INTRODUCTION

MAIN ORIGINAL THESIS: MASLOWIAN PORTFOLIO THEORY—MaPT

BROADENING THE SCOPE
- Target Oriented Investment Advice—TOIA
- A Mathematical Implementation + Examples
- TOIA is not MV Optimal
- Maslow’s Theory is Contested
- MiFID

FURTHER RESEARCH

CONCLUSIONS
- Disadvantages of TOIA
- Advantages of TOIA
- Summary
OUTLINE

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EXISTING THEORIES

Normative Theories → All Investments in One Portfolio

e.g. Mean-Variance (Markowitz 1952a)

Descriptive Theories → Many Sub – Portfolios

e.g. Behavioural Portfolio Theory (Shefrin and Statman 2000)
People making choices based on the normative theories

...OR...

Normative theories that allow for portfolio segmentation (mental accounts)
**Maslowian Portfolio Theory – MaPT**

**The Idea**

**Core Idea**

Investments serve a purpose in life. The life-goals are the purpose of the investments, and money is only a means to attain a life-goal, it is not a goal in itself.

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<table>
<thead>
<tr>
<th>Human Needs</th>
<th>Investments/MaPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physiological Needs</td>
<td>liquid/cash</td>
</tr>
<tr>
<td>Safety Needs</td>
<td>insurance, retirement savings</td>
</tr>
<tr>
<td>Love Needs</td>
<td>mixed portfolios for projects</td>
</tr>
<tr>
<td>Esteem Needs</td>
<td>mixed portfolios for projects</td>
</tr>
<tr>
<td>Self Actualization</td>
<td>broker account(?)</td>
</tr>
</tbody>
</table>

**Table 1: Maslowian Portfolio Theory.**
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**FURTHER SCOPE POSSIBLE AND NECESSARY**
OPENING THE BOX OF PANDORA . . .
Problem formulation by F. Van den Spiegel in 2000

- Refereed Publications:
  - investment horizon is relevant: (De Brouwer and Van den Spiegel 2001)
  - analogy (first ideas): (De Brouwer 2006)
  - MaPT: (De Brouwer 2009)
  - TOIA: (De Brouwer 2011)

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**TARGET ORIENTED INVESTMENT ADVICE (TOIA) THE LOGIC**

- Hierarchy Needs (Maslow 1943)
- EUT (Cramer 1728) (Bernoulli 1738)
- MaPT (De Brouwer 2009)
- Customary Wealth Theory (Markowitz 1952b)
- Target Oriented Investment Advice (De Brouwer 2011)

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**Figure 1:** Milestones for the formulation of TOIA.
FIGURE 2: A scheme to fill in the need levels.

FIGURE 3: The basic scheme to get a set of realistic investment projects in appropriate proportions. The important “Define Projects” segment is Figure 2.
THE MATHS OF TOIA
THE LOGIC

Risk-Reward Optimization
(Markowitz 1952a)

Lex Parsimoniae
(W. of Ockham 1320)
& transparency

TOIA (De Brouwer 2011)

Risk relative to target
(Fishburn 1977)
(Roy 1952)

↓
coherent risk metrics
(Artzner et al. 1997)

↑

TOIA Maths

FIGURE 4: An Implementation of TOIA.

INTERPRETATION OF ES, VaR AND σ

FIGURE 5: Interpretation of ES, VaR and σ.
**EXAMPLE 1**

**The Mechanics of a Risk-Reward Method**

**FIGURE 6:** Portfolios in the risk/reward plane.

**FIGURE 7:** Recommended portfolios in function of ES.

Philippe J.S. De Brouwer
EXAMPLE 2: NON-GAUSSIAN ASSETS

Figure 8: The pdfs in the example (the y-axis for the structured fund is truncated—this fund is a long call plus a deposit).

Figure 9: The min-VAR and min-ES portfolios compared.
**Example 3: A Complex Example**

<table>
<thead>
<tr>
<th>Goal</th>
<th>$\tau$</th>
<th>$T$</th>
<th>$CF$</th>
<th>$V_0$</th>
<th>$\alpha$</th>
<th>$ES_{\text{max}}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>school</td>
<td>€100,000</td>
<td>1</td>
<td>€0</td>
<td>€100,000</td>
<td>0.01</td>
<td>10% of $\tau$</td>
</tr>
<tr>
<td>yacht</td>
<td>€120,000</td>
<td>5</td>
<td>€0</td>
<td>€100,000</td>
<td>0.1</td>
<td>20% of $\tau$</td>
</tr>
<tr>
<td>retirement</td>
<td>€200,000</td>
<td>10</td>
<td>€10,000</td>
<td>€100,000</td>
<td>0.01</td>
<td>minimal</td>
</tr>
<tr>
<td>extra</td>
<td>€50,000</td>
<td>10</td>
<td>€0</td>
<td>€50,000</td>
<td>0.05</td>
<td>€5,000</td>
</tr>
</tbody>
</table>

Table 2: The investment parameters for in Example 3. The investor wants to invest $V_0$ (plus annually $CF$) and wants it to grow to $\tau$ in $T$ years, the expectation of the average of the $\alpha$100% worst outcomes is to be limited to $ES_{\text{max}}$.

**Example 3: Feedback to Investor**

<table>
<thead>
<tr>
<th>Goal</th>
<th>Equities</th>
<th>Bonds</th>
<th>Cash</th>
<th>ES</th>
<th>Feedback</th>
</tr>
</thead>
<tbody>
<tr>
<td>school</td>
<td>12.8%</td>
<td>24.4%</td>
<td>62.8%</td>
<td>10.8%</td>
<td>add</td>
</tr>
<tr>
<td>yacht</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
<td>18%</td>
<td>reduce</td>
</tr>
<tr>
<td>retirement</td>
<td>21%</td>
<td>30%</td>
<td>49%</td>
<td>€3161.20</td>
<td>ES</td>
</tr>
<tr>
<td>extra</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
<td>€3836.07</td>
<td>is less</td>
</tr>
<tr>
<td>total portfolio</td>
<td>50.46%</td>
<td>16.12%</td>
<td>33.42%</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

Table 3: An overview of the ES-optimal portfolio compositions, as well as their proportion of the total portfolio. In the last two columns one finds respectively the percentage of the sub-portfolio at $t = 0$ (i.e. at the moment of writing the financial plan), and the Expected Shortfall as obtained after optimization.
**EXAMPLE 3: A COMPLEX EXAMPLE**

![Graph showing the relationship between return and standard deviation for different target portfolios.](image)

**FIGURE 10:** An example with four target portfolios.

**DIFFERENT FROM MARKOWITZ (1952)**

- **ES ≠ VAR**
  - ES is coherent

- **Mental Accounting is Not Optimal**
  - How to test? Which $T$?
  - If so: a small price to pay (as a premium for an additional insurance): reduces model risk, diversification in diversification, ring-fencing, framework that counteracts behavioural biases, etc.
Maslow’s Theory is Contested

- criticisms
  - nativism
  - hierarchy
  - B-needs do not emerge from a deprivation
  - lower needs are unworthy
  - Maslow mixes evolutionary function, developmental sequence and cognitive priority
  - self-actualization (might) not be a distinctive motive
- not contested
  - separate needs
  - framing in addressing needs

Maslow is well known and well adapted to financial thinking.

Rules for Know-Your-Customer: suitability requirements guide the industry to a one-risk-profile-per-investor approach based on a questionnaire

- increases model risk (all in one portfolio)
- soft-focus concept of “risk-tolerance” (not defined and changeable)
- empowers emotions to become decisive ⇒ stimulates bubbles and crashes
- little understanding of the investor’s targets
- questionnaire = the worst MCDM to find something that does little matter and use it as the only parameter for the only decision, and map this arbitrary parameter in arbitrarily to an arbitrary set of investments.
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Further Research

- efficient investment strategies (ongoing at e.g. VUB)
- commercial wrapping (how to avoid incomplete cover of needs)
- implications on product development
- alternatives for TOIA, robustness of TOIA, …
- …
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**DISADVANTAGES OF TOIA**

- Portfolios are not necessarily MV-optimal
  - Because of mental accounting . . . however in a very abstract way (multiple horizons in MaPT/TOIA!)
  - ES used in stead of VAR . . . however this is much more logical, coherent and intuitive

- **Time consuming** for advisers

- **Computing time intensive** to optimize portfolios

- **If applied, should be complete** – all needs should be covered (facilitated by Maslow’s framework)

- More research is needed (e.g. efficient investment strategies)
ADVANTAGES OF TOIA

- creates a natural language to guide the investor;
- investment advice that serves a purpose, that makes sense for the investor, helps people to realize goals;
- no use of ill-defined concepts such as “risk tolerance”, no need for magical beliefs about the ability to define, determine and use this parameter;
- provides a framework to hold onto, to temper emotions
  - portfolio returns are not/less deteriorated by behavioural biases
  - bubbles and crashes are tempered—if TOIA is widely used
- ideal method to build trust and a long term relationship between advisor and investor
- TOIA reduces model risk (diversification within diversification)

CONCLUSIONS

- MaPT puts investing in a frame: the frame of life!
  Investments are a subordinated aspect of life and are no target in their own right
- MaPT is …
  - valid
  - normative
  - coherent
  - applicable in practice (TOIA)
- MaPT and its implementation TOIA have distinctive advantages: they
  - answer to real needs
  - create a natural language in communication with investors
  - are a rational approach to mitigate some behavioural biases, while other biases are used to help the investor
THANKS FOR YOUR ATTENTION!

AND BIG THANKS TO PROMOTOR, COMISSION AND JURY FOR THIS GREAT LEARNING EXPERIENCE!

Philippe welcomes communication at philippe@de-brouwer.com
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NOMENCLATURE

MaPT  Maslowian Portfolio Theory, page 9
MCDM  Multi Criteria Decision Method, page 27
MiFID Markets in Financial Instruments Directive, page 27
MV    Mean-Variance criterion, as proposed by (Markowitz 1952a), page 31
pdf   probability density function, page 21
TOIA  Target Oriented Investment Advice, page 13
VAR   Variance, page 31