SUSTAINABILITY AS A STRATEGIC RISK APPROACH: SUSTAINABILITY OPTION INTO NON-LIFE INSURANCE PRICING

Miriam Pedol

22nd May 2019

AFIR ERM 19 Florence

IAA AAI AFIR-ERM Finance, Investment & ERM

ISOA

AGENDA

Agenda

Sustainability: concept

DEVELOPMENT THAT MEETS THE NEEDS OF THE PRESENT, WITHOUT COMPROMISING THE ABILITY OF FUTURE GENERATIONS TO MEET THEIR OWN NEEDS

Our Common Future the Brundtland Commission, 1987, United Nations World Commission on Environment and Development, Part 1, Chapter 2

Sustainability as a business approach

If it emerges at all, a sustainable global economy will emerge through an era of intense technological, economic, social and political metamorphosis. We can distinguish four main types of 'value webs': 'locusts', 'caterpillars', 'butterflies' and 'honeybees'

Elkington, J., Cannibals with forks: The Triple Bottom Line of 21st Century Business, Oxford, UK: Capstone, 1998

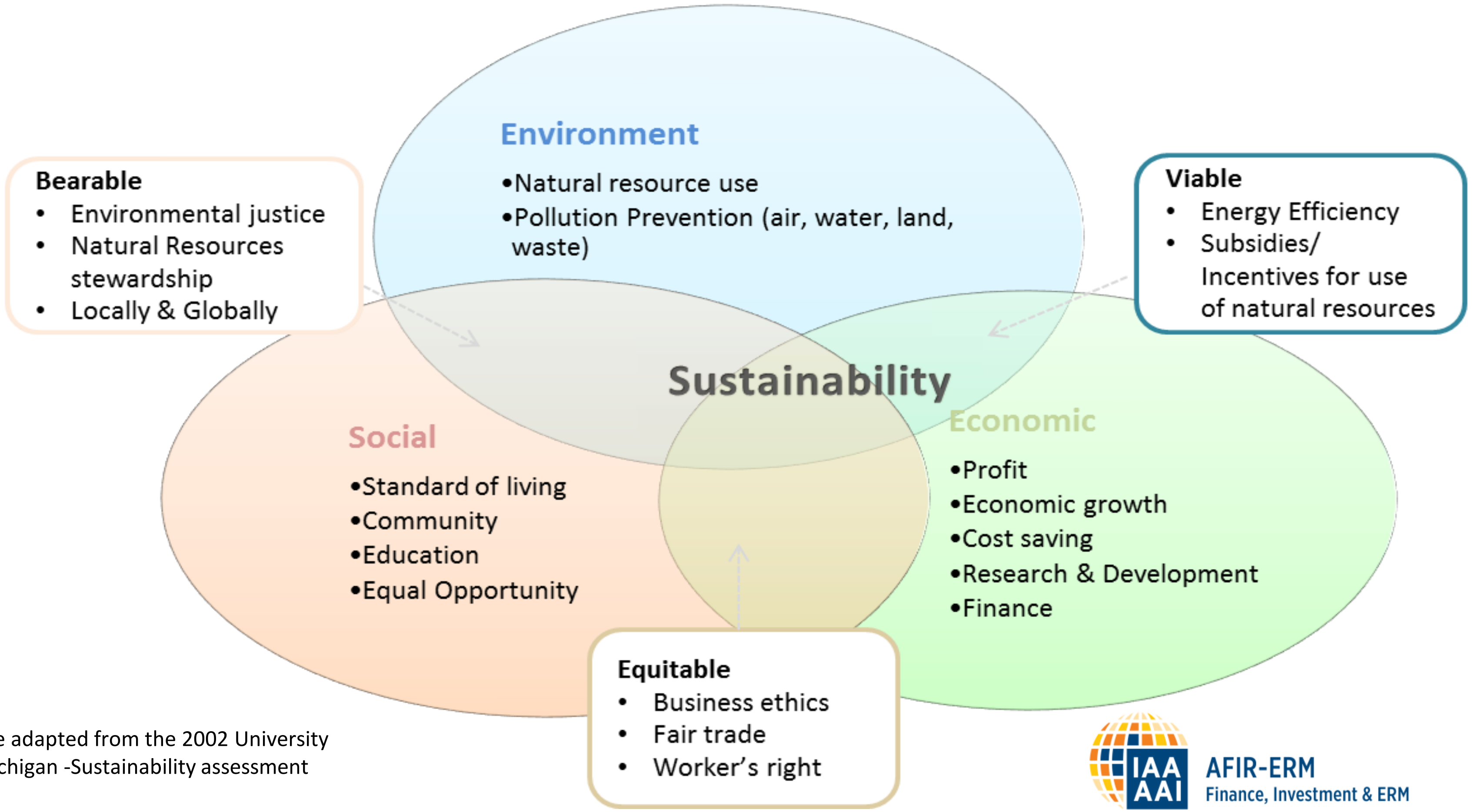


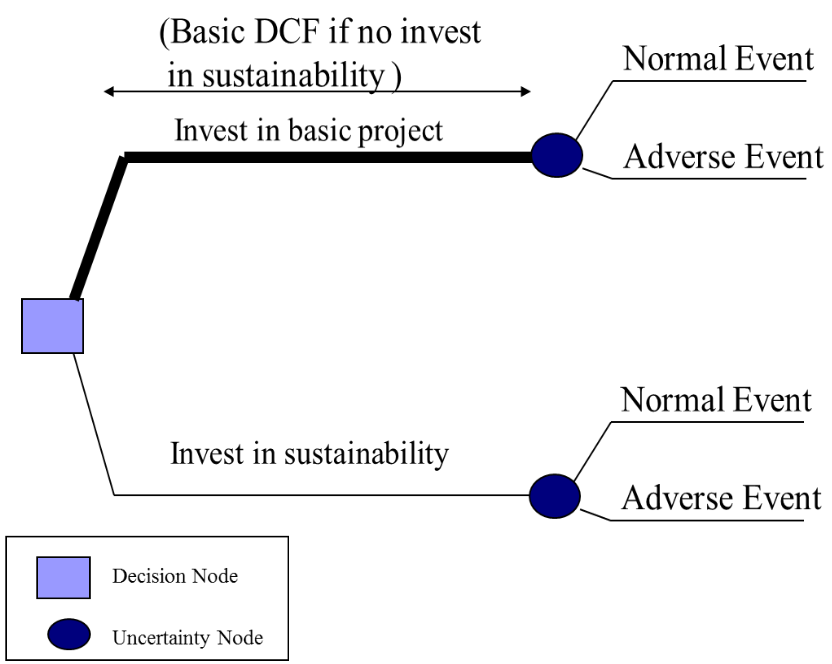
Image adapted from the 2002 University of Michigan -Sustainability assessment

Real Options: a new application to sustainability

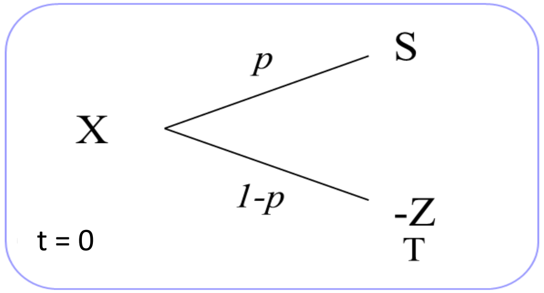
- Stewart Myers of the MIT Sloan School of Management wrote about real options in 1977. In the recent years, this approach has developed an increasingly more important position
- These options can be a **good tool** to make a project flexible in relation to the market changes analyzing each scenario and identifying the most appropriate corporate action
- There are real options when **there is the possibility to choose different strategies during the project's life** and, as a consequence, to change the size, opportunity and risk of a project's cash flows
- **Real options can be applied for business choices also related to risk mitigation**

Sustainability Option

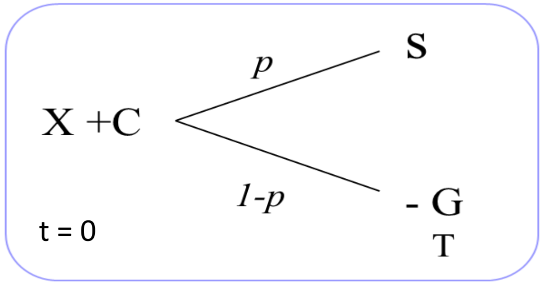
- Quantitative tool helpful in measuring the impact of sustainability on decision making: Pedol Model



Basic project



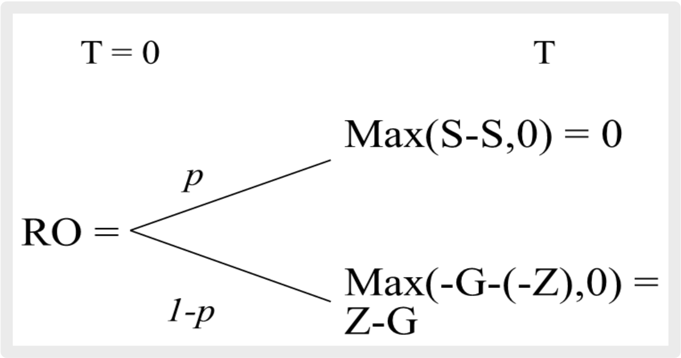
Sustainable project



where -G ≥ -Z.

The value of the real option (RO) is:

$$RO = [(1-p)^* (Z-G)] * v^T - C$$



$$\text{Basic NPV} = [p * S + (1-p) * (-Z)] * v^T - X$$

$$\textbf{Sustainable NPV} = [p * S + (1-p) * (-G)] * v^T - X - C = \textbf{Basic NPV + RO}$$

Variables:

Initial cost of project=	X
Initial cost of security/sustainability=	C
WACC=	i
Cash-in of the project=	S
Loss without sustainability=	-Z
Loss with sustainability=	-G
Maturity=	T

Sustainability in Insurance Sector

THE EU AND GOVERNMENTS AROUND THE WORLD ARE COMMITTED TO A MORE SUSTAINABLE ECONOMY AND SOCIETY

- Many studies are being published, such as:

1. International Association of Insurance Supervisors

   - *Issues Paper on Climate Change Risks to the Insurance Sector, 2018*

2. Principle for Sustainable Insurance

   - *The 4th factor: Underwriting for sustainable development in surety bonds, 2018*
   - *Underwriting environmental, social and governance risks in non-life insurance business: The first ESG guide for the global insurance industry, 2019*

Sustainability into non-life insurance pricing

- This is an exploratory approach to introduce ESG risk factors in underwriting processes to identify, mitigate and assess properly the impact of ESG risks
- The insurer recognizes investments and benefits of a sustainable strategy that mitigates the risk, so as to apply a reduction of premium in favor of the policyholder:

$$sustainability\ P = \tau \cdot V - f(RO)$$

Where
τ is the premium rate
V is the exposure
RO is the Sustainability Option
$f\,(.)$ is a discount function, $\in (0, \tau \cdot V)$

AFIR ERM 19 Florence

IAA AAI AFIR-ERM Finance, Investment & ERM

ISOA

Take aways

- **SUSTAINABILITY IS A STRATEGY**
- **ADOPTING SUSTAINABILITY HAS SEVERAL POINTS OF STRENGTH**: *ex-ante benefits* e.g. organization's prevention against adverse events; *ex-post benefits* e.g. pre-qualified intervention plans for containing the loss and saving important intangible assets, e.g. reputation
- **SUSTAINABILITY OPTION IS VALUABLE AND IT CAN BE USED AS A STRATEGIC MANAGEMENT TOOL,** when it is a risk mitigation instrument linked with sustainable factors
- **INSURANCE COMPANIES CAN RECOGNIZE A LOWER RISK PROFILE TO COMPANIES/ POLICYHOLDERS INVESTING IN SUSTAINABILITY,** and their capacity to generate and maintain value over time
- This study **WOULD LIKE TO BE A CONTRIBUTION TO ENCOURAGE THE DEVELOPMENT AND THE ADOPTION OF INSTRUMENTS USEFUL FOR ESTIMATING COMPETITIVE ADVANTAGES FOR THOSE WHO INVEST IN SUSTAINABILITY,** advantages also deriving from insurance products

Main References

- Our Common Future the Brundtland Commission, 1987, United Nations World Commission on Environment and Development, Part 1, Chapter 2
- Elkington, J., Cannibals with forks: The Triple Bottom Line of 21st Century Business, Oxford, UK: Capstone, 1998
- Brasch, M. A., Real Option in practice, Wiley Finance, New Jersey, 2003
- Triantis, A. J., Real options and corporate risk management, Journal of Applied Corporate Finance, 2000
- Pedol M., Sustainability Option: Application to BP's Deepwater Horizon Case, presented at the 22nd Annual International Real Options Conference held at Düsseldorf, Germany, June 21-23, 2018
- Pedol M. - Cabot T., Quantify Sustainability: a new factor inside insurance pricing, 2015, published by Argo Group International Holding, Ltd
- https://www.unepfi.org/psi/wp-content/uploads/2018/07/SURETY-BONDS.pdf
- https://www.unepfi.org/psi/wp-content/uploads/2019/02/PSI-Guidance-for-non-life-insurance-underwriting.pdf

Thank you.