Presenting Distributions:
How to Mitigate the Misperception of Cost Components in Long-term Savings Plans

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Agenda

1. Motivation
2. Previous Research
3. New Method + Experimental Design
4. Results
5. Discussion
Motivation

- growing importance of private retirement provisions
- growing importance of long-term savings plans

-seemingly minor changes in the product features can make a huge difference in final outcome

-management fee is the most important influence factor in final outcomes of savings plans

Focus of policy-makers: Cost Transparency

Example:
The US Government Accountability Office recommends that the Secretary of Labor require plan sponsors to report a summary of all fees that are paid out of plan assets or by participants.

Previous Research

Does cost transparency improve decision-making?

NO!

- savers focus too much on front-end loads (sales costs) (Wilcox, 2003)
- no fee minimizing behavior in choices among index funds (Choi, Laibson, Madian 2010)
- cost transparency does not change portfolio choice (Beshears, Choi, Laibson, Madian, 2010; Dominitz, Huang, Hong 2009)
- people are not able to make any assumptions about an investment’s future outcome (Benartzi, Thaler 2002)

⇒ Try to improve decision-making.
'Nudge' consumers
Previous Research

**Nudge proposed in past research:**
- distributions of possible outcomes (Benartzi, Thaler 2002; Goldstein, Johnson, Sharpe 2002)

**Try to improve decision-making.**

**“nudge” consumers**

**Nudges proposed in past research:**
- distributions of possible outcomes (Benartzi, Thaler 2002; Goldstein, Johnson, Sharpe 2002)

**But,** past research does not show:

- how distributions influence decision making in detail (e.g., what is the influence on the importance of specific features?)
- that presenting distributions actually improves decision making (e.g., is a nudge effective?)

**Why?**

- no approach available that is able to answer these questions
New approach to measure the effect of a nudge on decision-making

- 2 groups: 1. control group and 2. treatment group ➔ comparison of the results
- CBC ➔ measure the importance of several features in long-term savings plans

1. control group

2. treatment group

What’s new? (group 2)

- simultaneously present attribute levels (cost transparency) and the distribution of possible outcomes (the nudge)

Experimental Design – Empirical Application

2 empirical studies:
1. Online survey
2. Lab study

Background story:
- deposit 100 EUR per month over 40 years
- investment in the German fund index DAX

Conjoint:
- Incentive-aligned CBC (Ding, Grewal, Liechty 2005)

Respondents:
- 308 respondents (154 in group 1; 154 in group 2)
- respondents: Bachelor and Master students from the University of Muenster
### Experimental Design – Attributes + Levels

#### Attributes

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Attribute levels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management fee</td>
<td>0%, 0.75%, 1.5%</td>
</tr>
<tr>
<td>Zillmerization</td>
<td>0%, 2.5%, 5%</td>
</tr>
<tr>
<td>Guarantee</td>
<td>yes, no</td>
</tr>
</tbody>
</table>

- CBC: 12 choice sets for every respondent

### What is the „true“ importance of these savings plan features?

Simulation based on 4 alternatives

<table>
<thead>
<tr>
<th></th>
<th>Worst savings plan</th>
<th>With guarantee</th>
<th>Without management fee</th>
<th>Without Zillmerization</th>
</tr>
</thead>
<tbody>
<tr>
<td>1% quantile</td>
<td>24,189.49</td>
<td>48,000.00</td>
<td>31,444.69</td>
<td>25,597.01</td>
</tr>
<tr>
<td>2% quantile</td>
<td>28,816.53</td>
<td>48,000.00</td>
<td>37,986.81</td>
<td>30,720.83</td>
</tr>
<tr>
<td>3% quantile</td>
<td>32,334.72</td>
<td>48,000.00</td>
<td>42,918.32</td>
<td>34,522.95</td>
</tr>
<tr>
<td>4% quantile</td>
<td>35,376.47</td>
<td>48,000.00</td>
<td>47,285.40</td>
<td>37,933.44</td>
</tr>
<tr>
<td>5% quantile</td>
<td>38,123.16</td>
<td>48,000.00</td>
<td>51,230.53</td>
<td>40,969.87</td>
</tr>
<tr>
<td>10% quantile</td>
<td>49,898.65</td>
<td>49,898.65</td>
<td>68,270.85</td>
<td>54,000.44</td>
</tr>
<tr>
<td>50% quantile</td>
<td>136,018.18</td>
<td>136,018.18</td>
<td>197,252.98</td>
<td>152,163.30</td>
</tr>
<tr>
<td>90% quantile</td>
<td>419,218.75</td>
<td>419,218.75</td>
<td>636,080.64</td>
<td>487,040.39</td>
</tr>
<tr>
<td>95% quantile</td>
<td>586,408.61</td>
<td>586,408.61</td>
<td>900,210.31</td>
<td>690,003.90</td>
</tr>
<tr>
<td>96% quantile</td>
<td>647,265.84</td>
<td>647,265.84</td>
<td>994,294.84</td>
<td>762,572.75</td>
</tr>
<tr>
<td>97% quantile</td>
<td>730,371.72</td>
<td>730,371.72</td>
<td>1,126,612.59</td>
<td>863,580.97</td>
</tr>
<tr>
<td>98% quantile</td>
<td>856,861.31</td>
<td>856,861.31</td>
<td>1,327,519.04</td>
<td>1,019,117.24</td>
</tr>
<tr>
<td>99% quantile</td>
<td>1,110,491.93</td>
<td>1,110,491.93</td>
<td>1,725,954.30</td>
<td>1,325,546.06</td>
</tr>
<tr>
<td>Expected value</td>
<td>203,593.48</td>
<td>204,711.17</td>
<td>304,021.48</td>
<td>234,092.90</td>
</tr>
</tbody>
</table>
Results

What is the „perceived“ importance of these savings plan features?

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Attr. level</th>
<th>Without further information</th>
<th>With distributional information</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Part-worth</td>
<td>Std. err.</td>
</tr>
<tr>
<td>Management</td>
<td>0%</td>
<td>0.93</td>
<td>0.043</td>
</tr>
<tr>
<td>fee</td>
<td>0.75%</td>
<td>-0.22</td>
<td>0.044</td>
</tr>
<tr>
<td></td>
<td>1.5%</td>
<td>-0.71</td>
<td>0.050</td>
</tr>
<tr>
<td>Zillerization</td>
<td>0%</td>
<td>0.83</td>
<td>0.043</td>
</tr>
<tr>
<td></td>
<td>2.5%</td>
<td>-0.14</td>
<td>0.043</td>
</tr>
<tr>
<td></td>
<td>5%</td>
<td>-0.69</td>
<td>0.050</td>
</tr>
<tr>
<td>Guarantee</td>
<td>yes</td>
<td>0.87</td>
<td>0.037</td>
</tr>
<tr>
<td></td>
<td>no</td>
<td>-0.87</td>
<td>0.037</td>
</tr>
<tr>
<td>Log likelihood</td>
<td></td>
<td>-1281.50</td>
<td></td>
</tr>
</tbody>
</table>

All 3 features are equally important. The management fee is the dominant choice factor.

Experimental Design

Does this nudge help all respondents?

The role of financial literacy:
-5 very basic financial literacy questions (Lusardi, Mitchell 2009)

- 2 groups: 1. financially literate and 2. financially illiterate respondents

<table>
<thead>
<tr>
<th>Financially literate group</th>
<th>Financially illiterate group</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1 Without further information</td>
<td>G2 With distributional information</td>
</tr>
<tr>
<td>G1 With distributional information</td>
<td>G2 Without further information</td>
</tr>
</tbody>
</table>

Management fee 36.0% 56.4% 24.5% 46.0%
Zillmerization 28.9% 15.9% 37.6% 19.2%
Guarantee 35.1% 27.8% 37.9% 34.8%
Summary

Theoretical perspective:
- simultaneously presenting product features as well as distributions within conjoint analysis is new
- we propose a new approach to test the effectiveness of nudges and apply this approach within an empirical study
- the results show that our idea is feasible; we are able to uncover the effect of a nudge in more detail
  (here: the importance of management fees and Zilmerization are influenced more heavily compared to a guarantee)
- this approach could be used to test the effectiveness of alternatives nudges presented in the literature

Practical perspective:
- cost transparency is not enough
- presenting distributions is an effective nudge to improve decision-making
- distributions improve decision-making for both, financially literate and illiterate respondents