The Nobel Foundation – Asset Management

How we use MATLAB to secure the Nobel Prizes for the future

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Bio - Gustav Karner

- Master of Science in Computer Science, Linköping University
  Bachelor of Science in Business Admin, Major in Economics, Uppsala University
- Programmer and quantitative analyst Handelsbanken Markets
- Head of Risk Management Alecta
- Head of Asset Management Länsförsäkringar
- Chief Investment Officer Nobelstiftelsen

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Agenda

• The Nobel Foundation

• Historical Results

• How We Manage the Assets

• How We Use MATLAB to Find the Best Strategic Assets Allocation

• Conclusions
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Who was Alfred Nobel?

- **Born in 1833** in Stockholm. Raised in Stockholm and St. Petersburg. Received a broad and deep education.
- Experimented with explosives. Received his first patent at age 30. Earned **355 patents** in all. Famous for dynamite, but everything from bicycles to artificial silk. Built a corporate empire based on his patents.
- **Industrialist/entrepreneur.** Constantly travelling. Wrote hundreds of letters in five languages. Spent his later life in Paris, Sanremo and Karlskoga.
- Active in many fields. Wrote dramatic works.
- **No family of his own.** Contacts and business transactions with brothers Ludwig and Robert. His mother Andriette a key influence. Melancholic. Died alone in Sanremo in 1896.
Nobel’s will

http://www.nobelprize.org/alfred_nobel/will/testamente.html
The Nobel Foundation's tasks

• The connecting link for the Nobel Price Awarding Institutions

• Coordinate the Nobel Prize Award Ceremony and celebrations

• Manage the Assets

• But also other tasks as:
  – The Nobel Museum
  – Nobel Media
  – Nobel Week Dialogue
  – Conferences
  – Symposium
The Prize Awarding Institutions

- Royal Swedish Academy of Sciences
- Nobel Assembly at Karolinska Institutet
- Swedish Academy
- Norwegian Nobel Committee

Trustees of the Nobel Foundation

The Nobel Foundation
The Nobel Prize

- Nobel Prizes first awarded in 1901. Since then, 900 Prizes have gone to individual Laureates and 23 to organisations. The Nobel Prize is the “Gold Standard”.

- The Prize is:
  a) *Large* (SEK 8 million).
  b) *Universal*.
  c) *Long history* of quality (smoothly functioning selection process with few mistakes) and *independence* (from von Ossietzky to Xiaobo).
  d) *Breadth* (everything from physics to peace, mutually reinforcing).

- Great PR for science and research each year when the laureates are awarded.
The Nobel Prize Award Ceremony
The Nobel Banquet
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The Nobel Prize - amount

The graph shows the amount awarded for the Nobel Prize over time from 1880 to 2020. The amount awarded has fluctuated significantly, with a particularly large increase in the late 20th and early 21st centuries.
The Assets
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The Investment Committee

- The Investment Committee was formed at the initiative of Lars Heikensten in 2011

- The Investment Committee makes all asset management decisions

- The Investment Committee:
  - Tomas Nicolin, chairman, previously CEO Alecta and AP3
  - Magnus Dahlquist, prof. Stockholm School of Economics
  - Lars Heikensten, CEO The Nobel Foundation, previously The Riksbank
  - Carl-Henrik Heldin, chairman The Nobel Foundation
  - Kent Janér, founder and CIO Nektar
  - Gustav Karner, CIO Nobelstiftelsen
  - Sven Nyman, founder and CIO RAM ONE
The Investment Process

I – Strategy

Goal
Risk Level
Long-Term Assumptions
Asset/Liability Management

Possible Total Risk
Expected Returns
Investment Policy
Strategic Asset Allocation

II – Portfolio Constr

Economic Analysis
Strategic Deviations
Alpha + ∆risk
Active Riskfactors

Risk Budget
Strategic positions
Passive Exposure
Aktive risk
Manager Selection

III – Implementation

Implementation of Active and Passive Risk
Hedge unwanted risks

Due-diligence
Custody
Hedge-overlays

IV – Reporting

Follow up step I-III
-> IC/Board

Ex Ante/Ex Post
Risk-Return cmp to Normal Portfolio (benchmark)
Peer-group
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• The desired risk-level derives from:
  – The Board’s risk preferences
  – Financial Strength
  – Costs (Nobel Prizes and other costs)
Asset/Liability Management - Assumptions

- Expected (Real) Returns
- Fees
- Covariance Matrix
- Expected costs (inlc Nobel Prizes)
- Inflation and wage inflation
- Rebalancing strategy
• MATLAB is the "engine" for the calculations.

• Most of the calculations are done with matrix operations in MATLAB.

• MATLAB produces 1 000 000 different scenarios for every asset class every year.

• The model today simulates the next 30 years (but can be expanded to 100 years).

• The time to run the model is around 7 sec.
Asset/Liability Management Results

Simulated Median of the Assets

Assets (kkr)

Year

$5 \times 10^6$
Asset/Liability Management Results

Simulated Median Cost ratio

Cost ratio

Year
Asset/Liability Management Results

Default Ratio

Year

0 5 10 15 20 25 30

0 0.02 0.04 0.06 0.08 0.1 0.12
Asset/Liability Management Results

Risks and Opportunities

Assets (kkr)

Year

$3 \times 10^7$
The Final Results -
The Strategic Asset Allocation

Normal Portfolio

Equities incl Private Eq. 55 % +/- 10 % (60 %)
Fixed Incomes 20 % +/- 10 % (35 %)
Alternative Investments 25 % +/- 10 % (5 %)
Long-term benchmark

Genomsnittlig årlig avkastning de senaste fem åren (2009 - 2013)

Genomsnittlig årlig avkastning de senaste fem åren (2010 - 2014)

Genomsnittlig årlig avkastning de senaste fem åren (2011 - 2015)

Genomsnittlig årlig avkastning 2008 - 2012
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Conclusions

- The Nobel Foundation has a Long History and Strong Brand.

- Decent Returns are Required to Maintain the Size of the Nobel Prize Adjusted for Inflation.

- A Robust Simulation Process to Find the Right Strategic Assets Allocation and a Competent Investment Committee is the Key.