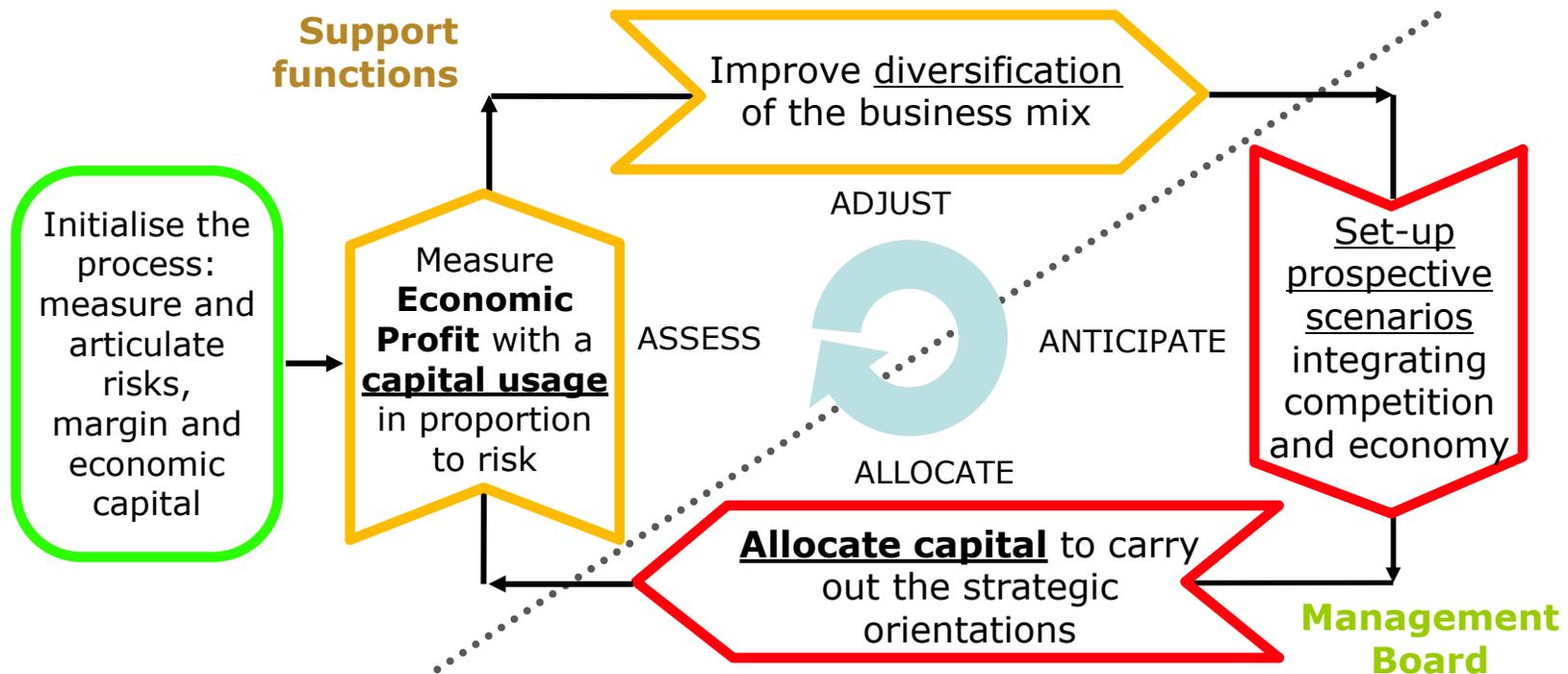
- This shines a new light on certain activities like trading, financial services (custody,...), franchises using the brand name (investment services,...), etc.
- And without a specific expertise, on the long term, capital can hardly return more than the risk-free rate

When risk and return assessments are thoroughly articulated, the capital allocation process can start



- Effective capital allocation is required to create long term value
 - Explicit allocation of long term resources
- Economic Capital is a neutral metrics for measuring risk
 - Across all types of risks and across all businesses

Allocating Capital is an iterative dynamic



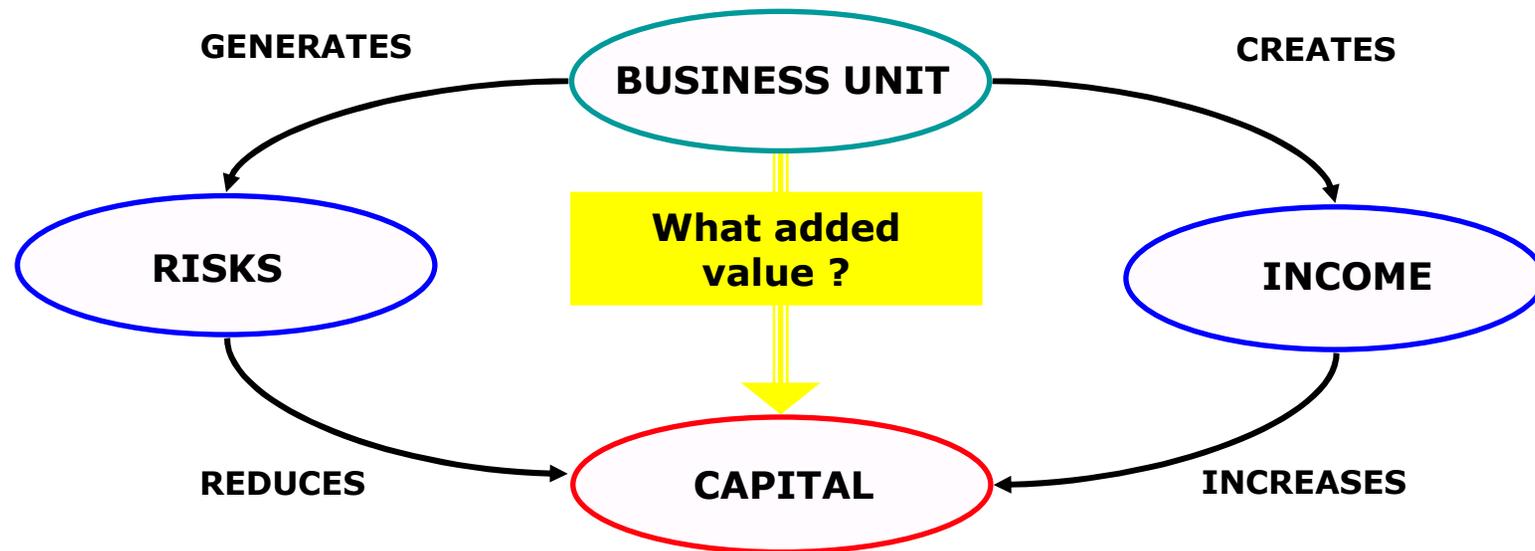
- Two sequential processes:
 - Capital Usage
 - Capital Allocation

Two complementary processes: Capital Usage and Capital Allocation



- **Capital Usage** is used to measure the Economic Profit, a key performance measure
 - Mechanical distribution of EC strictly proportional to risk levels
 - Used Capital is a measure of current risk
 - Risk assessment is done under the hypothesis that *the past is a good representation of the future.*
- **Capital Allocation** reflects the implementation of a strategy
 - Capital Usage constitutes the base case
 - *But the above hypothesis doesn't hold anymore*, which raises credibility and subjectivity issues
 - Capital Allocation is based upon scenarios which reflects strategic goals and include non recurrent events

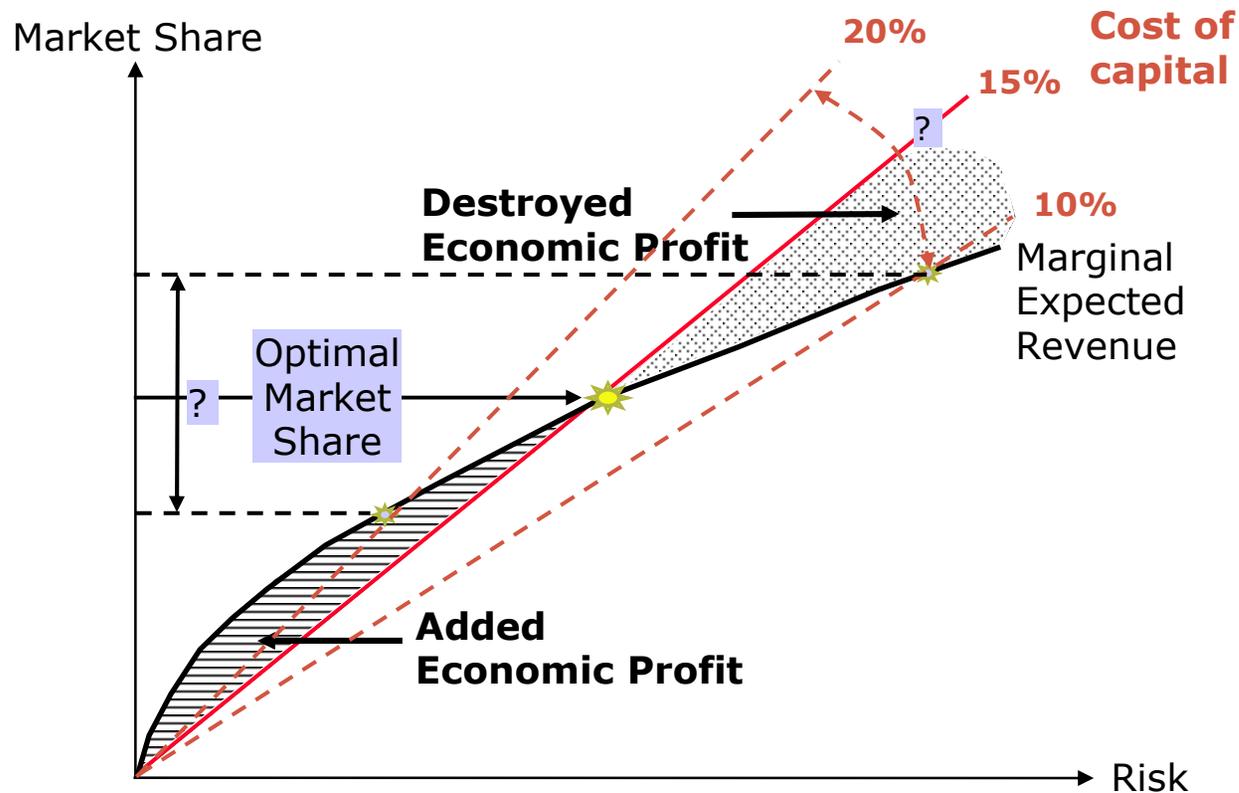
Economic Capital benefits: Measuring added value



- Added value = Economic Profit = Income – Cost of ECAP

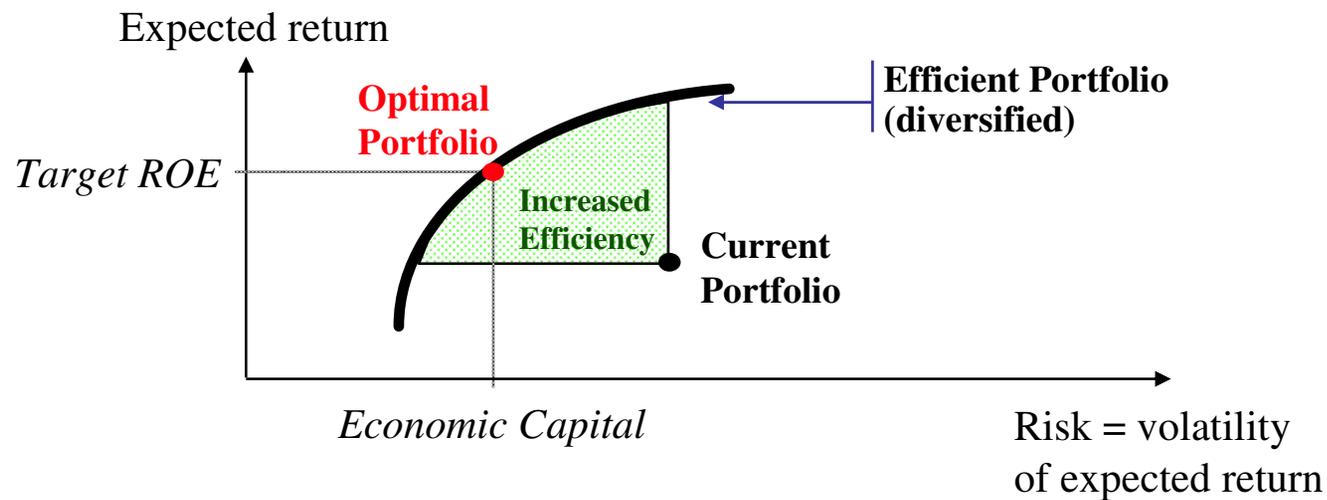
Economic Capital benefits: Targeting optimal market share

- When expanding a market, where is the limit between value creation and value destruction?



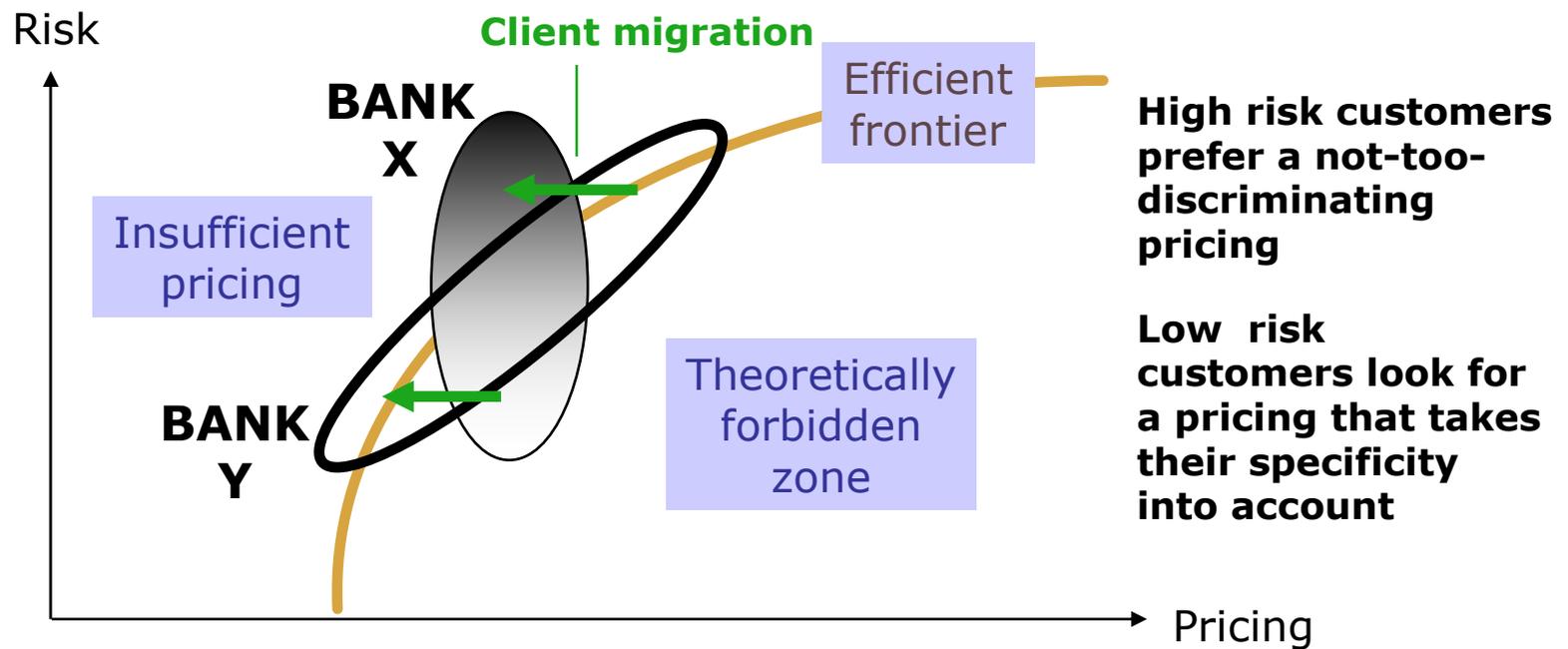
Economic Capital benefits: Managing diversification

- Is diversification a goal or a means to an end ?



- *Only non-diversifiable risks generate a return*
 - *Diversification is a constraint, not a goal*

Economic Capital benefits: Creating value by discriminating risks

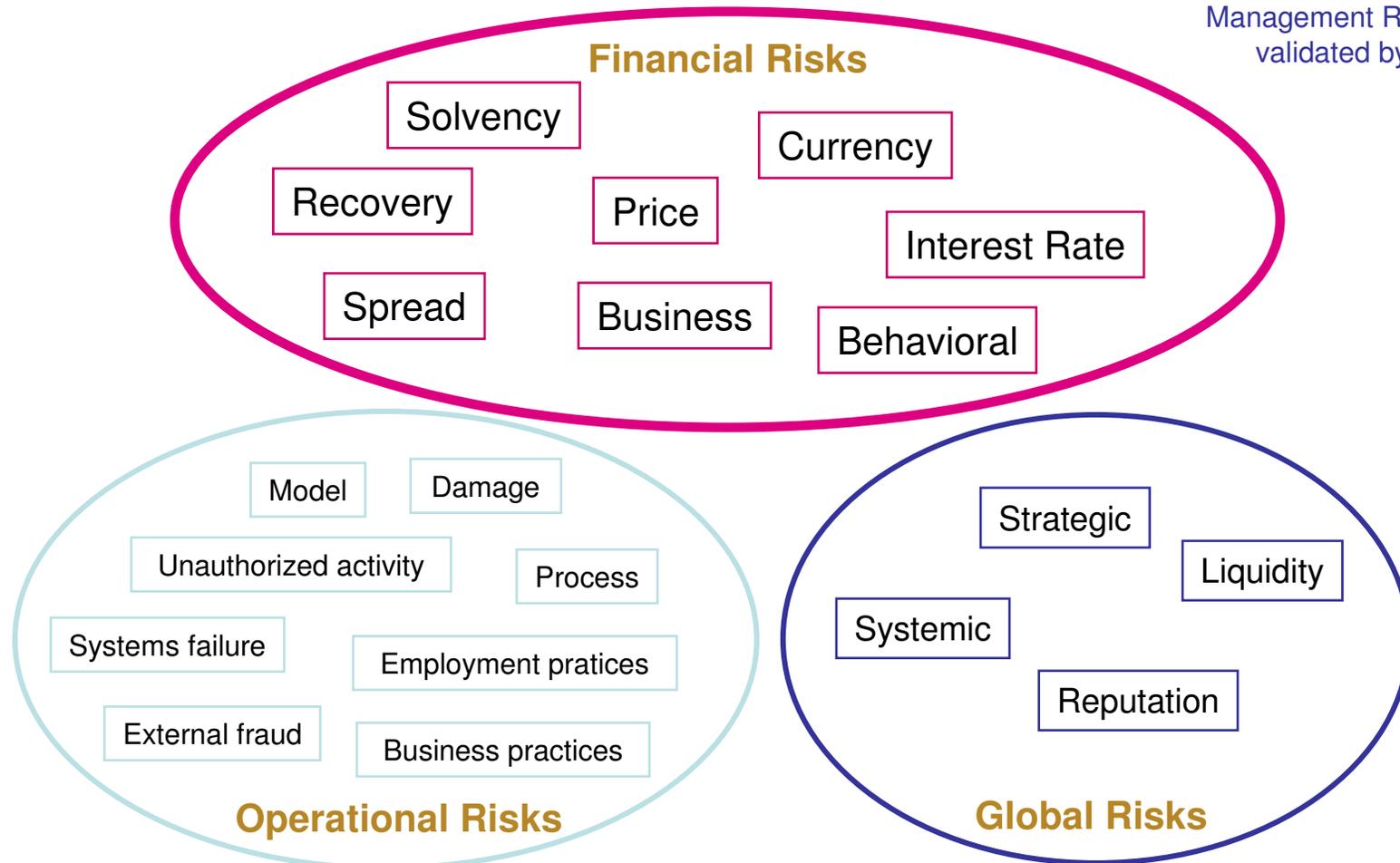


- Bank X improves its revenue and market share
 - But it destroys value

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ECAP Guideline 1: The classification of risks is explicit

Risk definitions are to be made explicit in a Risk Management Risk Glossary validated by the ComEx



ECAP Guideline 2: Each Business Unit benefits from its own risk-taking

- The *capital allocation* process aims at managing the bank as a holding of businesses
 - **Each BU puts its capital at risk and collects the resulting return**
 - Otherwise, it is not a BU !
 - **Each BU creates value from one or several sources of expertise**
 - The bank segmentation should result into BUs as independant as possible
 - To avoid complex reallocations of revenues, costs and risks
 - And facilitate the management of diversification

ECAP Guideline 3

Risk Capital is a measure of risk

- **Risks are Unexpected Losses**
- Potential losses are measured as:
 - Potential losses = Exposure * Risk factor
 - **Exposures** are economic values of assets or liabilities
 - In Economic value, either Market or Fair value
 - **Risk factors** are usually external random variables
 - Characterized by **risk parameters** such as a distribution function, a mathematical expectancy (\bar{E}) and a standard deviation (σ)
- Expected Loss (EL) = Exposure * \bar{E} of the risk factor
 - Expected Losses ARE NOT RISKS but provisions
- Unexpected Loss (UL) = Exposure * σ of the risk factor (* severity factor)
 - **Risk Capital = Unexpected Loss at a given IC and time-horizon**
 - These IC and time-horizon are unique and firm-wide
 - Risk Capital is a calibrated measure of risk

ECAP Guideline 4: Risk consolidation takes correlations into account

Diversification

➤ RISKS DO NOT ADD UP

- To aggregate 2 risks RC_A and RC_B , the « magic formula » is:

$$RC_{A+B} = \sqrt{RC_A^2 + RC_B^2 + 2\rho_{AB}RC_A RC_B}$$

- ρ « rho » is the correlation factor
- Adding the risks implies a correlation factor = 1
- Correlations handling is a critical issue
 - Managing correlations between X risks and/or BUs means handling $X^2/2$ figures
 - Choice is very much data dependent
- Managing diversification requires mastering correlation effects

ECAP Guideline 5: Risk aversion is the same at all levels of decision-making



Solidarity

- To avoid cross-subsidization, all activities should work with the same level of safety.
 - Equal to the level of safety of DEXIA as a whole.
- This level of safety is adequately measured by the probability of DEXIA facing an Unexpected Loss larger or equal than its Economic Capital.
 - ... at a given horizon.
- This probability level is, at any given time,
 - **AN INVARIANT ACROSS THE BANK.**
 - It quantifies the risk aversion to be applied at all levels of decision-making.**
 - UL depends upon the resulting **Interval of Confidence**
- The July 7th, 2004 Management Board has set Dexia IC at 99,97% at 1-year time horizon.

ECAP Guideline 6: The Management Board determines the Target ROE

Risk Appetite

- Shareholders Expected Return on their investment is usually:

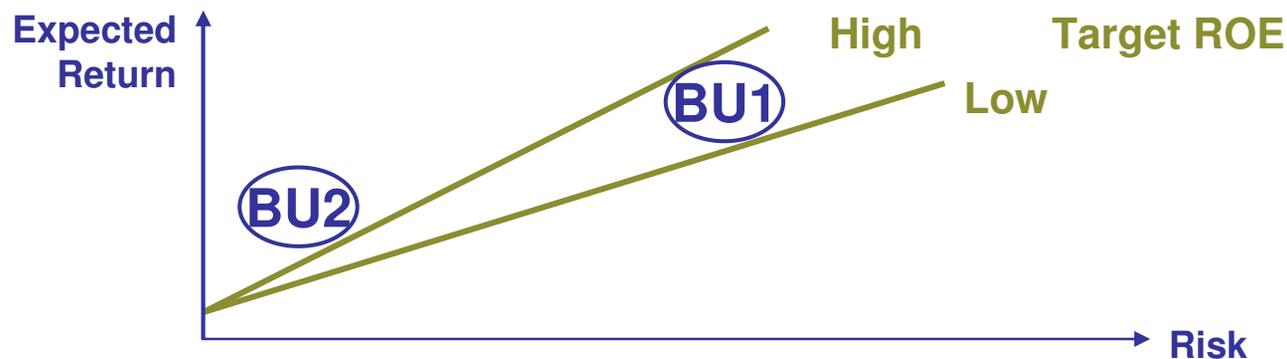
$$\text{Expected Return} = \text{Risk-free return} + \beta * \text{market risk premium.}$$

- To satisfy shareholders, the bank must generate a margin such as:

$$\text{Expected Margin} = \text{Expected Return} * \text{Market Capitalisation} = \text{Equity} * \text{Target ROE}$$

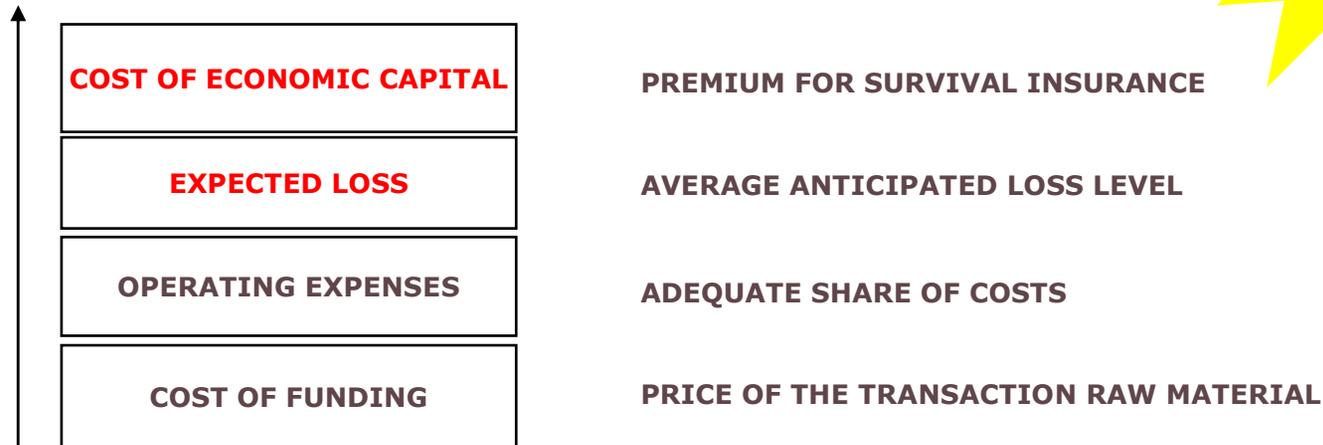
- Defining the Target ROE structures the business mix

- It defines the Expected Margin, its accepted volatility and the optimal market shares
- As a key component of the financial plan, **it has to be stabilized**



ECAP Guideline 7: The cost price of transactions includes EL and the cost of UL

RAROC



- Cost price of transactions includes two risk-related components
 - EL, the average anticipated level of future losses of the portfolio
 - And the cost of ECAP = $ECAP * Target\ ROE$
- To know the cost price of transactions is required to set-up an effective pricing policy
 - Pricing below the cost price is a commercial matter.

ECAP Guidelines

- **Guideline 1: The classification of risks is explicit.**
- **Guideline 2: Each Business Unit benefits from its own risk-taking.**
- **Guideline 3: Risk Capital is a measure of risk.**
- **Guideline 4: Risk consolidation takes correlations into account.**
- **Guideline 5: Risk aversion is the same at all levels of decision-making.**
- **Guideline 6: The Management Board determines the Target ROE.**
- **Guideline 7: The cost price of transactions includes EL and cost of ECAP.**

Conclusion

- The Economic Capital framework offers a better risk metrics than the regulatory framework (whether in turbulent times or not)
 - Full use of available risk models and data
 - Having a clear picture of what information is brought in by Endogenous Risk Measures
- Its articulation with Return completes the risk assessment with an Exogeneous Risk Measure
 - Are there some profit sources that are not explained?
 - Permanent reality check and best fit to the Institution business model
 - Back testing on effective losses is an unavoidable – although a costly exercise
- **Suggestion to Regulators and Risk Managers : MAKE SURE THE RISK MANAGEMENT STRUCTURE IS ABLE TO JUSTIFY ALL PROFITS!**
 - AAA rating with 50bp margin?
 - And no private game reserve...

Thank you for your attention