School of Business & Economics
Research Area: Neuroeconomics

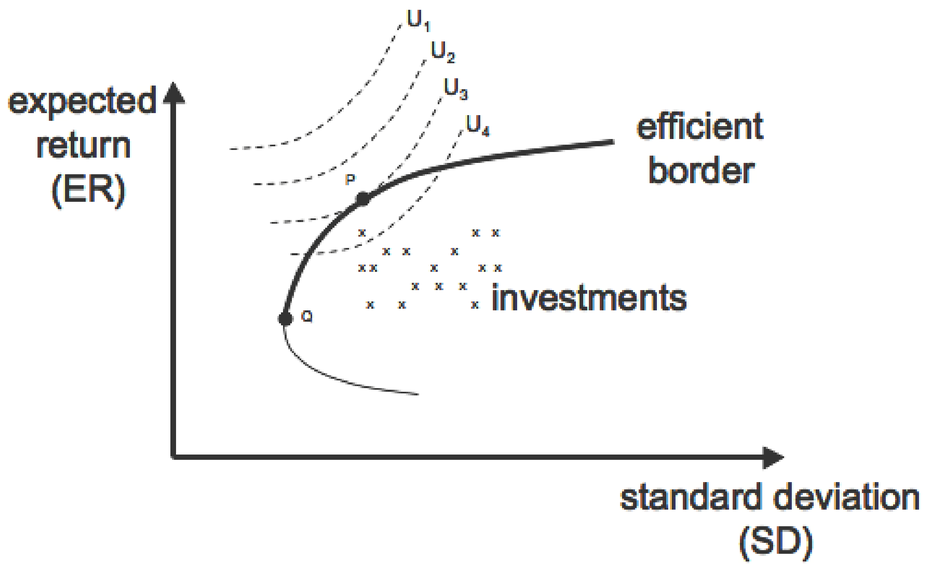
Freie Universität Berlin

Underdiversification in Portfolio Decisions

Do individuals recognize that one can reduce the risk of investments by combining them?

Background

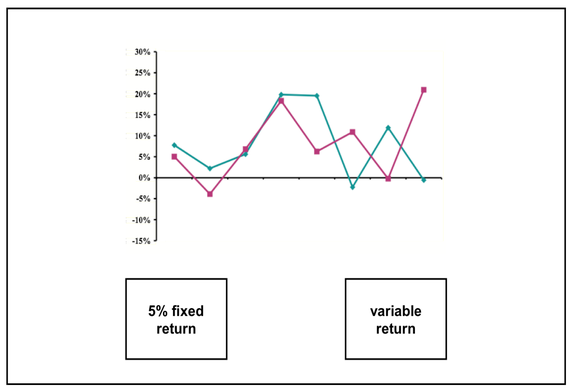
Portfolio Theory



- Trade off between (expected) return and standard deviation (risk)
- Diversification: Reduction of risk through a combination of investments
- Diversification depends on correlation between returns of single investments

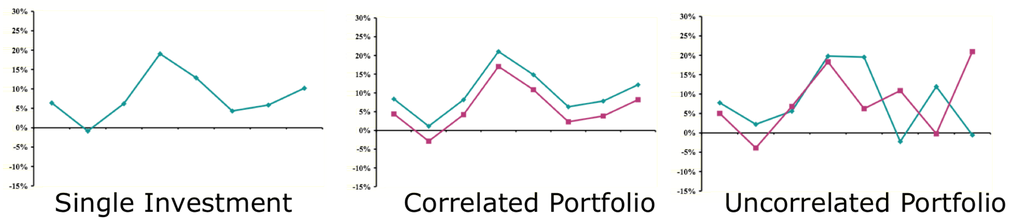
Experiment

Risk Perception and Investment Decision (RPID) Task



- Choices between a safe investment with 5% fixed return and a risky investment with variable returns (represented by a chart of past returns)

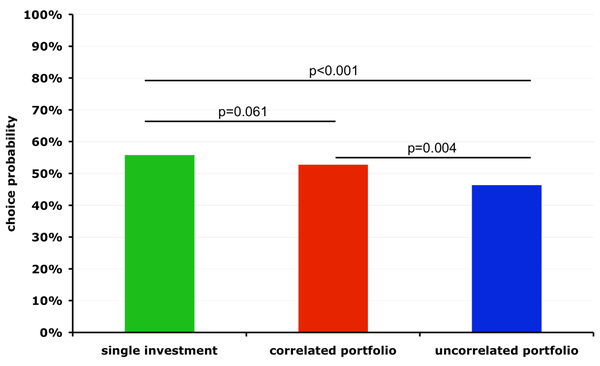
Conditions



- All three conditions result in the exact same (portfolio) returns

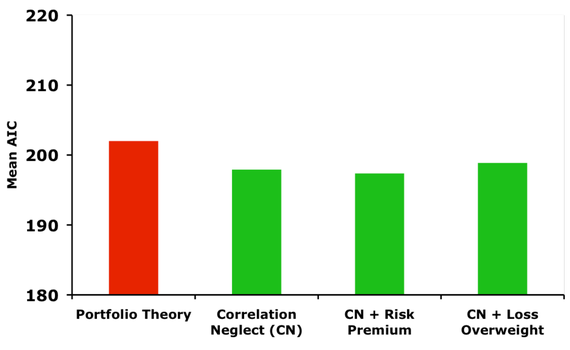
Behavioral Results

Choice Frequencies



- The uncorrelated portfolio was chosen less often compared to the correlated portfolio and the single investment

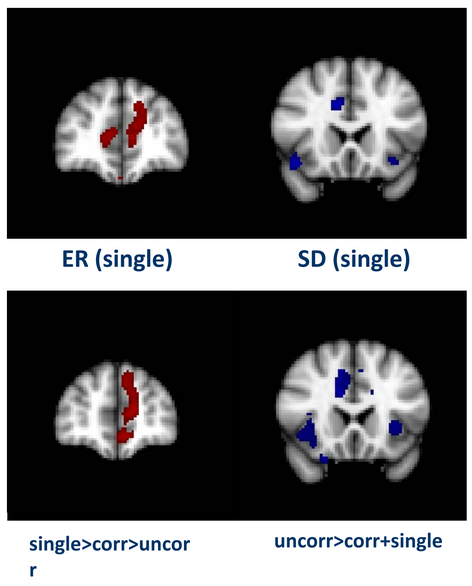
Model Comparison



- 3 models perform nearly equally well
- Neural data as tie breaker

Neural Results / Conclusion

Neural Results



- Expected retrun (ER) and standard deviation (SD) correlate with brain activity in the value- and risk network during decisions about single investments
- Comparison of different conditions (single, corr, uncorr) results in neural differences in both the value- and the risk network which is in line with the CN+Loss Overweight model

Conclusion

Behavioral and neural findings can be explained by a risk-return model assuming an neglect of the correlation between returns and an overweighting of losses.

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