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1. Abstract

How do risk attitudes change after experiencing gains or losses? For the case of losses, Imas (2016) shows that subsequent risk-taking behavior depends on whether these losses have been realized or not. After a realized loss, individuals' risk taking decreases, whereas it increases after an unrealized (paper) loss. He refers to this asymmetry as the realization effect. We replicate this result (N=203) and in addition find a realization effect for the gain domain. Independent of a prior gain or loss, risk taking is higher when outcomes remain unrealized. In several further experiments (N=775), we test theoretical predictions about risk taking and skewness for paper and realized outcomes as well as examine the robustness of the effect with respect to the realization mechanism. In line with the predictions, we find no realization effect for non-positively skewed lotteries and show that the effect is only reliably observed if money is physically transferred.

2. Introduction

- Inconsistent findings on risk taking after previous gains/losses:

	Prior Loss	Prior Gain
Risk seeking	Langer and Weber (2008), Weber and Zuchel (2005), ...	Thaler and Johnson (1990), Suhonen and Saastamoinen (2017), ...
Risk averse	Shiv et al. (2005), Frino et al. (2008), ...	Clark (2002), Coval and Shumway (2005), ...

- Unifying framework proposed by Imas (2016): Realization. People react differently to realized as compared to unrealized (paper) losses.
- Realization effect (RE): People tend to become more risk-seeking after a paper loss and more risk-averse after a similar realized loss.
- Cumulative prospect theory and mental accounting can explain this behavior.
- More evidence that realization matters: Realization utility (BX, 2012; IJ, 2013), deliberate versus forced sales (WC, 1998)

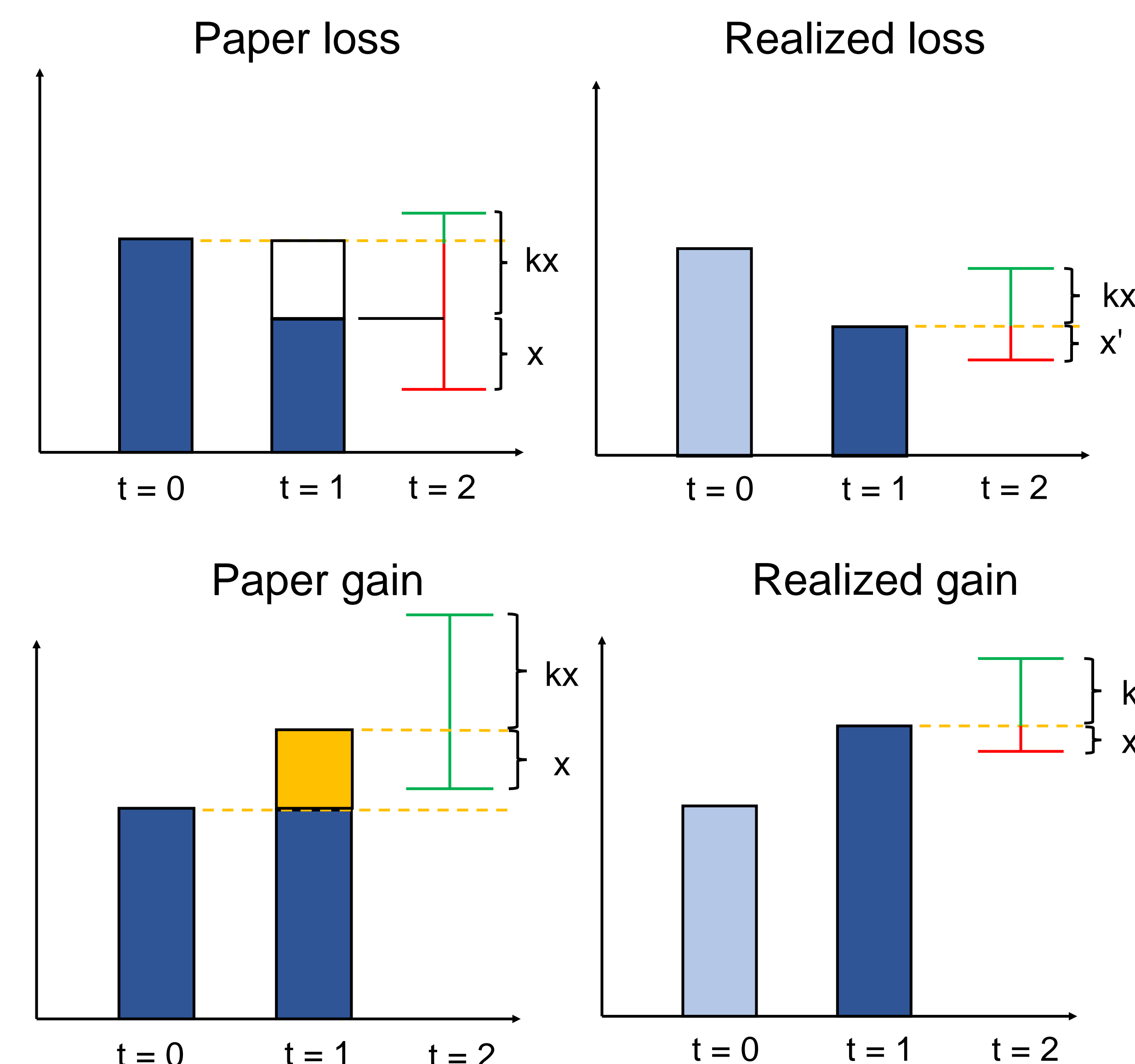
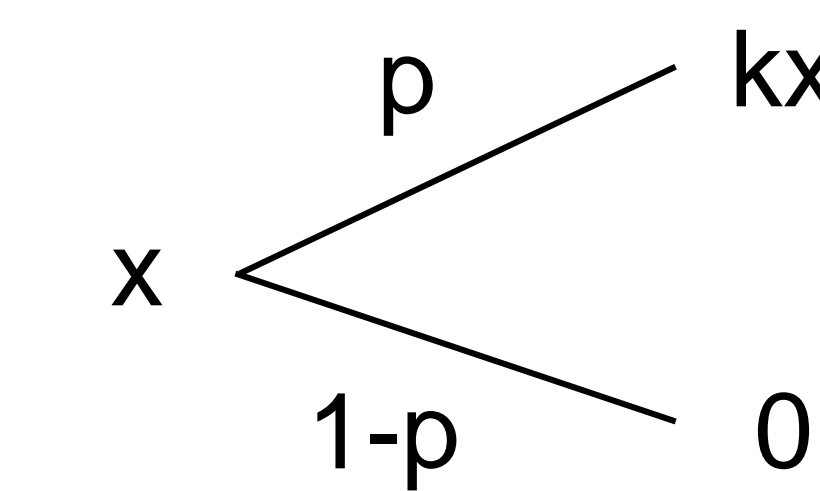
Study Questions

- Generalizability:** Does the effect exist for gains?
- Testing theory:** Does the effect depend on the skewness of the lottery?
- Robustness:** How does the realization mechanism need to look like?

3. Theoretical Background

Basic Model: Utility is derived from fluctuations of financial wealth (BHS, 2001)

- Investment in a lottery:



- Realization closes the mental account. Gain/loss is internalized, no cushion against loss/no possibility to break even.

H1: RE for gains and losses

Model with Contingent Planning:

Skewness and risk taking (Barberis, 2012)

- Lower skewness → lower upside potential and larger downside risk
- Time inconsistent behavior and realization

H2: No RE for non-positively skewed lotteries

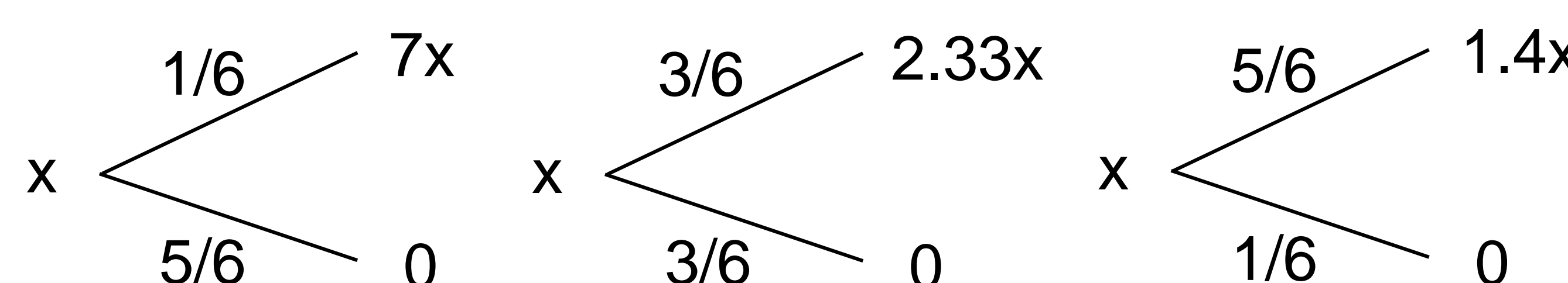
4. Experimental Design

- Participants get an envelope with 8.00 Euro. Over four rounds they can invest up to 2.00 Euro each round in a lottery ($0 \leq x \leq 2$).
- Participants are randomly assigned to the realization treatment (paid out after round 3) or the paper treatment (not paid out after round 3).

Experiment 1
Positive skewness

Experiment 2
Symmetric lottery

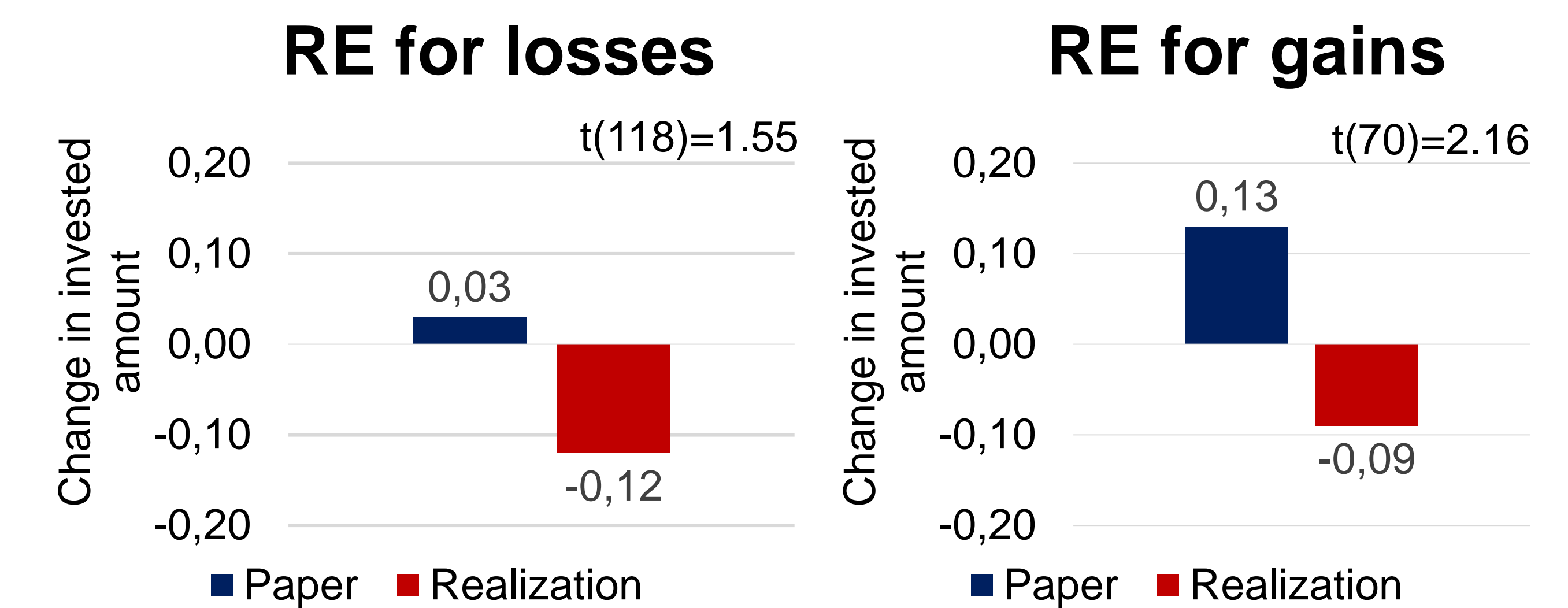
Experiment 3
Negative skewness



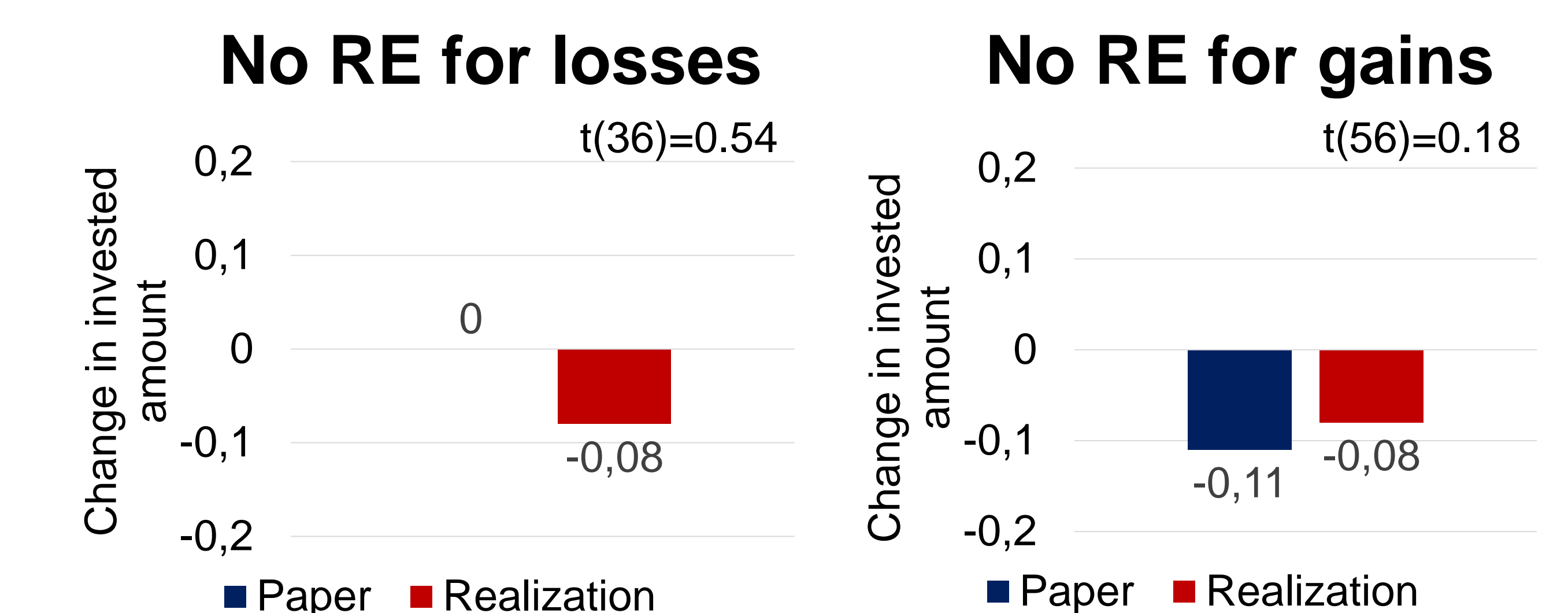
5. Results

- Analysis of the change in investment between round 3 and 4 across treatments

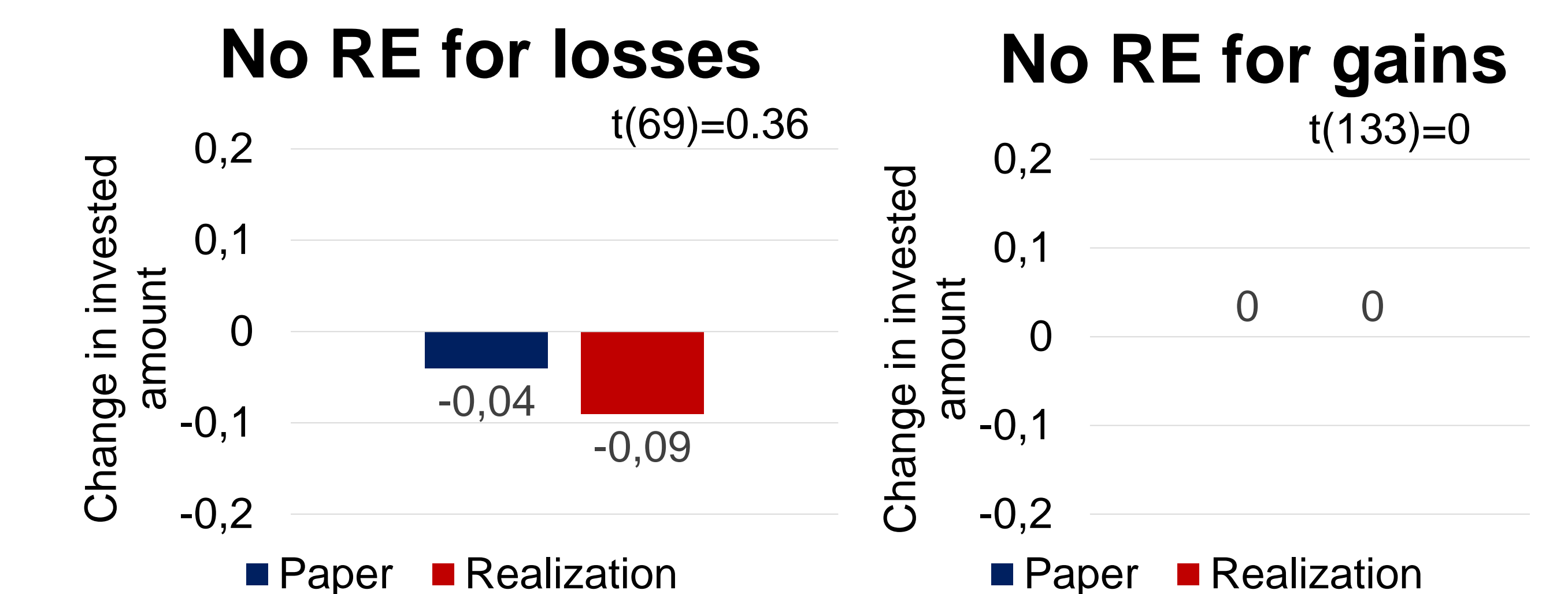
Experiment 1 (N=203)



Experiment 2 (N=95)



Experiment 3 (N=209)



6. Discussion

- Realization matters in subsequent risk taking.
- RE is more generalizable:** After realized gains and losses risk aversion increases while it decreases after unrealized gains and losses.
 - Evidence for existing theory:** No RE for non-positively skewed lotteries.
 - RE is sensitive to the realization mechanism.**

References

- Barberis, N., 2012. A model of casino gambling. *Management Science* 58, 35-51.
- Barberis, N., Huang, M., Santos, T., 2001. Prospect theory and asset prices. *The Quarterly Journal of Economics* 116, 1-53.
- Barberis, N., Xiong, W., 2012. Realization utility. *Journal of Financial Economics* 104, 251-271.
- Imas, A., 2016. The realization effect: Risk-taking after realized versus paper losses. *American Economic Review* 106, 2086-2109.
- Ingersoll, J. E., Jin, L. J., 2013. Realization utility with reference-dependent preferences. *The Review of Financial Studies* 26, 723-767.
- Weber, M., Camerer, C., 1998. The disposition effect in securities trading: an experimental analysis. *Journal of Economic Behavior & Organization* 33, 167-184.