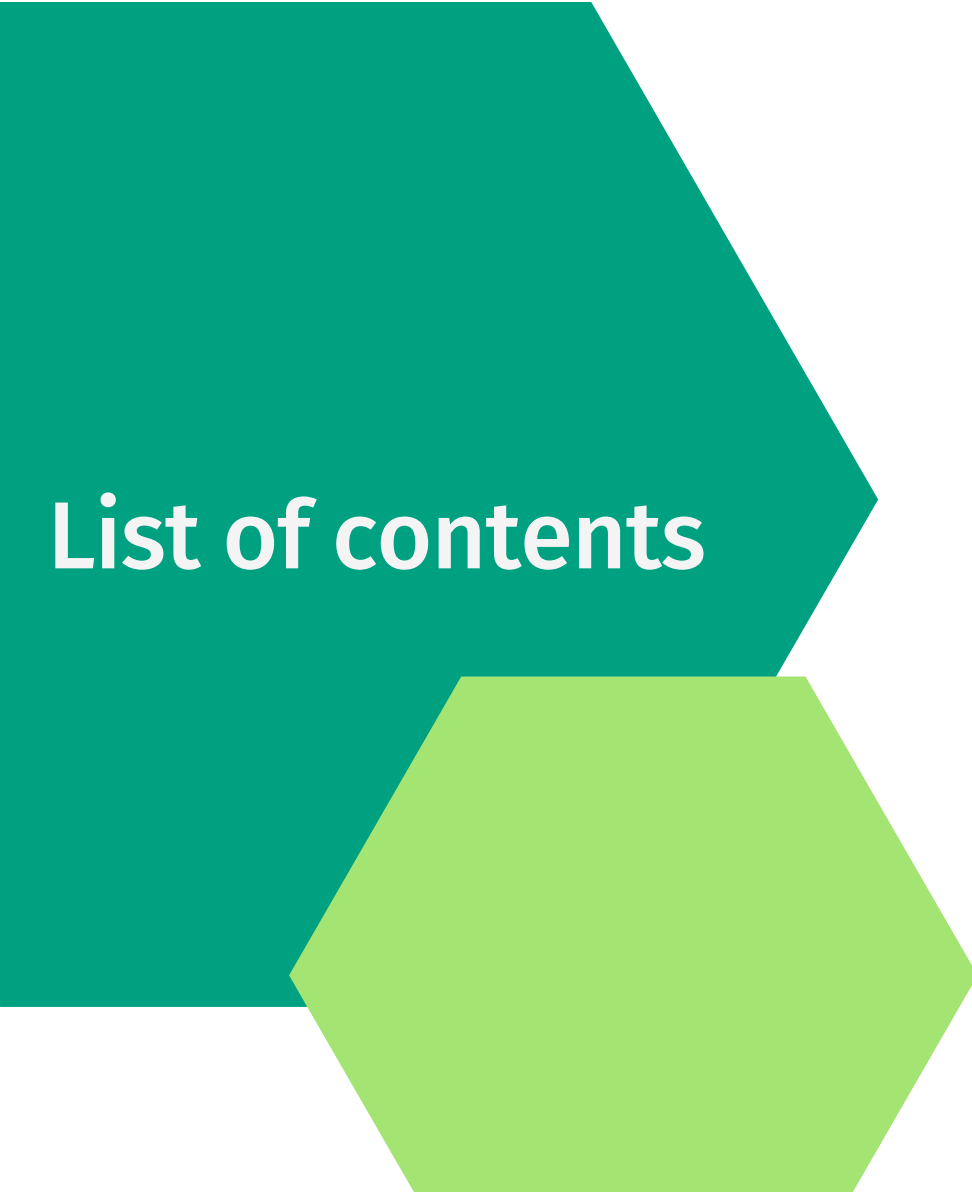


Prospect theory and stock market anomalies

Barberis, Nicholas, Lawrence J. Jin, and Baolian Wang. 2021.



Presentation by Sam
Niesten and Cas van
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Introduction

Writers

- Nicholas C. Barberis, Lawrence J. Jin, and Baolian Wang
- May 2020, Revised January 2021

The Paper

- Prospect theory
- 23 Stock market anomalies

Our interest

- Investing in the stock market
- People's behavior

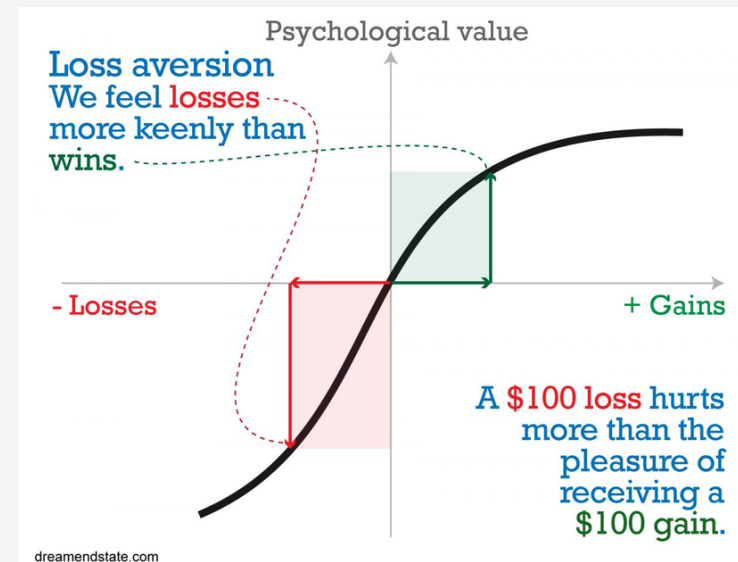


Prospect theory

- Kahneman and Tversky (1992)
- Different psychological value of gains and losses
- Concave over gains, convex over losses

Narrow framing

- Traditional models think individuals integrate all their risks
- Barberis, Huang and Thaler (2006)
- Separate risks from each other



Model and Equilibrium structure

Model Setup

- Three dates, $t = -1, 0$ and 1
- Focus on investor decision making at time 0
- R_f is the risk-free asset with gross per-period return
- R_i is the gross per-period return of risky asset

$$\begin{aligned} & \max_{\Theta_1, \dots, \Theta_N} E(\tilde{W}_1) - \frac{\gamma}{2} \text{Var}(\tilde{W}_1) + b_0 \sum_{i=1}^N V(\tilde{G}_i) \\ &= \max_{\Theta_1, \dots, \Theta_N} W_0((1 - 1'\Theta)R_f + \Theta'\bar{R}) - \frac{\gamma}{2} W_0^2 \Theta' \Sigma \Theta + b_0 \sum_{i=1}^N V(\tilde{G}_i), \end{aligned}$$

where

$$\tilde{G}_i = W_0 \Theta_i (\tilde{R}_i - R_f) + W_{-1} \Theta_{i,-1} g_i.$$

Model and Equilibrium structure

Full rationality with homogeneous holdings

- Investors are identical in their preferences, wealth, their prior gain or loss in each risky asset
- Used in expected utility models with identical investors
- Not useful for this paper

Full rationality with heterogeneous holdings

- This is a reaction on the one above
- There are too many locations to pay attention for
- Need to solve the N-dimensional optimization



Model and Equilibrium structure

Bounded rationality with heterogeneous holdings

- Mild bounded-rationality assumption
- Real life investor portfolio will be less diversified than the market portfolio from this theory
- This is the best option and will be used

$$\begin{aligned} & \theta_i(\mu_i + \frac{\nu\zeta_i}{\nu-2} - R_f) - \frac{\hat{\gamma}}{2}(\theta_i^2\sigma_i^2 + 2\theta_i(\beta_i\sigma_M^2 - \theta_{M,i}\sigma_i^2)) \\ & - \lambda\hat{b}_0 \int_{-\infty}^{R_f - \theta_{i,-1}g_i/\theta_i} (\theta_i(R_f - R_i) - \theta_{i,-1}g_i)^\alpha dw(P(R_i)) \\ & - \hat{b}_0 \int_{R_f - \theta_{i,-1}g_i/\theta_i}^{\infty} (\theta_i(R_i - R_f) + \theta_{i,-1}g_i)^\alpha dw(1 - P(R_i)), \end{aligned}$$

where

$$\begin{aligned} \hat{\gamma} &= \gamma W_0 \Theta_{M,R} \\ \hat{b}_0 &= b_0 W_0^{\alpha-1} \Theta_{M,R}^{\alpha-1}, \end{aligned}$$

Parameters of the research

- Economy with 1000 stocks
- 23 anomalies
- 3 characteristics: volatility, skewness, and gain overhang

Results

- Investors use a limited framing strategy
- prospect theory is useful for comprehending stock market anomalies
- Prospect theory may indeed explain the momentum anomaly
- Time Variation of Alphas and the Effects of Interaction

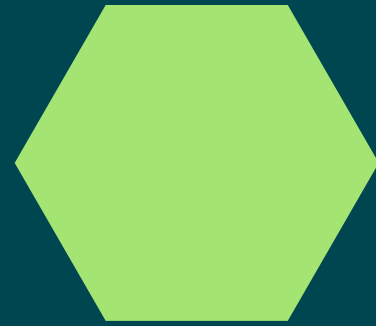


Real-World Investors and Prospect Theory

preferences can have a
substantial influence
on asset prices.

Even if investors give
prospect theory only a little
weight when making
decisions, the impact on asset
values might be significant.

Conclusion



- Prospect theory, a powerful model of risk attitudes, has the ability to illuminate investor behavior
- This paper provides a solution to that query, demonstrating in particular how prospect theory may be used to explain the bulk of 23 notable stock market abnormalities.
- The study adds to the expanding body of research demonstrating the value of prospect theory for considering a variety of financial data.

Thank you for listening!

Prospect theory and stock market anomalies



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