Investor behavior: the Last Mile problem and possible fixes

Andreas Hackethal
Goethe University Frankfurt am Main

2015 GSBE Marketing-Finance Symposium
Oct 8, 2015
Return gap of self-directed investors

Return-Risk Profile of German Individual Investors
(3,400 individuals, Online Broker, 2003-2012)

>80% of investors
Return gap caused by investment mistakes

Determinants of investment results
(5000 clients of Online Broker, 1999-2011)

- Low diversification
- Excessive trading
- Home bias
- Disposition effect
- Lottery stocks
- Trend Chasing

Weber/Meyer/Loos/Hackethal (2014)
Actual portfolio risk not in line with desired risk

14,000 customers of a German online brokerage (2007-2008)

Source: Own data analysis
Investor preferences result in dilemma also for advisors

Client survey and portfolio data
(1280 clients, 2010-2013)

Source: German, Felix (2014). Working Paper, Goethe University
Example for opionated trading: Tetraphobia

- Probability that Taiwanese traders place limit orders \( \_\_\_8 \) is 50% higher than \( \_\_\_4 \)
- Superstitious traders earn on average $250 less per trade
Sound investment behavior can be learned

Variation across investors

- 100%
- ~ 50 to 60%
- ~ 0 to 5%
- ~ 30%
- ~ 10 to 15%
- 0%

Determinants

- Remaining differences must be individual-specific experiences and environmental factors (still 50-60%)
- Differences in parenting matter little
- Genetic differences across individuals
- Standard socio-economic factors

Source: Cronqvist and Siegel (2014)
Psychology: investors typically in „System 1“

System 1 – INTUITION
- Always on
- Effortless, fast, simultaneous
- Objective: match own mental model with world

System 2 - LOGIC
- Needs to be activated
- Effort, slow, sequential
- Objective: check System 1 and trade off consuming now against long-term well-being
The Last Mile Problem

- Lack of relevant information
- Poor decision rules
- Options inconvenient
- Low self control
Last Mile Problem Fixes

Potential Fixes

- Financial Education
  works when smart & „just-in-time“
- Defaults
  works but paternalistic
- Financial Advice
  works under specific conditions
- Goal Orientation
  works in health

Lack of relevant information
Poor decision rules
Options inconvenient
Low self control
Efficacy of smart disclosure depends on details

**Typical challenges**
- Inattention
- Motivated attention (e.g., ostrich effect)
- Low comprehensibility
- No verifiability
- => No behavioral change plus unintended side effects such as „moral licensing“ and „insunation anxiety“

**Solutions**
- Simplification
- Sequence/Saliency
- Standards (indicators, format)
- Feedback on own behavior
- Benchmarks and peer groups
- Indirect effects through supply side responses
- => Significant reactions and learning effects

Source: Loewenstein et al (2013)
**Last Mile Problem Fixes**

**Actionable information: smart disclosure of portfolio performance**

<table>
<thead>
<tr>
<th>Risk concentration 2014</th>
<th>45% Single stocks</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Returns 2014</td>
<td>Before cost</td>
<td>After cost</td>
</tr>
<tr>
<td>+2.245€</td>
<td>8.3%</td>
<td></td>
</tr>
<tr>
<td>+1.913€</td>
<td>7.3%</td>
<td></td>
</tr>
</tbody>
</table>

Meyer/Ahslwede/Urban (2015): Recipients of salient portfolio reports increase diversification and reduce trading
### Performance Chart

<table>
<thead>
<tr>
<th>Service</th>
<th>Return (%)</th>
<th>Value ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index Funds Over Mutual Funds</td>
<td>+2.1%</td>
<td>+$93,687</td>
</tr>
<tr>
<td>Tax-Loss Harvesting</td>
<td>+1.0%</td>
<td>+$44,613</td>
</tr>
<tr>
<td>Optimal Allocation</td>
<td>+0.5%</td>
<td>+$22,306</td>
</tr>
<tr>
<td>Automatic Rebalancing</td>
<td>+0.4%</td>
<td>+$17,845</td>
</tr>
<tr>
<td>Tax-Aware Allocation</td>
<td>+0.6%</td>
<td>+$26,768</td>
</tr>
<tr>
<td>Estimated Additional Return</td>
<td>+4.6%</td>
<td>+$205,219</td>
</tr>
</tbody>
</table>

**Based on a $100,000 Investment.**

**Defaults: Roboadvice with built-in sound decision rules**

- Fully automated
- 0.25% p.a. all-in
- 0.0% <$10k AuM
Financial advice can bridge last mile

14,000 Brokerage clients

Advisor recommendations

Speculative Risk

Actual Risk

Planned Risk

Planned Risk
However, even beneficial advice is hardly followed by retail investors.

Source: Bhattacharya, Hackethal, Kaesler, Loos, Meyer (2012)
Adherence to advice: flat fee schemes

Change in adherence from change in pricing model

Source: Loos/Meyer/Hackethal 2015
Self control I: Goal orientation

- Gesamtwert Deiner Anlagen: € 29.326
- Gesamte monatliche Sparrate: € 114

Segeltörn Karibik
Juni 2017
Monatliche Sparrate: € 59
- Du hast € 15.903 von € 20.000 gespart
- Du wirst Dein Sparziel voraussichtlich erreichen.

Studiengebühren
Dezember 2019
Monatliche Sparrate: € 45
- Du hast € 13.423 von € 20.000 gespart
- Du wirst Dein Sparziel voraussichtlich erreichen.
Self control II: Interaction with virtual future self increased propensity to save money

Source: WSJ, Nov 26., 2011
Behavioral heterogeneity requires new forms of insight generation for regulators and industry

<table>
<thead>
<tr>
<th>Focus</th>
<th>Client behavior</th>
<th>Industry behavior</th>
<th>New equilibrium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laboratory experiments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Administrative Data analysis</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Field studies</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Natural experiments</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Randomized controlled trials</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FCA 2013: "Randomised Controlled Trials (RCTs) offer one of the most direct ways of getting evidence on consumer choices. RCTs are often used to assess the relative effectiveness of possible interventions."
RCT example from FCA: how to encourage consumers to claim redress

FCA developed seven changes ("treatments") to a firm’s letter to contact 200k customers about a failing in its sales process. Changes were applied randomly to the firm’s standard ("control") letter.

- Envelope with message „act quickly“
- FSA Logo in the letter head
- Salient bullets at the top of the letter
- Simplification by reducing the text by 40%
- Sentence in bold that claims process would only take 5 minutes
- CEO signature
- Reminder letter after six weeks

Making all these changes to a single letter increased the response rate by six and a half times. Interestingly, the FSA logo had no effect, and adding the CEO signature even reduced the response rate slightly.

Source: FCA occasional Paper 1 „Applying Behavioral Economics at the FCA, April 2013, pp 45
Last Mile Problem Fixes

- Smart disclosure and j.i.t. education
- Sensible defaults and smart rules
- Simplification and unconflicted advice
- Goal orientation and opportunity cost

**Industry:** experimentation mode, agile business models

**Regulator:** competition focus, understand consumer behavior
Last Mile Problem Fixes

Selected References

- Abusing ETFs, Bhattacharya, U., Hackethal, A., Kaesler, S., Loos, B., & Meyer, S., Available at SSRN 2022442 (2014)
Backup: Framework to categorize challenges and fixes

\[
\max_{A_0} E \left[ u_0(c_0, \ldots) + s \sum_{t=1}^T d^t u_t(c_t, \ldots) | I_0 \right]
\]

- Decision Rules: \( \max \)
- Beliefs: \( E[\ ] \)
- Preferences \( u_t(\) \)
- Actions \( A_0 \)
- Self Control: \( s \)
- Data: \( I_0 \)

Source: Jean Tirole, EER, 2002, Rational irrationality: Some economics of self-management