# Predictive Accuracy of Risk Perception Ratings for Investment Decisions

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## Background

- *Traditional* Risk-Return Model[1]. $WTP(X) = V(X) - \beta_{VAR}VAR(X)$
- *Psychological* Risk-Return Model[2]. $WTP(X) = V(X) - \beta_R R(X)$
- Evidence suggests that the psychological model outperforms the traditional model. [2]
- Perceived risk is poorly correlated with variance. Probability of incurring a loss is a stronger driver of risk perception.[3]
- Limited assessment of the predictive accuracy of subjective versus objective measures of risk for investment decisions

*WTP(X) = willingness to pay for option X; V(X) = expected value of option X ; VAR(X) = variance of option X; R(X) = perceived riskiness of option X; $\beta_{VAR}$ = risk attitude; $\beta_R$ = perceived risk attitude*

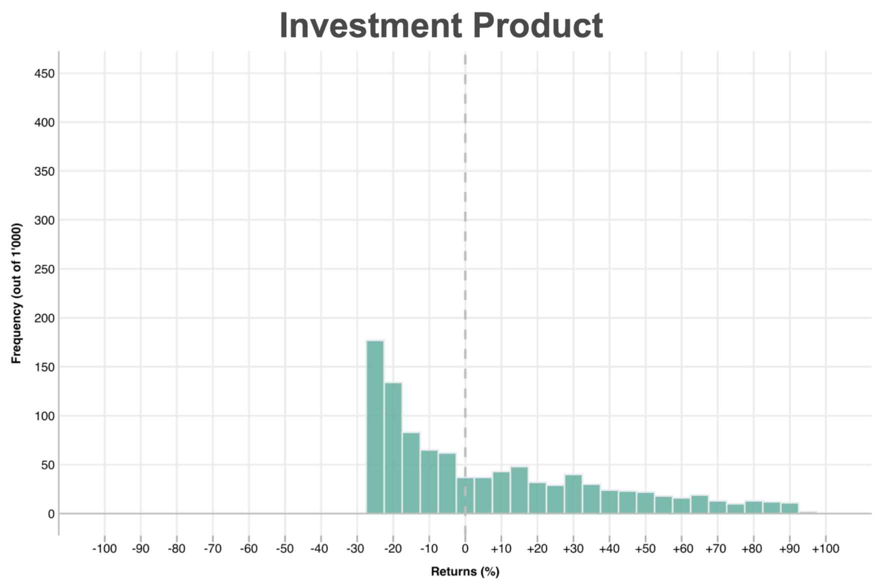
## Research Questions

1. **Which objective risk measure best explains risk judgements?**
2. **How well do subjective risk measures predict investment decisions in comparison to objective risk measures?**

## Methods *(pilot study)*

**Participants.** 33 participants (M= 23.1 (±2.8) y.o. 75% female)

**Stimuli.** 25 Investment products:
25 return distributions (5 levels of skew x 5 levels of VAR)

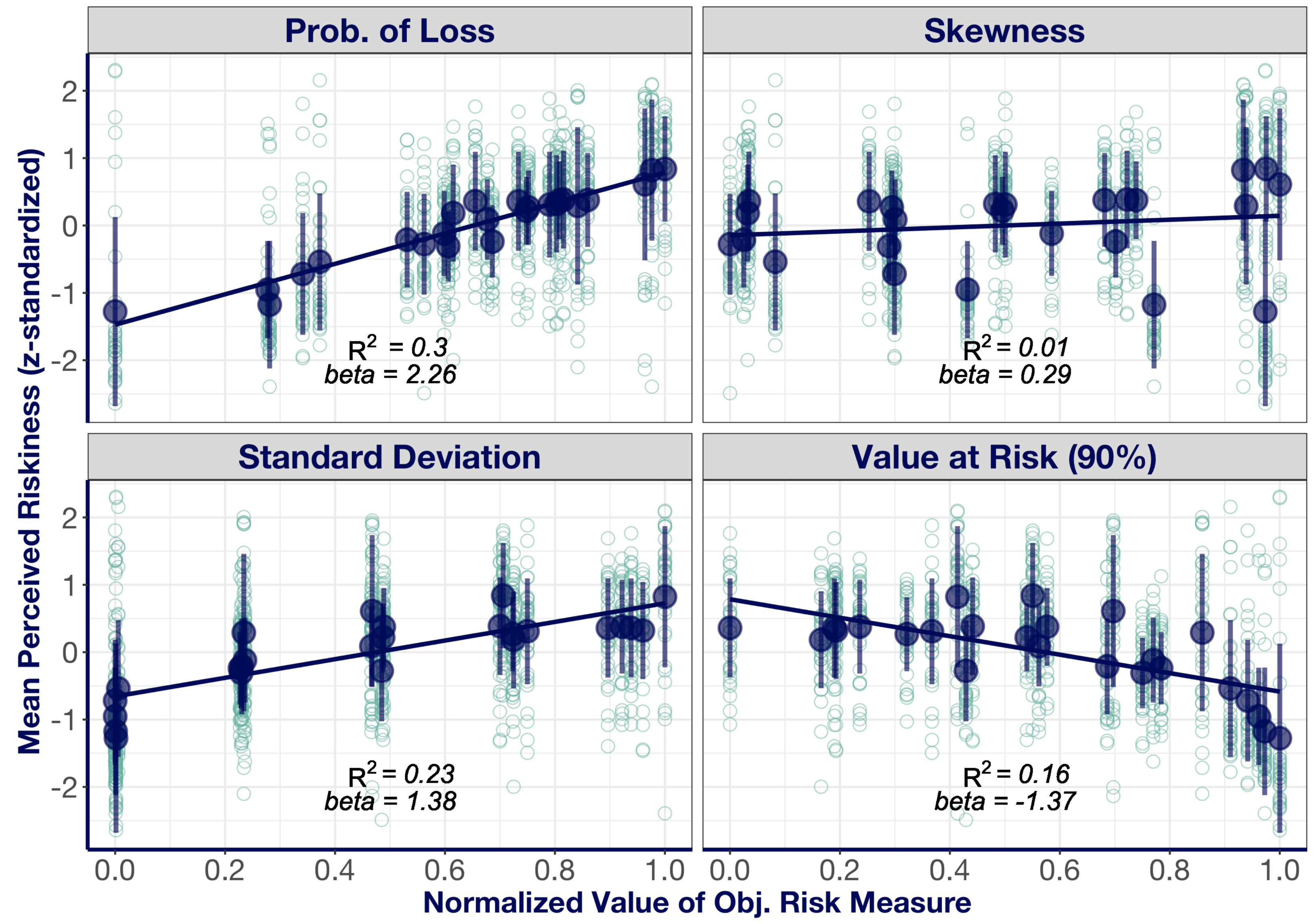



**Task.** Three separate blocks of trials:
- Block A. Rate riskiness of the investment products
- Block B. Rate attractiveness of the investment products
- Block C. Decide how much money to allocate in an investment product

*Order of blocks A and B were counterbalanced between participants*

## Results

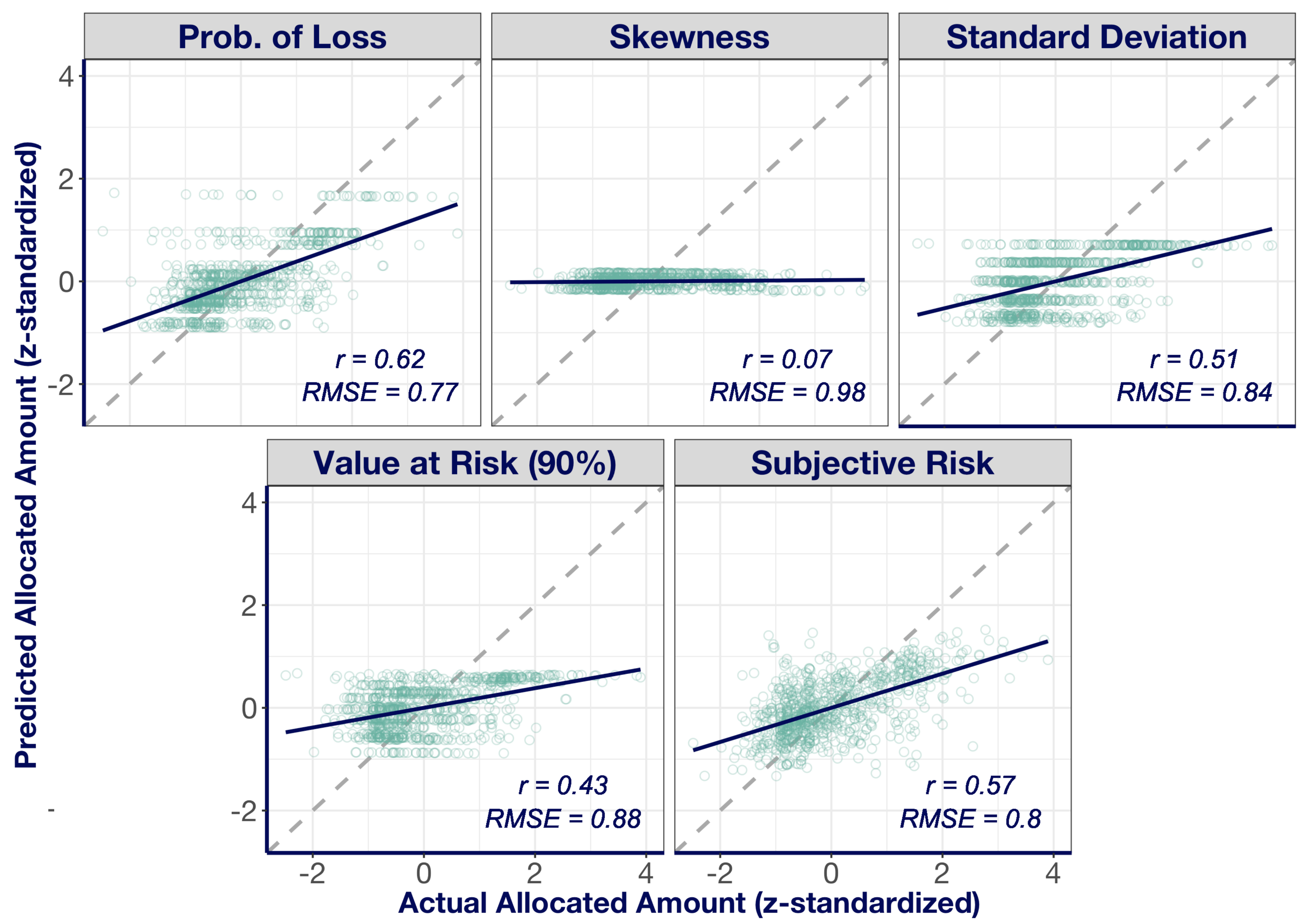
**Perceived Riskiness & Objective Measures of Risk**
*Regressions of Perceived Risk Ratings on Different Distribution Characteristics*




Line = Line of best fit. Small dot = One rating. Large dot = Mean(±SD) rating. Data from 33 subjects (825 ratings).

**Main Result 1.** The probability of incurring a loss explains most variance in perceived risk judgements.

**Actual vs. Predicted Investment Decisions**
*Leave-One-Out Cross-Validation Procedure*




Line = Line of best fit. Small dot = Actual/Predicted investment. Data from 33 subjects (825 allocations)

**Main Result 2.** The probability of incurring loss was a better predictor of investment allocations than perceived risk ratings.

## Discussion

- Consistent with recent findings [3], probability of incurring a loss seems to be a key driver of financial risk perception and investment allocations.

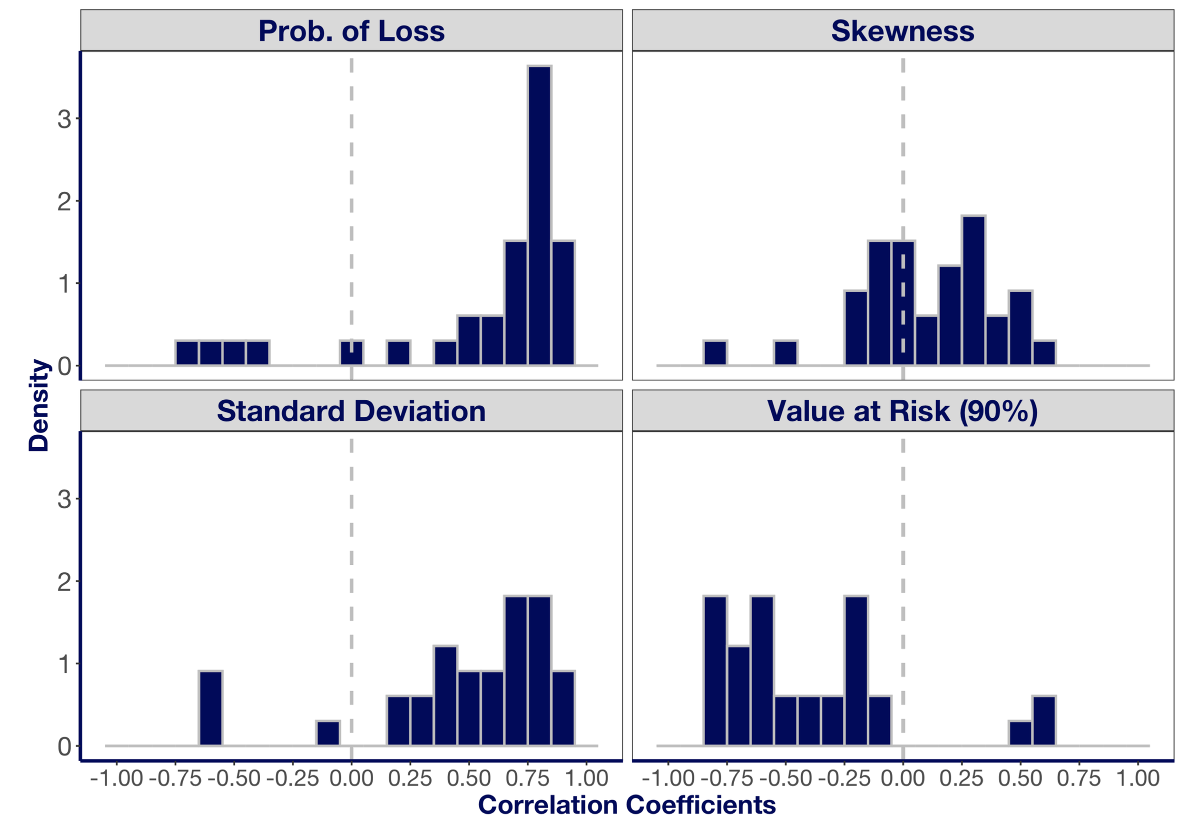
- Subjective risk perception seems to be a relatively good predictor of investment decisions.

## Future Directions

**How to improve the prediction of investment decisions?**

**Individual differences.** Not every individual rates risk or makes allocation decisions based on the same criteria.

**Correlations Between Risk Ratings and Objective Risk Measures**
*Individual Data: Distribution of Correlation Coefficients*




Data from 33 subjects

**Reliability.** Are individuals' risk judgements and investment allocations consistent overtime?

**Would you like to know more or have any questions?**
**https://meet.google.com/kns-yjks-oyf**

## References

[1] Markowitz, H. (1952). Portfolio selection. *The Journal of Finance*, 7,77-91.
[2] Weber, E. U., & Hsee, C. (1998). Cross-Cultural Differences in Risk Perception, but Cross-Cultural Similarities in Attitudes Towards Perceived Risk. *Management Science, 44*(9), 1205-1217.
[3] Holzmeister, F., Huber, J., Kirchler, M., Lindner, F., Weitzel, U., & Zeisberger, S. (2020b). What Drives Risk Perception? A Global Survey with Financial Professionals and Laypeople. *Management Science. 66(9)*, 3977-4002.

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