Environment & Finance

Why we should we make the environment a part of the financial environment

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- Answer 1 . Natural Tendency (Merton's Spiral)

- Answer 2 . In two parts

  – Analysis of present situation

  – Proposal – help needed

This presentation about reforestation similar idea, any environmental topic
Rôle of the forest

- Sinking CO_2

- Water Resources

- Biodiversity

WHAT WE HAVE NOW?

- Annual rate of deforestation of 150,000 km^2
- Studies in rich countries with paternal view

  - Environmental ethics. Intrinsic value of the nature of call "back" to the nature
  - Environmental decisions. How to quantify outcomes?
  - Corruption and problems with the enforcement of the law
  - Courses like in Schumacher College: How to create community currency and community banks?
  - Cattle for free
  - Support Government projects. Africa say. Who pays for studies like these?
  - Analogue forestry projects – people should pick berries and sell them in a local market
  - Free economic view: one pollutes $\longrightarrow$ pays, one benefits $\longrightarrow$ pays
  - *Globalifóbicos* for example: Porto Alegre "We reject the privatization of our natural resources"
  - Economical solution – We should spend more money on public goods
  - Permits to pollute – To apply we should unify criterions
  - "Integrity" projects – Modern Ecology, no such things as integrity of ecosystems

HOW MUCH MONEY

IS WASTED?

__Proposal__

Modify the situation by positive actions of owners of "good options".

Good options $\longrightarrow$ call (Asian Type)

$$C(1)=(\ \int_0^1 X(s)ds - K\ )+$$

X(s) easily observed "physical" asset

X(s) does not ~~include future~~ expectations. How to model X(s)?

Forrest case   BESQβ

$dX(t) = 2(X(t))^{1/2}dw(t) + 2\ \beta X(t)\ dt$

Limit of branching phenomena (nothing to do with trees)

Proposal

X(t) is user friendly

Individual optimization problem

Maximize $E(C(1) - C(0) - Cp)$

Cp = Cost of planting trees & protection. Fund Σ needed. Option should be attractive

Assuming some optimality of actions:

$dX(t) = 2(X(t))^{1/2}dw(t) + 2\,\beta X(t)\,dt$

Risk Neutral Valuation?

$rX(s) \longrightarrow (r + \delta_1)\, X(s)$

$\delta_1 \longrightarrow$ work (money) implied

Similarly for "bad options" $\longrightarrow$ put

$r \longrightarrow r - \delta_2$

$\delta_2 \longrightarrow$ profit

**Global Optimization Problem**

- Maximize $E\left[\int_0^1 X(s)ds\right]$ or

- Minimize $E\left[\exp\left(-\int_0^1 X(s)ds\right)\right]$

After selling good and bad options and given fund Σ

Variable

C_b ---------- price of bad options

C_g ---------- price of good options

Assumption

$dX(t) = 2(X(t))^{1/2}dw(t) + 2\,f(t)X(t)\,dt$

$f(t) = f(\,C_g,\,C_b,\,t\,)$

More general $E\left[\int_0^1 f(X(s))ds\right]$

Analytically easy if we know f

Who purchase bad option does not to be bad guy.

Main Goal

Start the project

$$C_g = 0 \qquad , \qquad C_b = \infty$$

We need fund Σ

Market forces tend to lower Σ in the future

There are opposite interests that help to create market in any environmental topic

Main Problem

Quantify things

"There is no market where we can buy, lets say, reduced global CO_2 level"

"Those who are frustrated by their inability to buy the environmental goods that they want, regardless of the income they generate, have few options"

Philip E. Graves

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