

# Climate Investing

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## Introduction(s)

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## *About Me – Short Bio*

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- I am Professor of Finance at *EDHEC*, former Director of the *EDHEC-Risk Institute*, and Research Director at the *CFA Institute Research Foundation*.
- I holds Master's degrees in business, economics, statistics, mathematics, and a PhD in finance from *U.C. Berkeley*.
- Previously on the finance faculty at the *University of Southern California*, I have also been a Visiting Professor at *Princeton University* and at *MIT*.
- I sit on the editorial board of the *JPM* and my research has been published in leading journals and featured in major dailies (*The Economist*, *FT*, *WSJ*).
- I have co-authored investment textbooks and launched digital programs on (1) Data Science for IM and (2) Climate Change and Sustainable Investing.
- In parallel to my academic activities, I have been a consultant to large institutions and a co-founder of business ventures (*Sci Beta & TrackInsight*).
- Outside finance, I have completed a PhD in Relativistic Astrophysics and currently conduct research on the foundations of quantum mechanics.
- I am also the founding Director of the *EDHEC Quantum Institute*, but please do not ask questions about this or this course will never finish in time :)

## *About You*

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- Please tell me about:
  - Your background
  - Your current occupation
  - Your objectives

## *About the Investment Industry*

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- Who?
  - Principals: **asset owners (a.k.a. investors)**
  - Agents: **asset managers**
  - Intermediaries: **advisors & distributors**
  
- What?
  - Financial **objectives**: goal-driven and liability driven objectives
  - Financial **constraints**: dollar and risk budgets
  - **Non-financial objectives and constraints**: sustainable investing
  
- How?

## *About Bob Merton*

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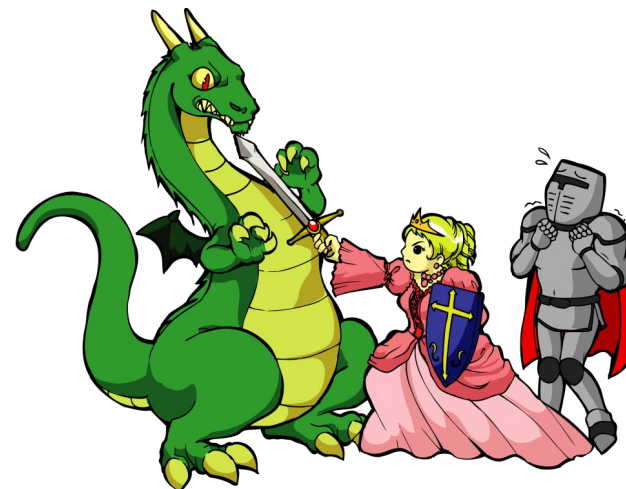
“It is, of course, not new to say that optimal investment policy should not be “one size fits all.” In current practice, however, there is much more uniformity in advice than is necessary with existing financial thinking and technology. That is, investment managers and advisors have a much richer set of tools available to them than they traditionally use for clients. (...) I **see this issue as a tough engineering problem, not one of new science.** We know how to approach it in principle and what we need to model, but actually doing it is the challenge.”

*Thoughts on the Future: Theory and Practice in Investment Management*  
Robert Merton (FAJ, 2003)

- Investors/asset owners are facing **problems**, for which they need **dedicated investment solutions – investment products** are (at best) useful as pieces of a greater puzzle.

## About Asset Owners

- The core of the problem: asset owners **want safety** (tight risk budgets) but they **need performance** (tight dollar budgets and ambitious goals) in the face of uncertain market conditions.
- They need a **shield** (safe portfolio) and a **sword** (risky portfolio) to win this fight, and they need also to know when and how to use them (dynamic allocation to safe and risky)!



## About Investment Solutions

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- There are a few basic requirements for an investment solution to be meaningful for a given investor, each of which is firmly grounded on a dedicated form of risk management.
- In a nutshell, we need a good safe building block, a good risky building block and a good allocation to the two building blocks.
  - The risky BB (a.k.a. *performance-seeking portfolio* or PSP) should be efficient (i.e., well rewarded);
  - The safe BB (a.k.a. *liability-* or *goal-hedging portfolio* or LHP/GHP) should be efficient (i.e., truly safe w.r.t. the specific goals/liabilities);
  - The allocation to risky versus safe BBs should be efficient (i.e., utility or probability maximizing).
- Optimization under constraints: \$ budget constraints, risk budget constraints, climate risk (more generally ESG) constraints.

## *About Climate Change (as an Economic Problem)*

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“Virtually everything we do involves, directly or indirectly, the combustion of fossil fuels. (...) **The problem is that those who produce the emissions do not pay for that privilege, and those who are armed are not compensated.**”

William Nordhaus, *The Climate Casino*, Yale University Press, 2013 (page 17)

- Internalizing the (negative) externality by putting a price to carbon:
  - Introducing carbon taxes (and/or subsidies)
  - Developing carbon trading (cap & trade)
  - Increasing (decreasing) cost of capital for carbon intensive (climate friendly) activities
- The last question will be the main focus of our attention.



## *About Sustainable Investing*

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- Most financial institutions are now committed to incorporating climate and/or ESG constraints in their investment process.
- This commitment requires dealing with one key challenge, namely the quality and reliability of extra-financial data.
- This commitment also raises a several major dilemmas:
  - **Doing good versus feeling good** – Green/ESG washing risks, or how to make sure that climate/ESG investing is more than an excuse for selling and buying more of the same investment products?
  - **Doing good versus doing well** – Opportunity costs, or how much performance are (we) investors prepared to give up in exchange for the alignment of (our) their portfolios with climate/ESG constraints?
  - **Doing good versus ... doing good** – Green dilution risks, or how much carbon intensity reduction are (we) investors ready to incur when they (we) add ESG score objectives to an initial carbon reduction objective?

## *About the Course*

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- Outline of (the rest of) this course
  1. Efficient risky portfolios
    - i. Risky portfolios in principle: Modern portfolio theory
    - ii. Risky portfolios in practice: Active versus passive versus factor investing
  2. Efficient safe portfolios
    - i. Safe portfolios in principle: Liability-hedging and goal hedging portfolios
    - ii. Safe portfolios in practice: Interest rate and inflation risk hedging
  3. Efficient allocation strategies
    - i. Linear & concave payoffs – Buy-and-hold & fixed-mix allocation strategies
    - ii. Convex payoffs – Dynamic portfolio insurance strategies
  4. Efficient climate investing
    - i. Measuring non-financial risks – ESG and climate risks reporting
    - ii. Managing non-financial risks – ESG and climate investing
- Format and evaluation of the course
  - Format: lectures (lecture notes) on theory & discussions (slides) on applications
  - Assignments: Problem sets & final case study