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Long-Term Investors Club
Venice Forum

Towards a Sustainable Future: The Role of Long-Term Investment

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"Valuing A Sustainable Future Under Uncertainty"

Toulouse School of Economics

Valuing a sustainable future under uncertainty

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Motivation

- Words are dangerous when they have a fuzzy definition.
- Do we have a science-based definition of
  - Sustainable future?
  - Short-termism?
  - Environmental responsibilities?
- If yes, how should we adapt our valuation methods to take these concepts into account?
  - Cost-benefit analysis, evaluation of investment projects.

Copenhagen Consensus

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Project rating		Challenge	Opportunity
Very Good	1	Diseases	Control of HIV/AIDS
	2	Malnutrition	Providing micro nutrients
	3	Subsidies and Trade	Trade liberalisation
	4	Diseases	Control of malaria
Good	5	Malnutrition	Development of new agricultural technologies
	6	Sanitation & Water	Small-scale water technology for livelihoods
	7	Sanitation & Water	Community-managed water supply and sanitation
	8	Sanitation & Water	Research on water productivity in food production
	9	Government	Lowering the cost of starting a new business
Fair	10	Migration	Lowering barriers to migration for skilled workers
	11	Malnutrition	Improving infant and child nutrition
	12	Malnutrition	Reducing the prevalence of low birth weight
	13	Diseases	Scaled-up basic health services
Bad	14	Migration	Guest worker programmes for the unskilled
	15	Climate	Optimal carbon tax
	16	Climate	The Kyoto Protocol
	17	Climate	Value-at-risk carbon tax

Note to table: Some of the proposals were not ranked (see text below)

Economic efficiency and sustainable development

- Multidimensional impacts: Unique valuation (life, health, environmental assets,…).
- Dual questions:
  - How much should we sacrifice for the future generations?
  - How should we compare current costs with future benefits?
- One thousand tons of rice delivered with certainty in 300 years has a value of 8 kilograms of rice today when we use a discount rate of 4%.

Case study: Solar panels in France

- EDF must purchase solar electricity at a price of 58 cents/kWh. The European electricity mix costs 6 cents/kWh, but it emits 400 grams of CO2.
- In other words, it costs our people 1300 €/tCO2 saved!
- Let's compare to the benefit of reducing emissions of CO2… The Stern Report.
- NPV of the marginal damages generated by one more tCO2:
  - Stern: 60€ (discount rate 1.4%)
  - Nordhaus: 6€ (discount rate 5%)

The economics of discounting under certainty

- Main rationale to discount the future: Beliefs in a growing world GDP/cap: Why should we sacrifice the present for the benefit of people who will be much wealthier than us?

- Rawls' veil of ignorance + Risk aversion => Willingness to smooth consumption over time. The discount rate is the minimum rate of return on savings that just compensatse for the increased consumption inequalities.

- Ramsey Rule: Efficient Discount Rate = 2 * growth rate.

The economics of discounting under uncertainty

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- Uncertainty on growth is at the core of the question of sustainability.
- Precaution => reduce the discount rate.
- Because the distant future is more uncertian, this precautionary effect provides an argument in favour of a decreasing term structure of the discount rate.
- Weitzman-Gollier (2010), Gollier (2011)
- France: discount rate= 4% until 30 years, then 2%.