



AFIR-ERM
Finance, Investment & ERM



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ERM and QRM

New challenges for the actuarial profession

Ermanno Pitacco

MIB Trieste School of Management

Agenda

- Intro: extending the actuarial role
- ERM & QRM
- Modeling and implementation issues
- Final remarks

Intro: extending the actuarial role

- The “traditional” actuary (1st type) \Rightarrow life insurance
- The first extension (2nd type) \Rightarrow non-life insurance
 \Rightarrow ASTIN [1957]
- The second extension (3rd type) \Rightarrow finance
 \Rightarrow AFIR [1988]
-
- Currently: actuary involved in evaluations in the face of risk and uncertainty \Rightarrow AFIR - **ERM**

Intro: extending the actuarial role (*cont'd*)

- Aim of this talk: to single-out some of the principles and tools of ERM, which can support the actuarial role in a wide field of applications

ERM & QRM

- ERM: a number of definitions
- Definition proposed by IAA (2009):

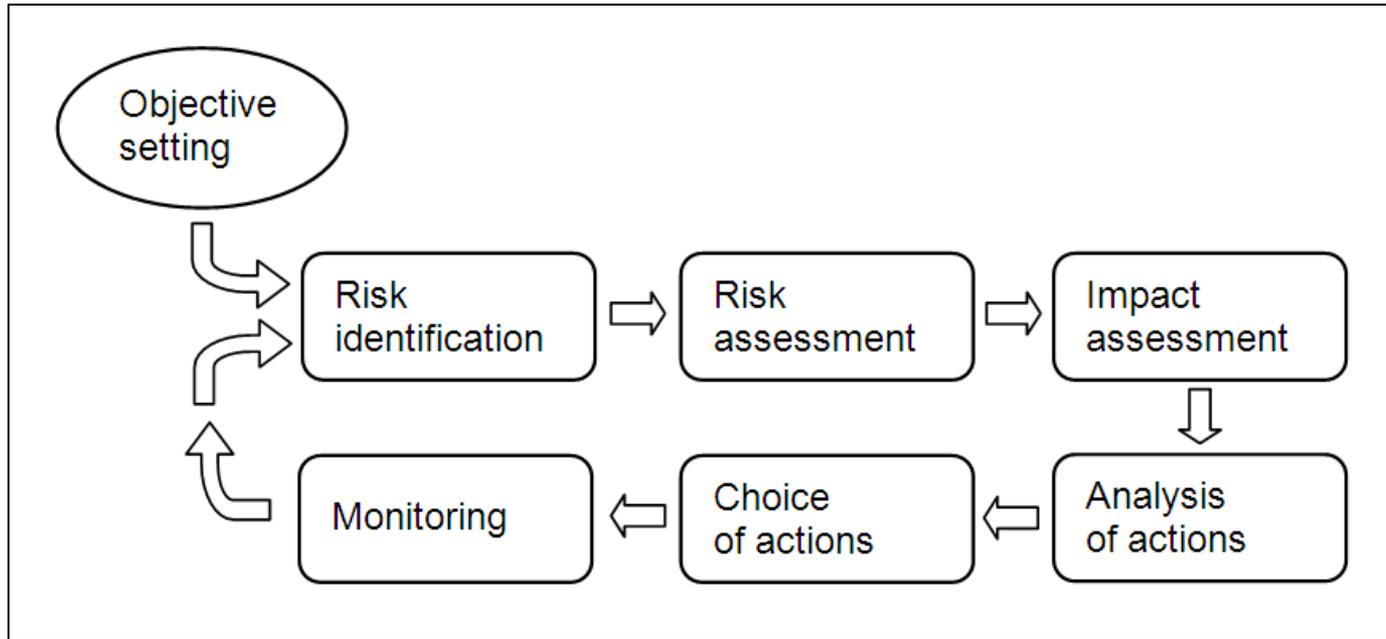
Enterprise Risk Management, as described here, is a holistic management process applicable in all kinds of organisations at all levels and to individuals. ERM differs from a more restricted “risk management” used in some sectors. For example, in some areas the terms “risk management” or “risk control” are used to describe ways of dealing with identified risks, for which we use the term “risk treatment”. Some other terms used in this document also have different usages. For example the terms “risk analysis”, “risk assessment” and “risk evaluation” are variously used in risk management literature. They often have overlapping and sometimes interchangeable definitions, and they sometimes include the risk identification step.

ERM & QRM (*cont'd*)

- All definitions share some basic ideas, in particular:
 - *holistic*, emphasizing the importance of the “whole” and the “interdependence” of the parts
 - perspective *across* the enterprise
 - *value-adding* risks vs *non-value-adding* risks
 - risk *appetite* vs risk *tolerance*

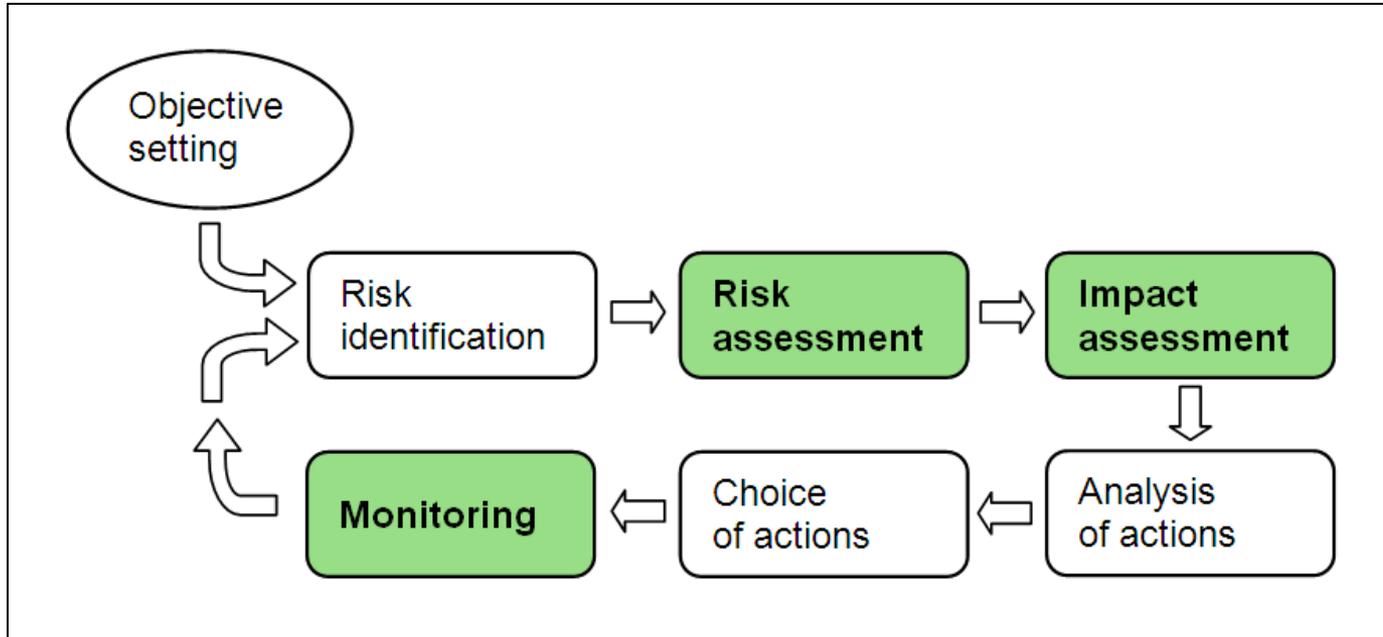
ERM & QRM (*cont'd*)

- At the heart of ERM: the *RM process*



ERM & QRM (*cont'd*)

- The *QRM* phases of the RM process

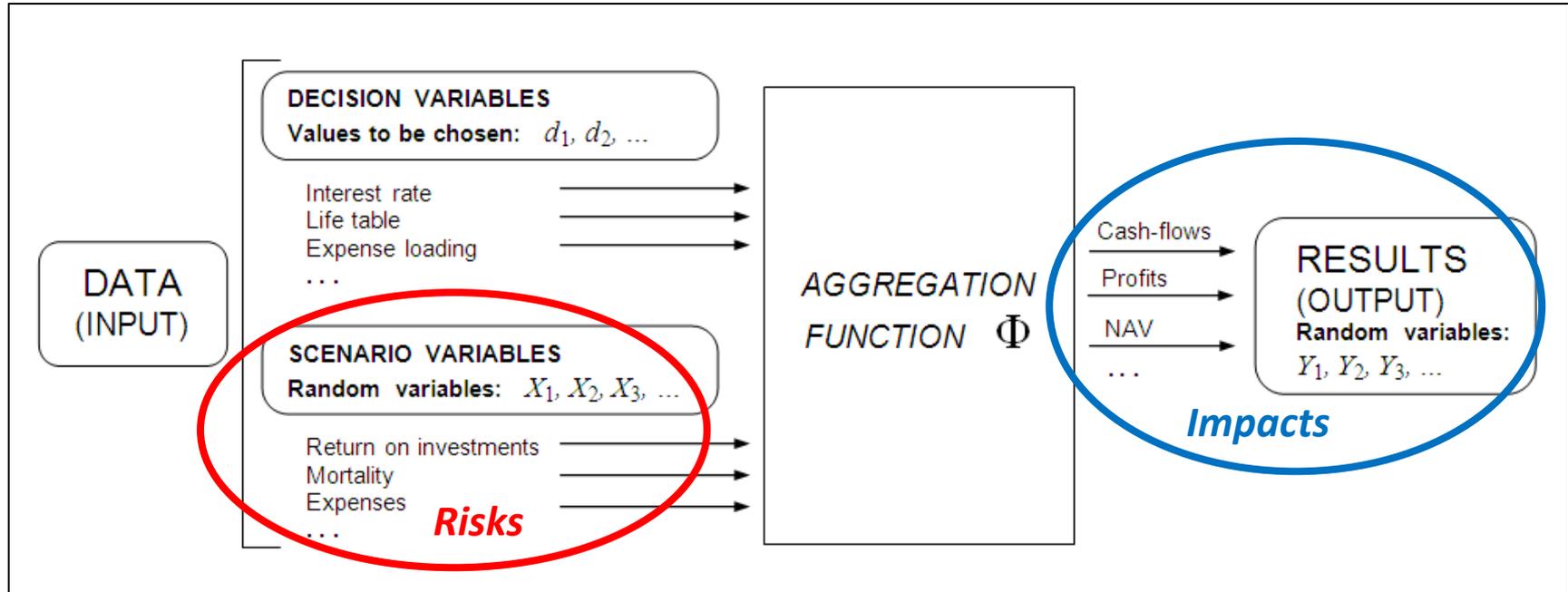


Modeling and implementation issues

- Critical step: *Risk* assessment \Rightarrow *Impact* assessment
 - From random variables (scenario) to random variables (results)
 - Model allowing for *risk components*
 - idiosyncratic risk
 - aggregate risk
 - catastrophe risk

Following figure: life insurance LoB

Modeling and implementation issues (*cont'd*)

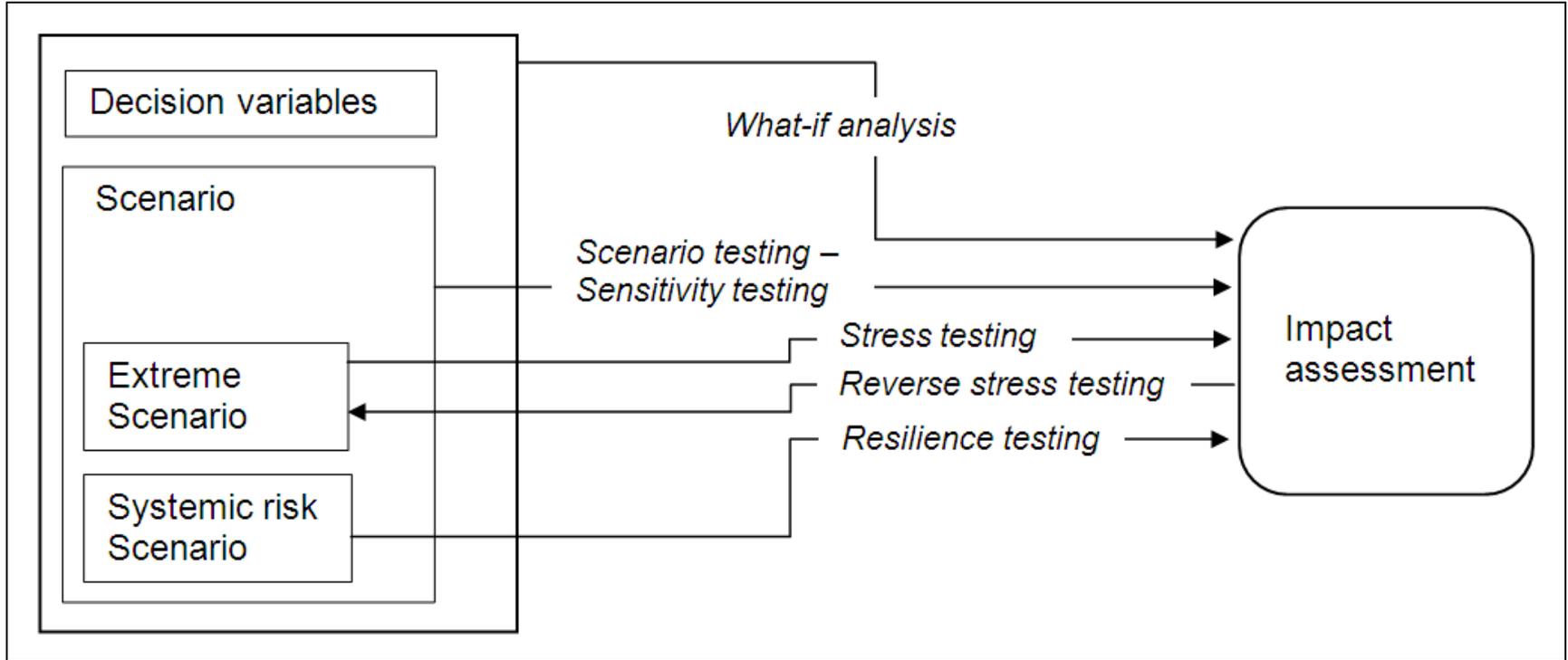


Modeling and implementation issues (*cont'd*)

- Implementation
 - stochastic approaches \Rightarrow given the probability distribution of the scenario variables, find the probability distribution of the results \Rightarrow MonteCarlo simulation
 - deterministic approaches \Rightarrow tabulations
 - stress testing (e.g., see IAA (2013))

*Be stochastic but, from time to time,
be reasonably deterministic !*

Modeling and implementation issues (*cont'd*)



Modeling and implementation issues (*cont'd*)

- Monitoring phase \Rightarrow new data
 - checking the effectiveness of actions undertaken
 - supporting *adjustments* in the risk identification and risk assessment phases \Rightarrow sound *statistical inference*

Final remarks

- According to ERM logic, all issues do not refer to specific activities
- Many issues involve quantitative assessments \Rightarrow QRM
- Actuarial role in wide fields clearly emerges

References

- IAA (2009), *Note on enterprise risk management for capital and solvency purposes in the insurance industry*. International Actuarial Association. http://www.actuaries.org/CTTEES_FINRISKS/Documents/Note_on_ERM.pdf
- IAA (2013), *Stress testing and scenario analysis*. International Actuarial Association - Insurance Regulation Committee. https://www.actuaries.org/CTTEES_SOLV/Documents/StressTestingPaper.pdf
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*Many thanks
for your kind attention!*

ermanno.pitacco@deams.units.it
pitacco@mib.edu