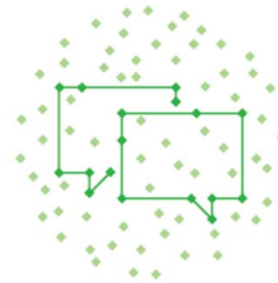


Simulated Experience and Investment Endurance

The CFPB
Research
Conference

New perspectives
on consumers
and markets



May 07, 2015

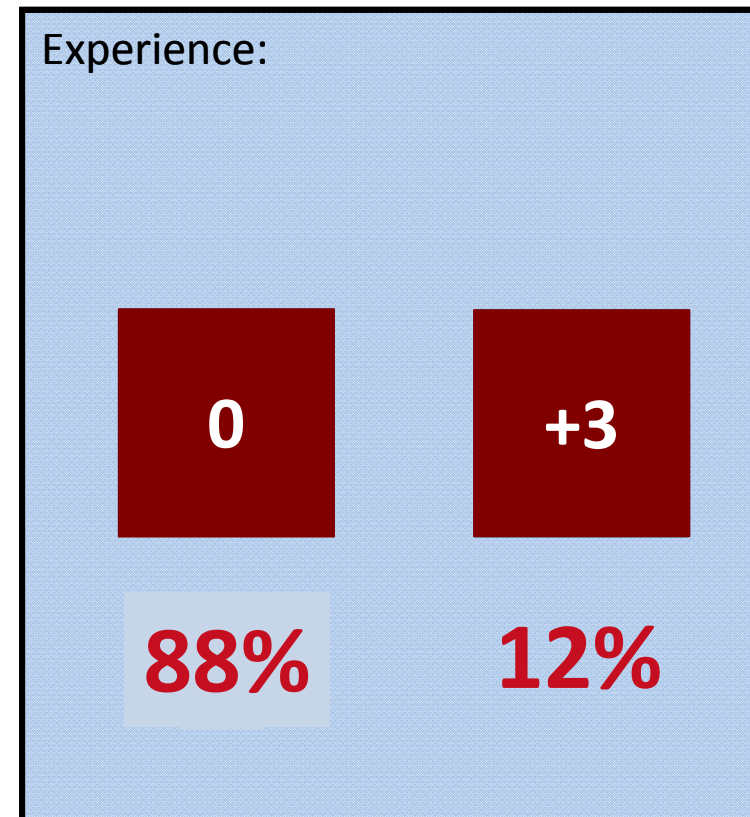
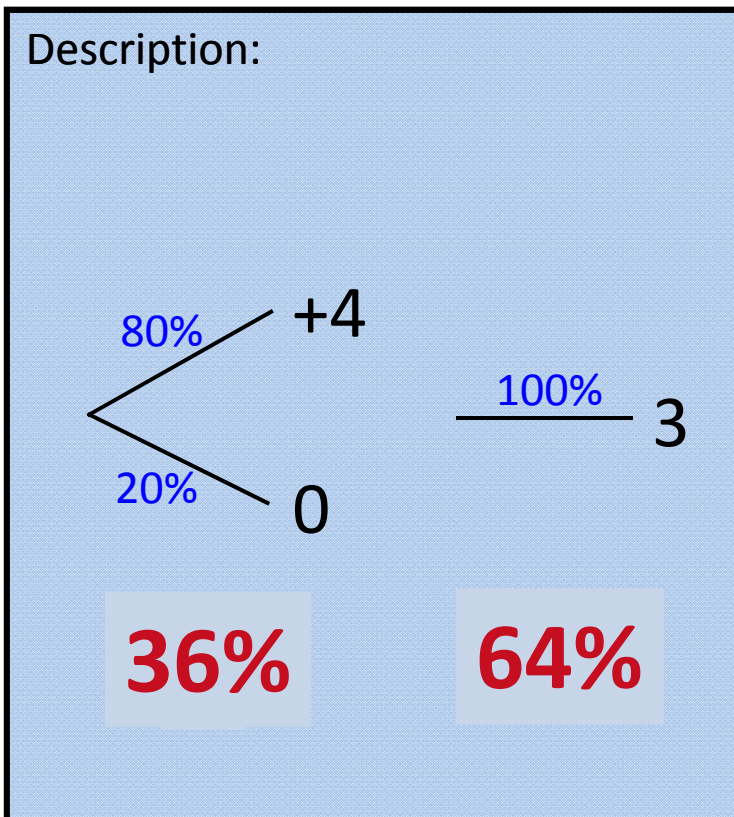
Stefan Zeisberger
(with Meike Bradbury and Thorsten Hens)

www.prospect-theory.com

Why is all this here important?

- Increasing pressure to make important investment decisions
- Low levels of financial and risk literacy
- Regulator pressure, at least in Europe
 - MiFiD (Markets in Financial Instruments Directive): Banks have to identify each investor’s “preference regarding risk taking”
- Industry interest: digitalization of banking services
- But how to do? How can we appropriately **present and measure investor’s risk preference?**

Does the Presentation of Risk Influence Risk Preferences?



(results from Hertwig et al. 2004, *PsySci*)

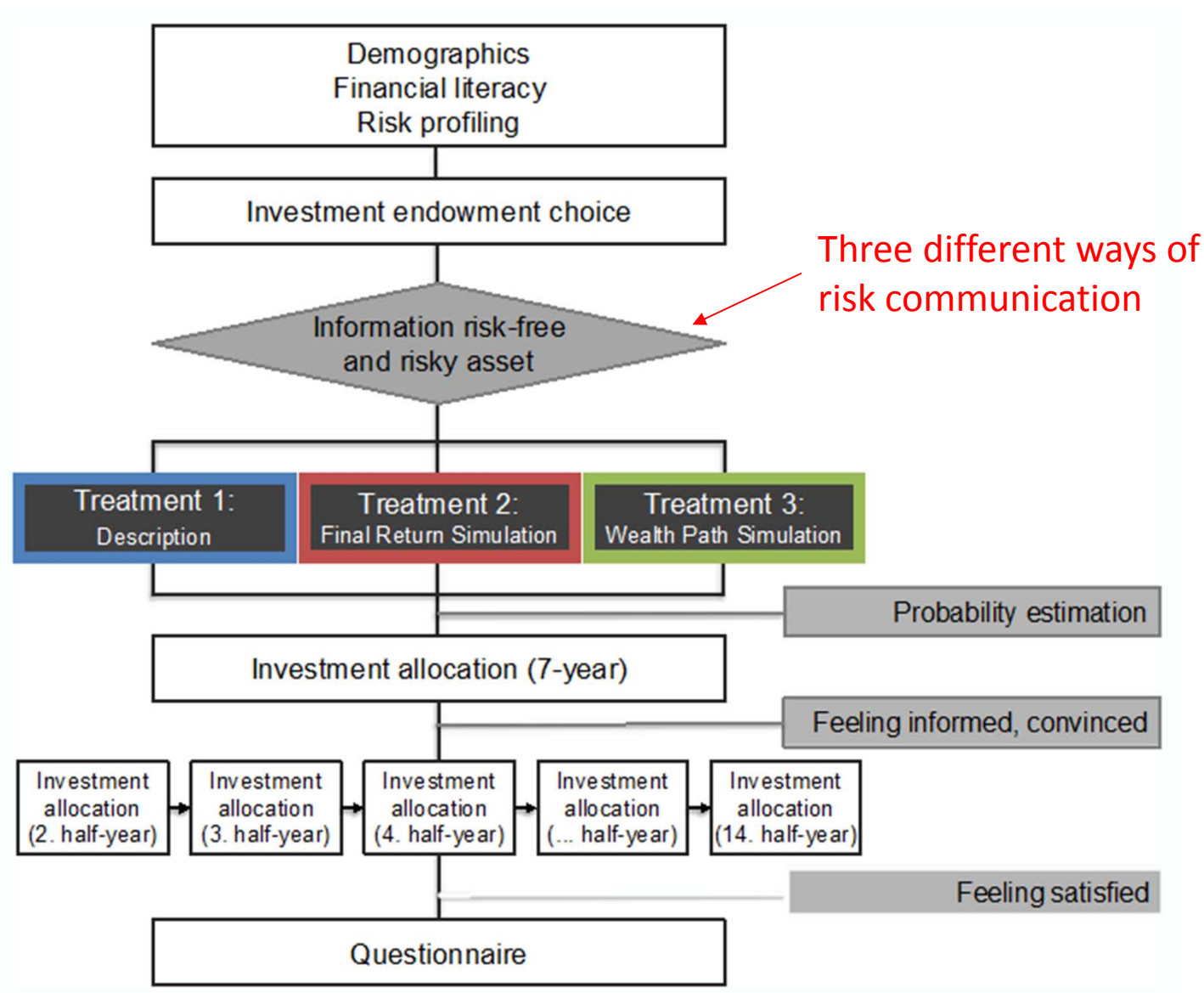
Literature on Experience-Description Gap

- Financial literacy:
 - Lusardi et al. (2010, *JoCA*), Rieger (2008, *JBehF*)

- Experience description gap:
 - greater risk taking for experience: e.g. Hertwig et al. (2004, *PsySci*), Barron and Erev (2003, *JBDM*), Weber et al. (2004, *PsyRev*)
 - challenged by: e.g. Hadar and Fox (2009, *JDM*), Rakow et al. (2008, *JBDM*), Ungemach et al. (2009, *PsySci*), Camilleri and Newell (2011, *ActaPhy*)

- **Application in finance:**
 - **Kaufmann, Weber, Haisley (2013, *MS*)**
 - **With simulated experience investors show higher risk exposure**
 - **Bradbury, Hens, Zeisberger (2015, *RoF*)**
 - **With simulated experience investors invest in riskier structured products**

Our Experimental Design

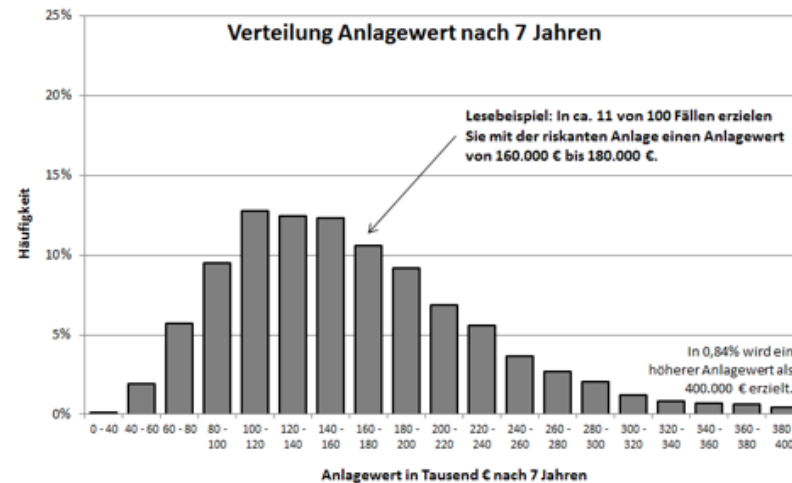


Riskante Anlage

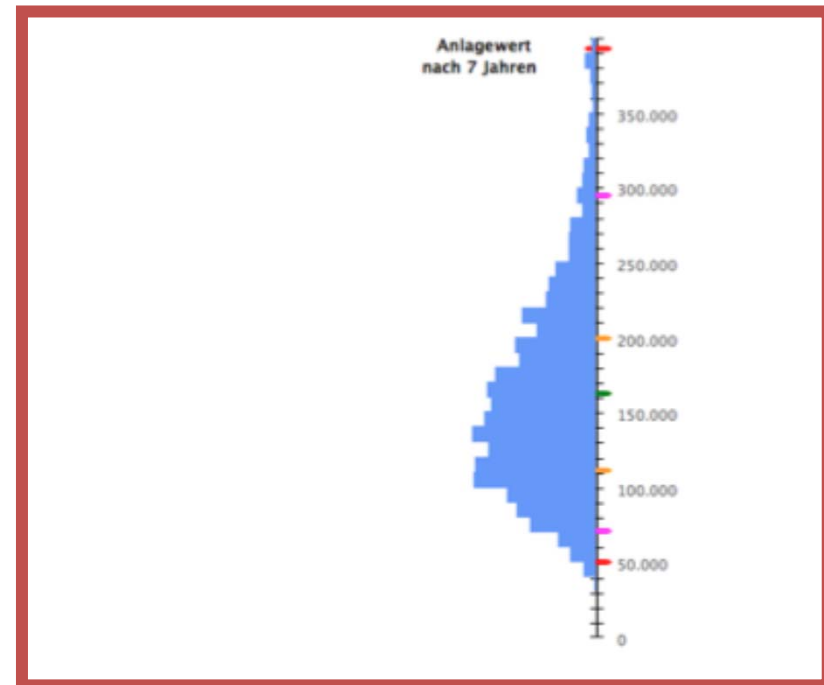
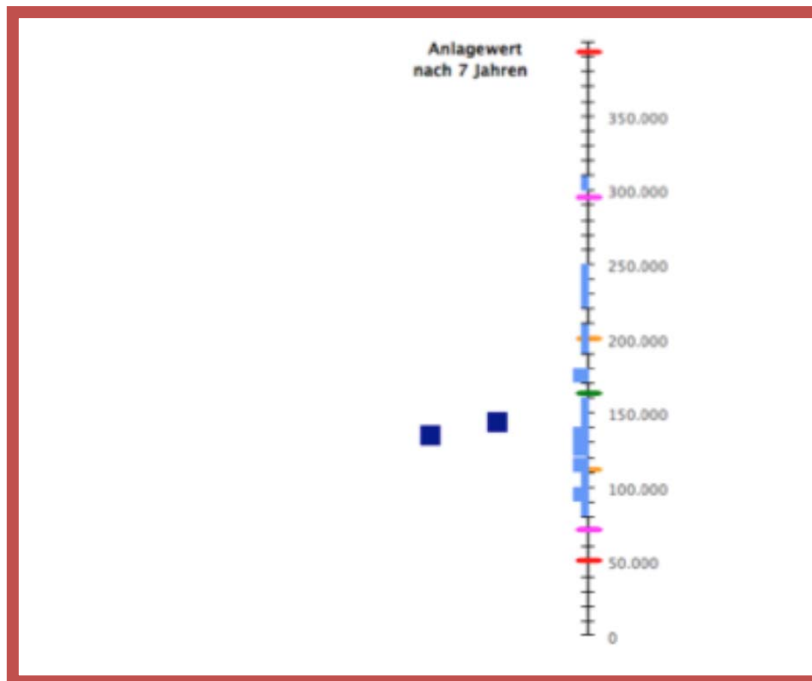
Bei der riskanten Anlage handelt es sich um einen Aktienindex. Dieser bildet die Wertentwicklung von Aktien ab. Die **erwartete Rendite beträgt 7,0% pro Jahr**, d.h. **im Durchschnitt** können Sie eine Rendite von 7,0% erwarten. Die tatsächlich erzielte Rendite ist jedoch **nicht sicher**, sie kann deutlich höher aber auch deutlich tiefer ausfallen. Die jährliche **Standardabweichung**, d.h. die als „normal“ betrachtete Abweichung von diesen 7,0%, beträgt **16,9%**.

Falls Sie Ihren zuvor gewählten Investitionsbetrag von 100.000 € ausschließlich in die riskante Anlage investieren, können Sie nach 7 Jahren einen Anlagewert von 164.100 € erwarten. Wie erwähnt ist dieser Wert jedoch nicht sicher, er könnte deutlich höher aber auch deutlich tiefer ausfallen.

Folgende Grafik zeigt Ihnen die Verteilung Ihres Anlagewertes am Ende der 7 Jahre, wenn Sie ausschließlich in die riskante Anlage investieren. Beispielsweise würden Sie in ca. 11 von 100 Fällen einen Anlageendwert zwischen 160.000 € und 180.000 € erzielen.

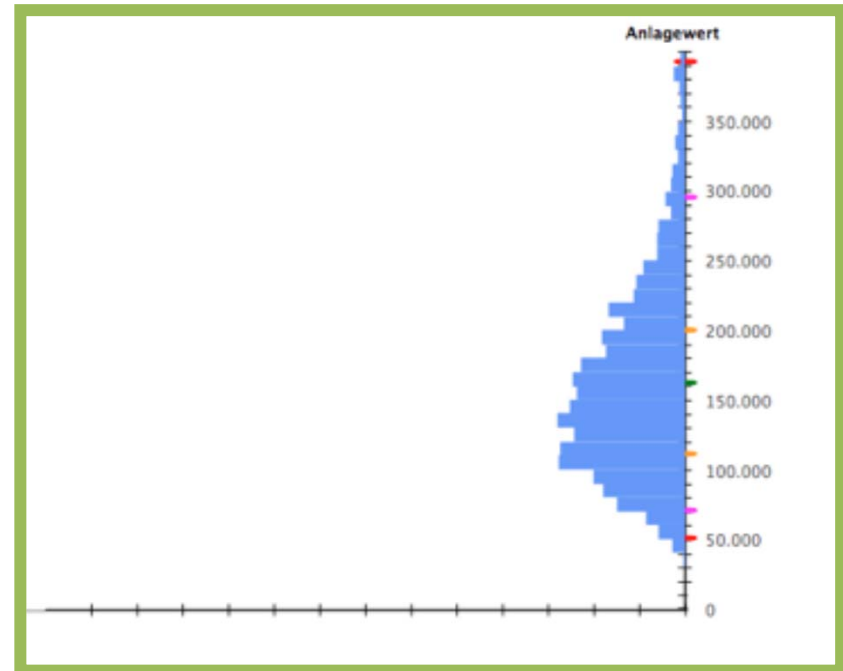
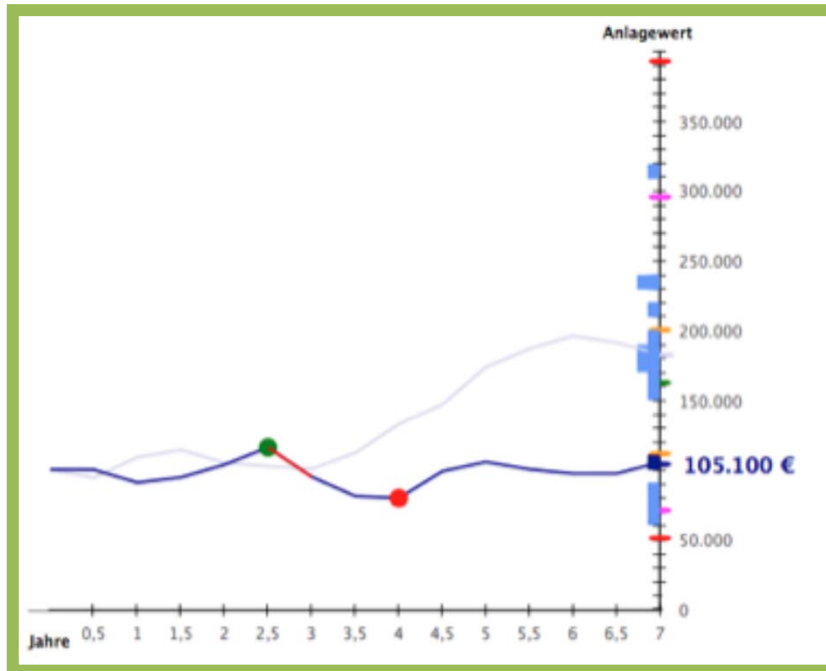


Treatment Final Return Simulation (FRS)



based on “risk tool” proposed by Kaufmann et al. (2013)

Treatment Wealth Path Simulation (WPS)



- Daily investment decisions made over three weeks

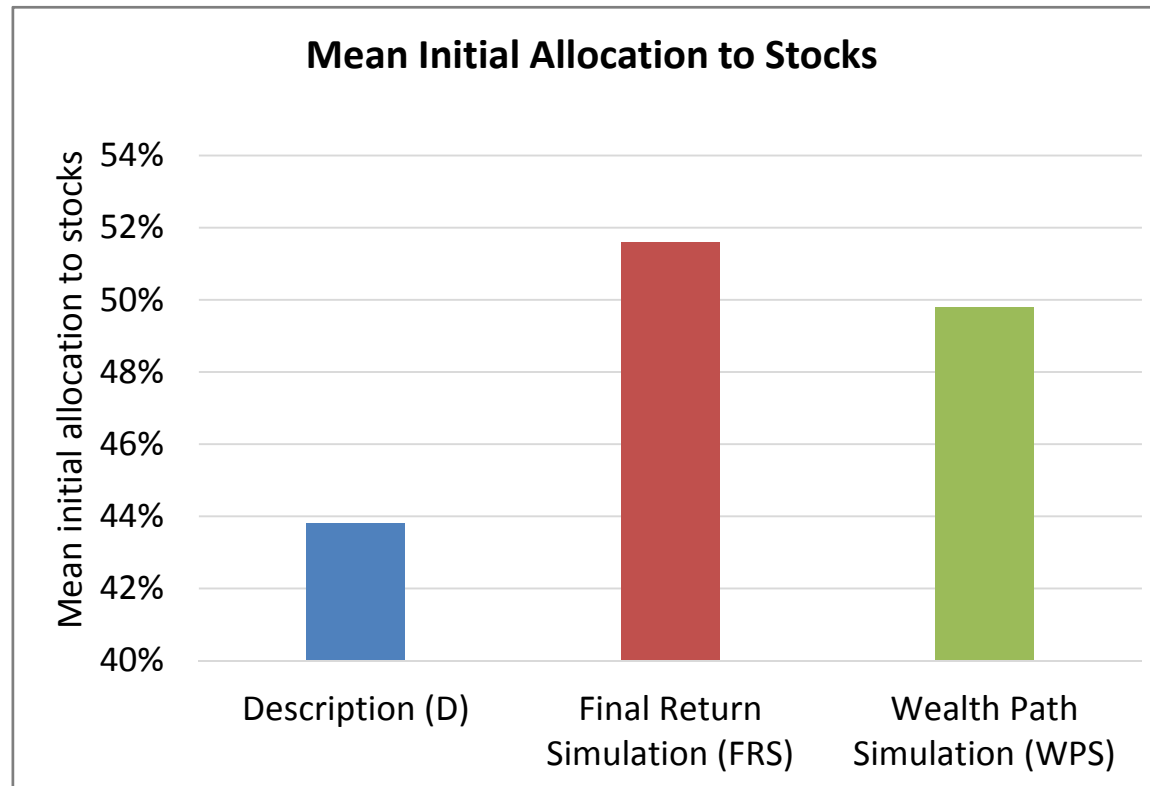
- Approx. 1,000 participants
 - representative sample of German population
 - Relatively financially literate: 52% reported to hold financial assets

- Real monetary rewards
 - Fixed (5.60€) plus 20 participants with €100 as initial investment (incentive compatible, ranged between approx. 80€ and 250€)

- Proprietary online experiment with easy access
 - Accessible with various devices, internet browsers etc.

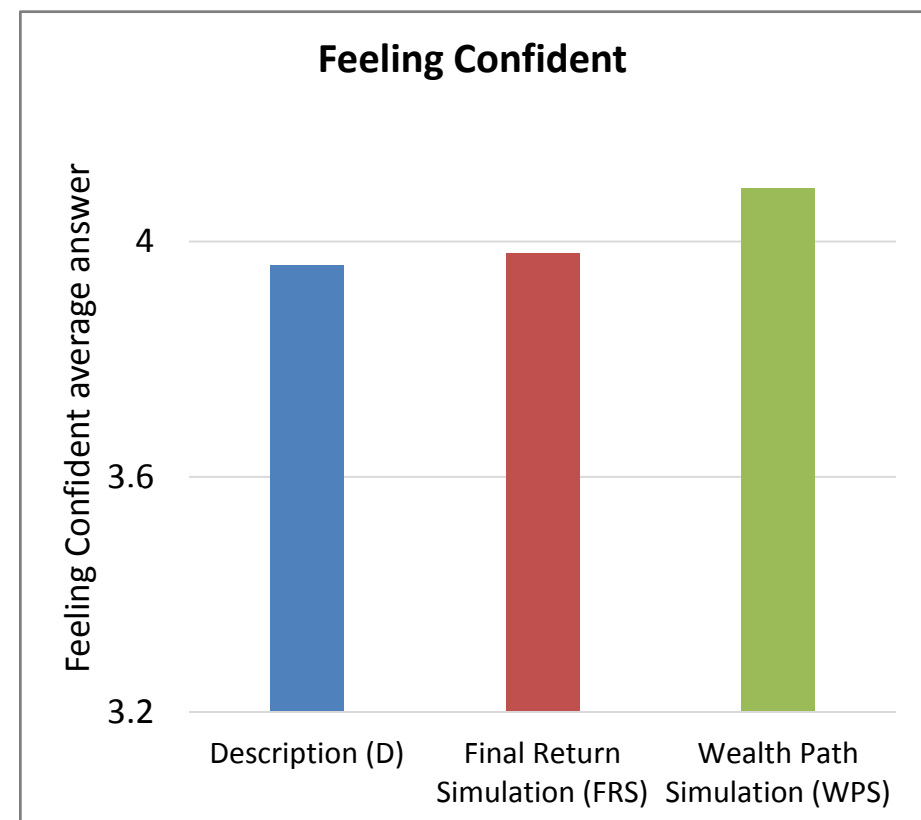
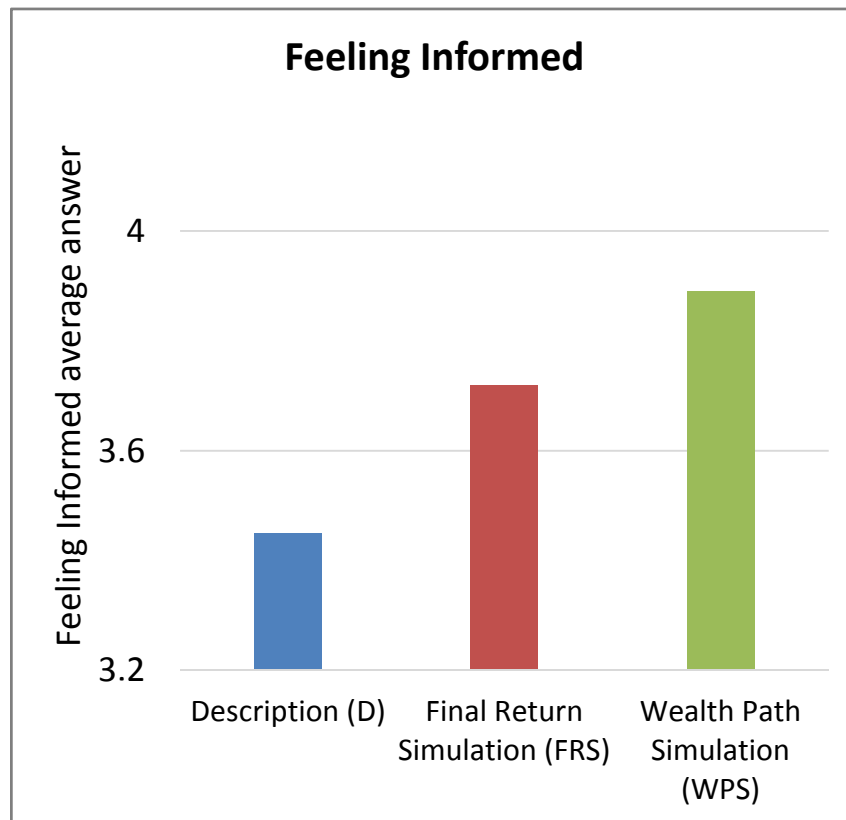
Mean Initial Allocation to Stocks

- With any form of simulated experience, investors take more risk.



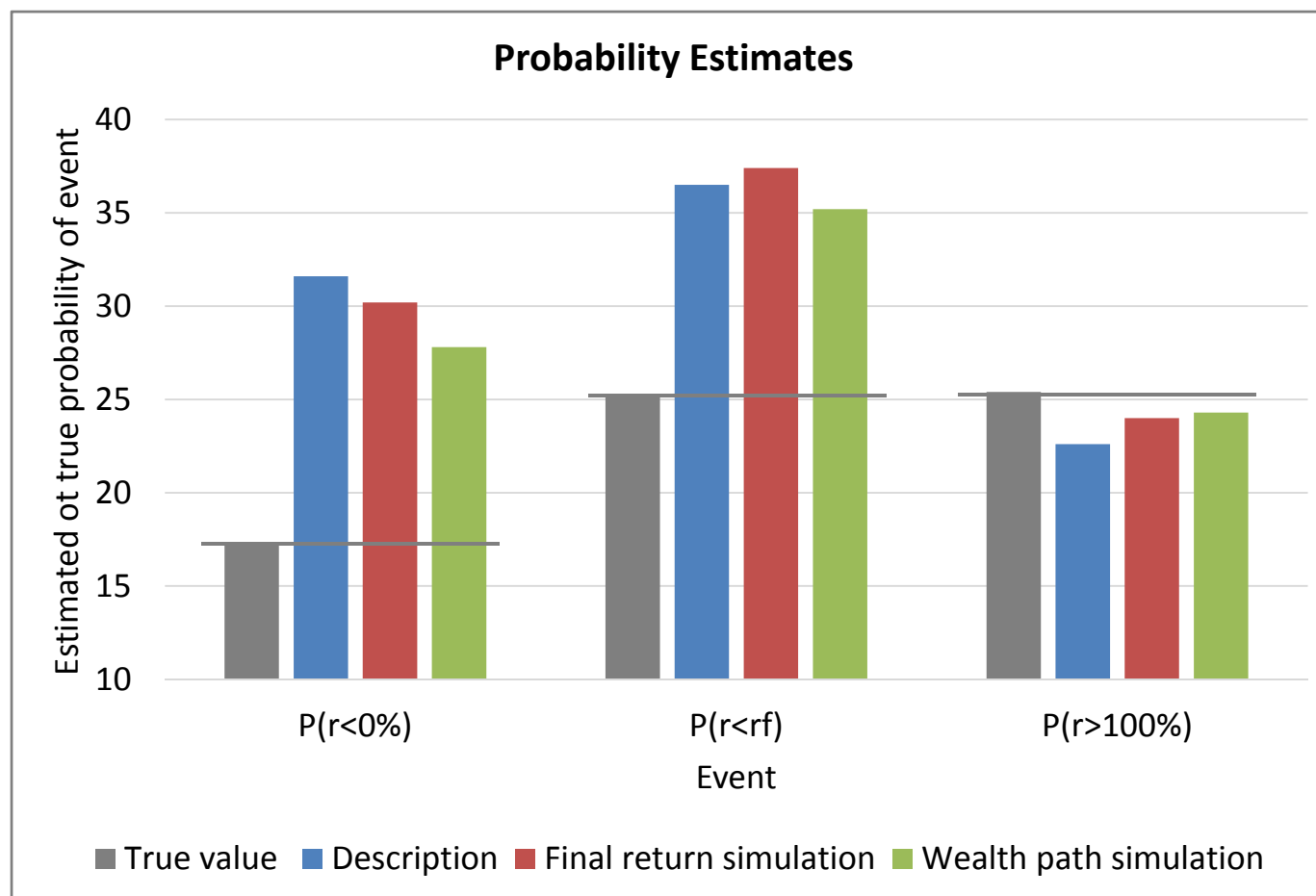
Feeling Informed and Confident about Investment Decision

- With any form of simulated experience, investors feel better informed about investment task.



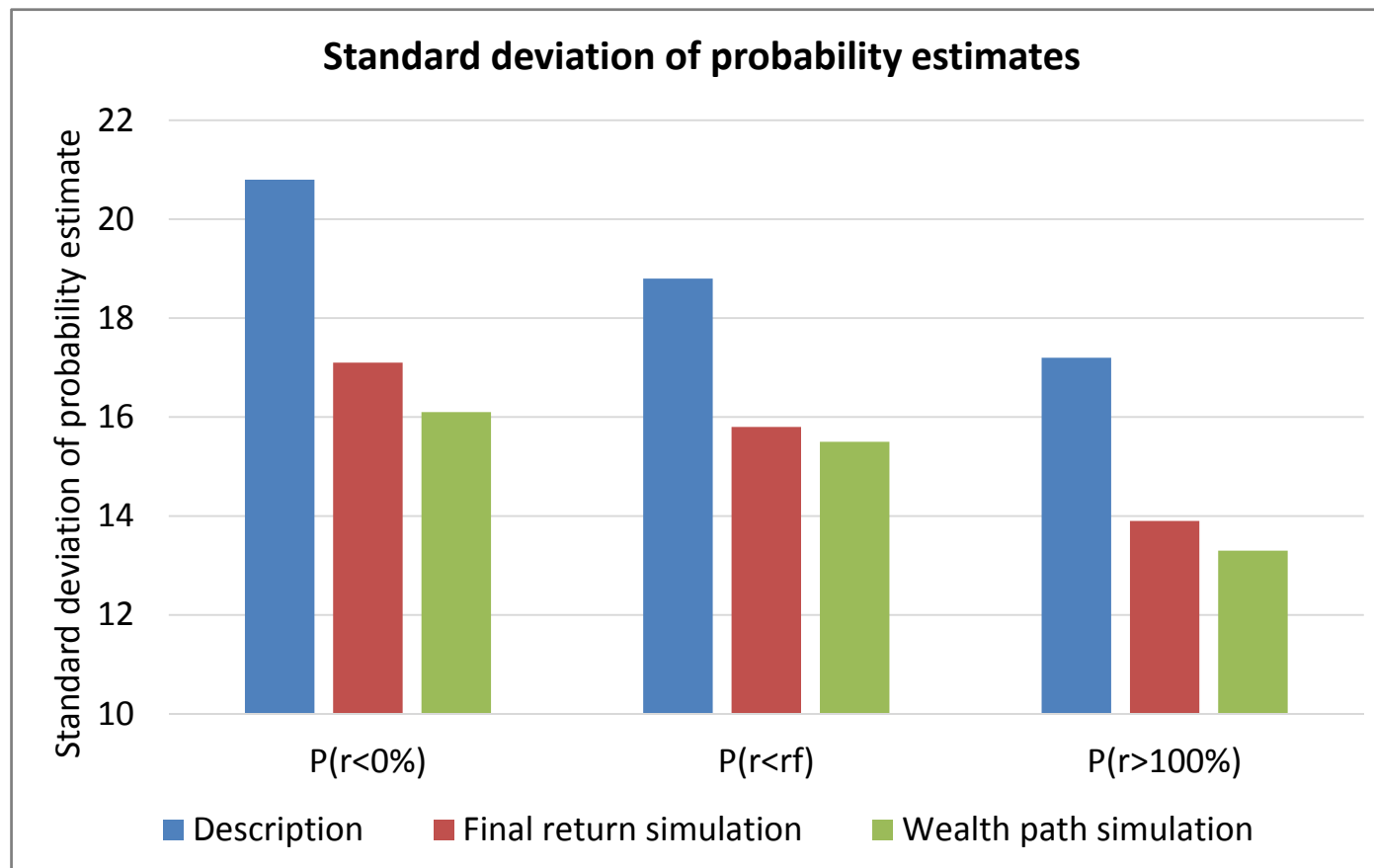
Investors' Understanding of Risk (1)

- With simulated experience (FRS or WPS), investors have a better understanding of risk.



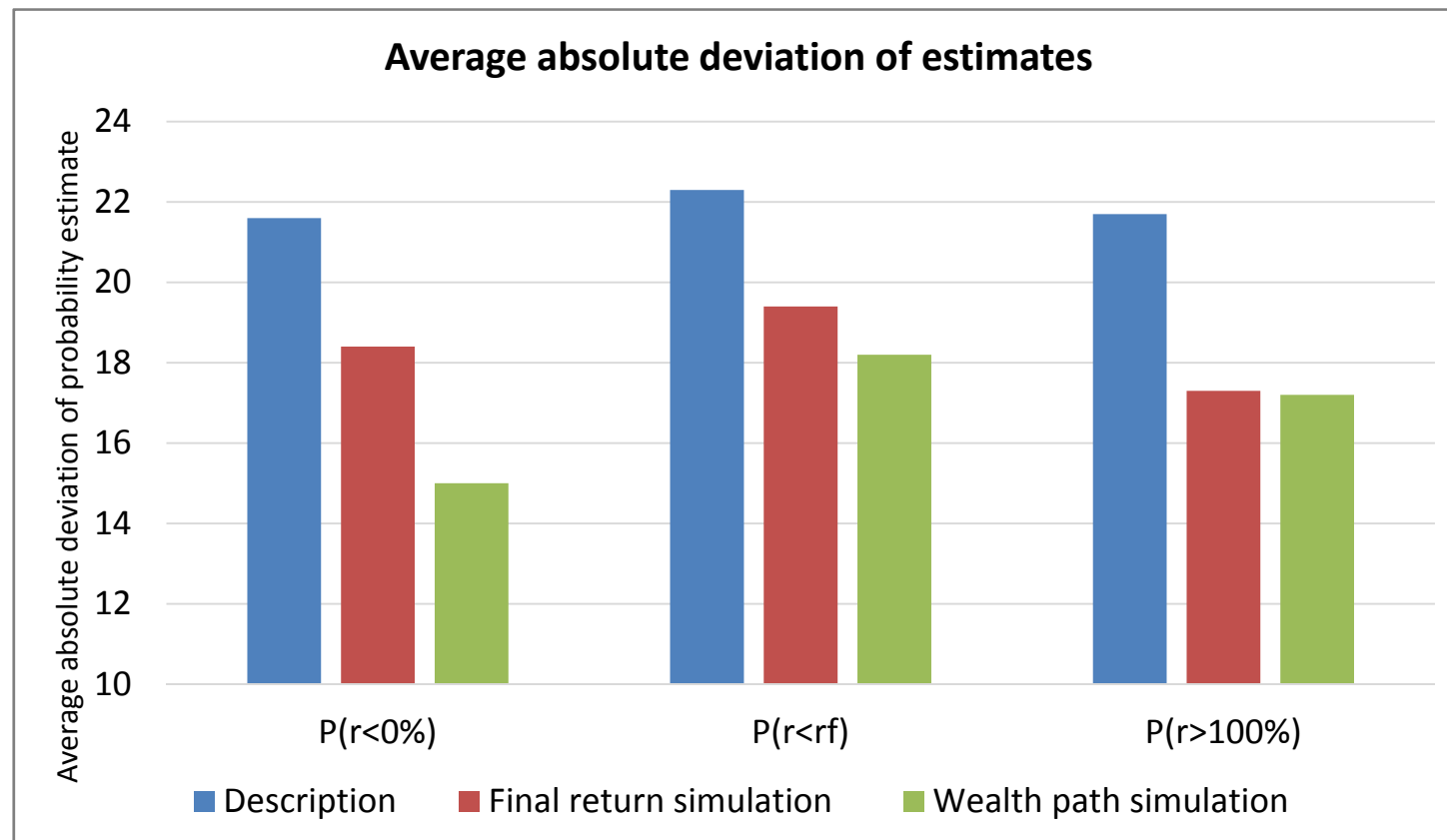
Investors' Understanding of Risk (2)

- With simulated experience (FRS or WPS), investors have a better understanding of risk.



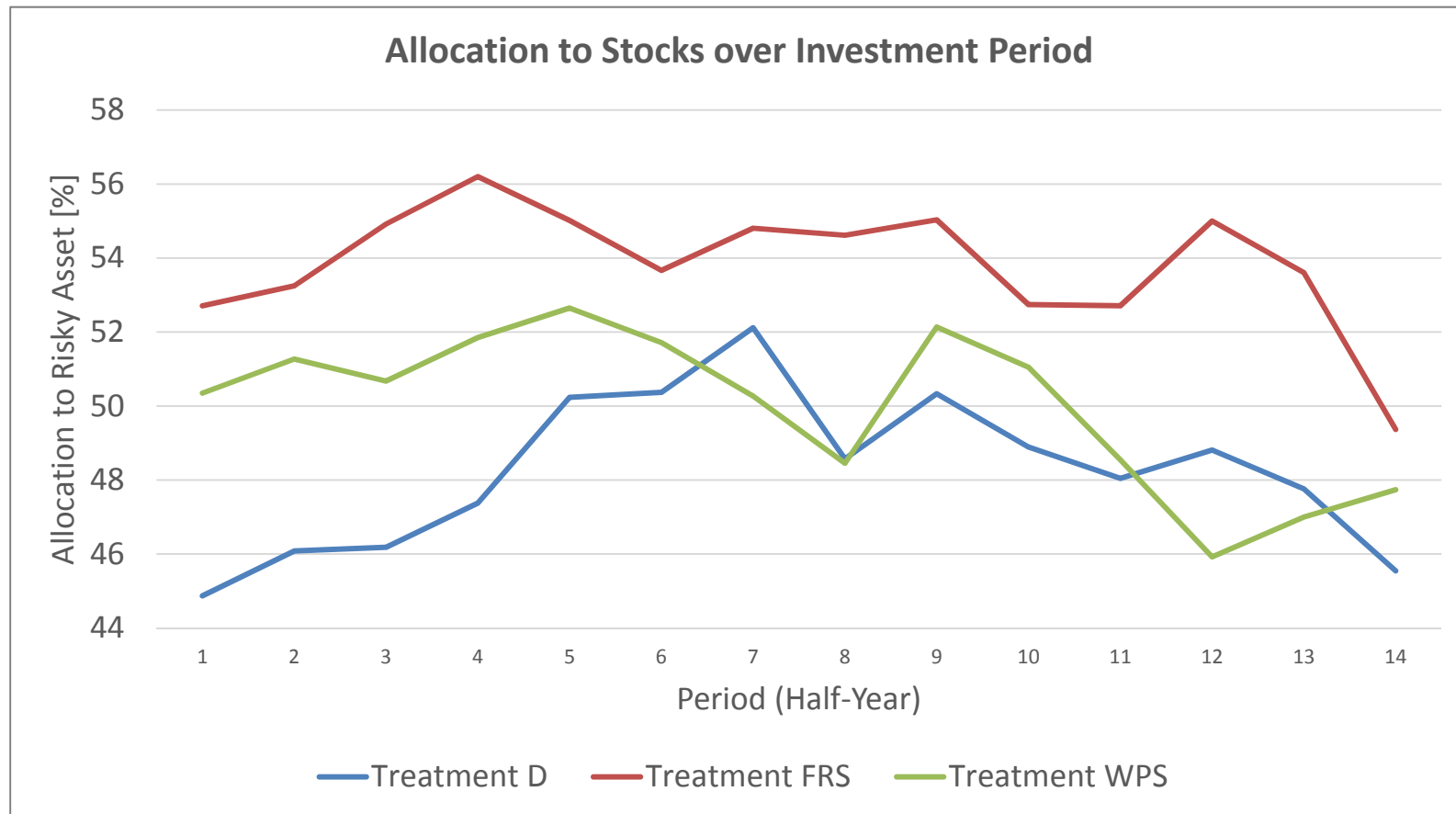
Investors' Understanding of Risk (3)

- With simulated experience (FRS or WPS), investors have a better understanding of risk.



Allocation to Stocks over Investment Period

- Actual experience works as a substitute for simulated experience.



- With **simulated experience** investors...
 - make riskier decisions
 - feel better informed
 - better understand the underlying return distribution
 - do not feel greater regret or dissatisfaction with the outcome

- Actual experience is a substitute for simulated experience

- A *final return simulation (FRS)* leads to highest increase of risk-taking

- A *wealth path simulation (WPS)* leaves investors feeling even better informed and more also with a higher understanding of the risk.

Acknowledgements

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➤ Co-authors Meike Bradbury and Thorsten Hens



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- University of Innsbruck Finance Seminar 2014

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➤ Paper available on my website: www.prospect-theory.com

Appendix

Investment Decisions Screenshot

Wertentwicklung Anlagestrategie: 2,0 Jahr(e) Hilfe zur Studie

	Strategie gesamt	Sichere Anlage	Riskante Anlage
Anlagewert Halbjahresbeginn*	96.603 €	0 €	96.603 €
Anteil	100 %	0 %	100 %
Rendite	10,4 %	0,9 %	10,4 %
Gewinn/Verlust	10.047 €	0 €	10.047 €
Anlagewert aktuell	106.650 €	0 €	106.650 €

*Möglicherweise entstandene Umschichtungskosten wurden verrechnet.

Sie müssen nun einen Investitionsentscheid für das kommende Halbjahr fällen, indem Sie Ihre Aufteilung zwischen beiden Anlagen wählen. Wenn Sie sich entschieden haben klicken Sie auf "Finaler Entscheid für 5. Halbjahr".

Anteil riskante Anlage:
100%

0% 100%

Finaler Entscheid für 5. Halbjahr

How Well Do Investors Understand Return Distribution?

- With simulated experience (FRS), investors have a better understanding of risk.

	$P(r < 0\%)$	$P(r < r_f)$	$P(r > 100\%)$
True value	17.2	25.2	25.4
Description vs. Final Return Simulation			
Average estimates			
Description	31.6	36.5	22.6
Final return simulation	30.2	37.4	24.0
Average absolute deviation of estimates to true value			
Description	21.6	22.3	21.7
Final return simulation	18.4	19.4	17.3
<i>t-test</i>	<i>p=.052</i>	<i>p=.055</i>	<i>p=.004</i>
Standard deviation of estimates			
Description	20.8	18.8	17.2
Final return simulation	17.1	15.8	13.9

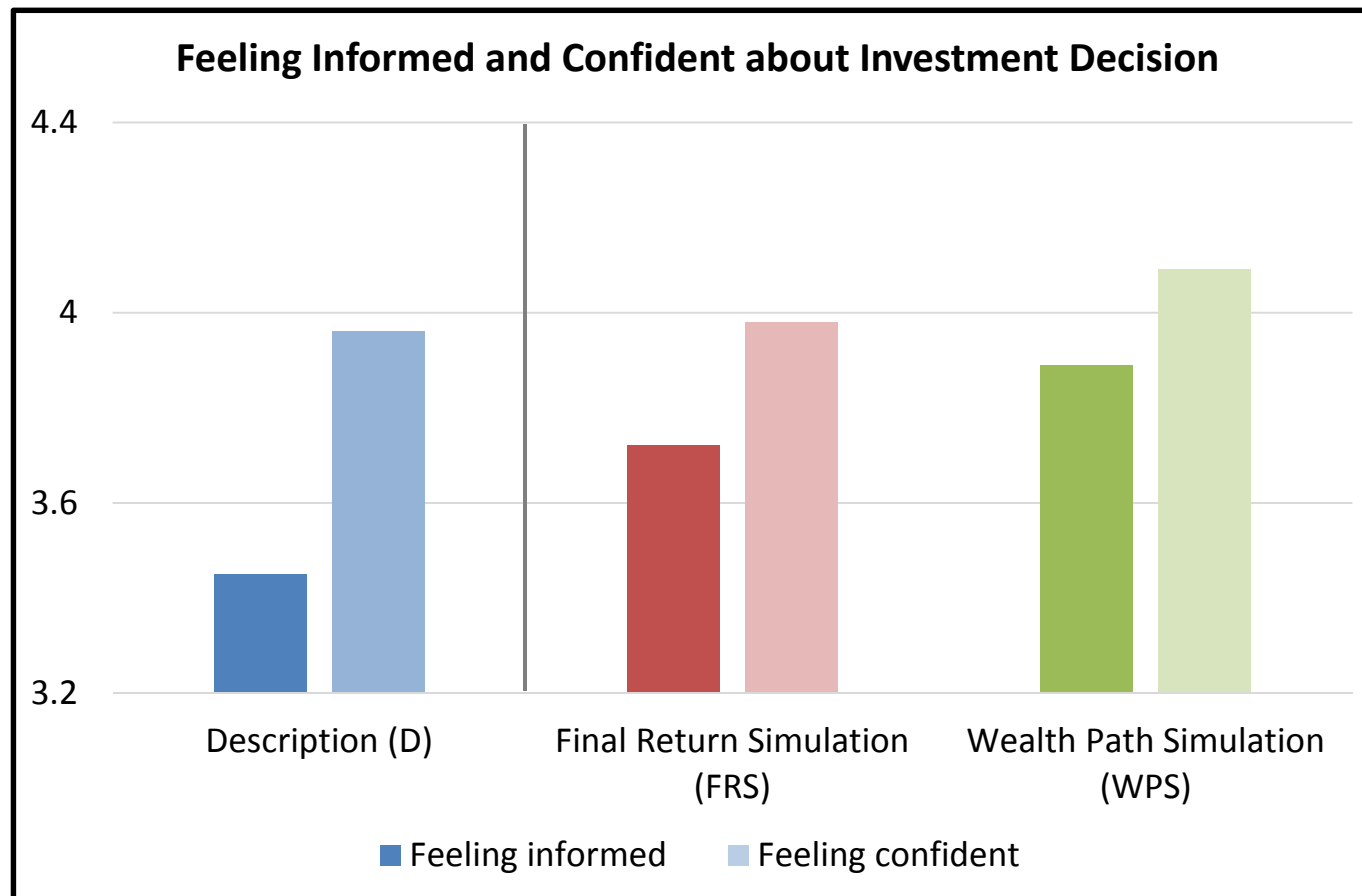
How Well Do Investors Understand Return Distribution?

- With simulated experience (FRS), investors have a better understanding of risk.

	$P(r < 0\%)$	$P(r < r_f)$	$P(r > 100\%)$
True value	17.2	25.2	25.4
Description vs. Wealth Path Simulation			
Average estimates			
Description	31.6	36.5	22.6
Wealth path simulation	27.8	35.2	24.3
Average absolute deviation of estimates			
Description	21.6	22.3	21.7
Wealth path simulation	15.0	18.2	17.2
<i>t-test</i>	<i>p=.001</i>	<i>p=.013</i>	<i>p=.003</i>
Standard deviation of estimates			
Description	20.8	18.8	17.2
Wealth path simulation	16.1	15.5	13.3

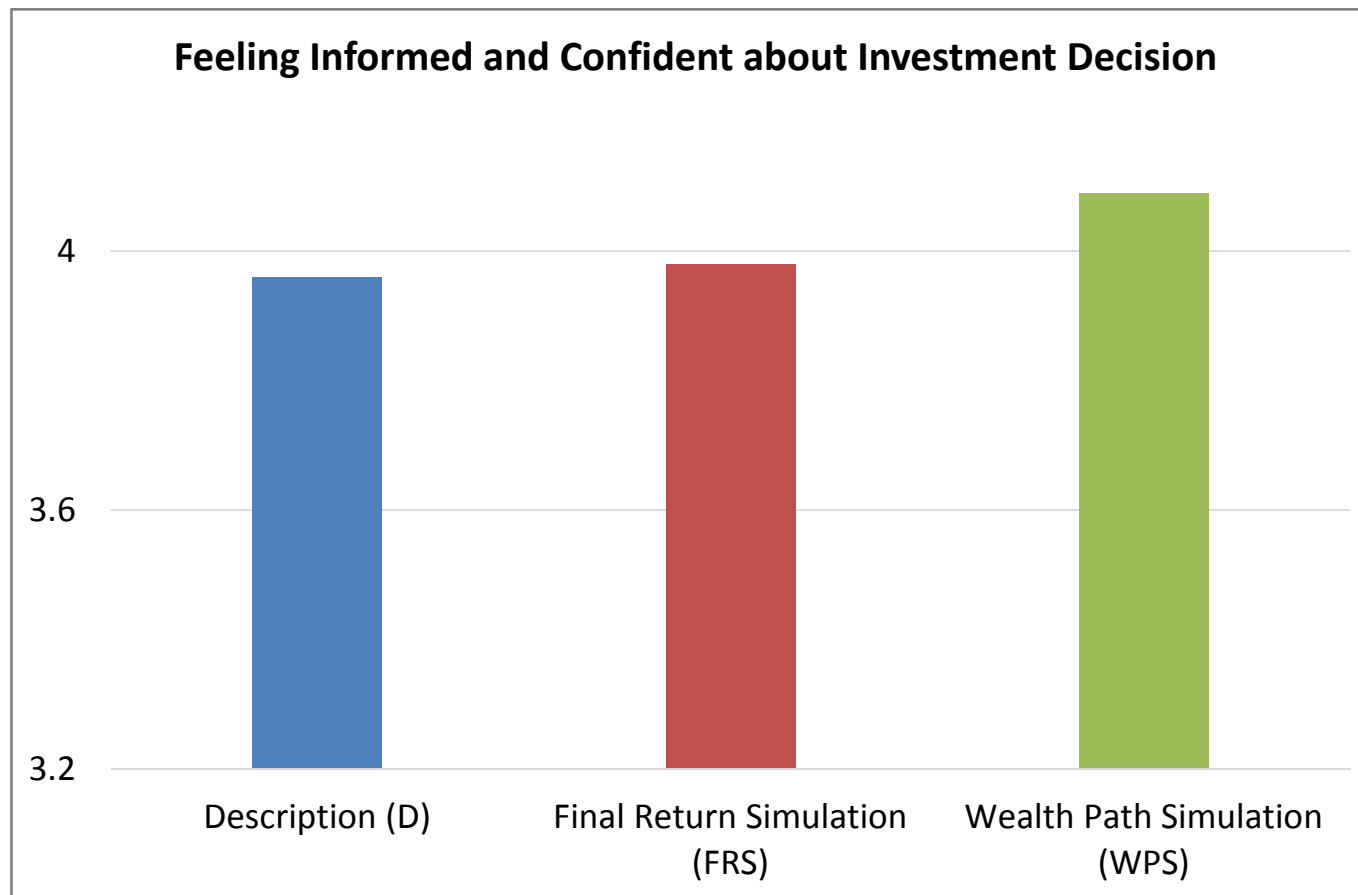
Feeling Informed and Confident about Investment Decision

- With any form of simulated experience, investors feel better informed about investment task.



Feeling Informed and Confident about Investment Decision

- With any form of simulated experience, investors feel better informed about investment task.



- Results are robust with regard to
 - 1. Transaction costs
 - 2. Return distribution

