# DO GROUPS MAKE WISE DECISIONS?

Daniel Evans – University of Bonn
Georg Schneider – University of Bonn

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# Motivation

- Hiring committees, mutual funds, etc. make decisions jointly
- Joint decision-making comes with **benefits** but also **risks:**
  - *Benefits*: diverse inputs, deliberation, weighing best inputs
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$\Rightarrow$ Joint and individual decision-making differ in **several respects at once**

$\Rightarrow$ Which features of joint decision-making **enhance decision quality**, and which **harm it**?

# Distinct features of joint decision-making

**Joint decision:** a shared decision made by a group after discussion

1. **Composition**

2. **Communication**

3. **Collaborative aggregation**

# Distinct features of joint decision-making

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1. **Composition**
   - Number and mix of people making a decision (+ inputs they bring)
2. **Communication**
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   - Agreeing on joint decision rather than aggregating separate judgments

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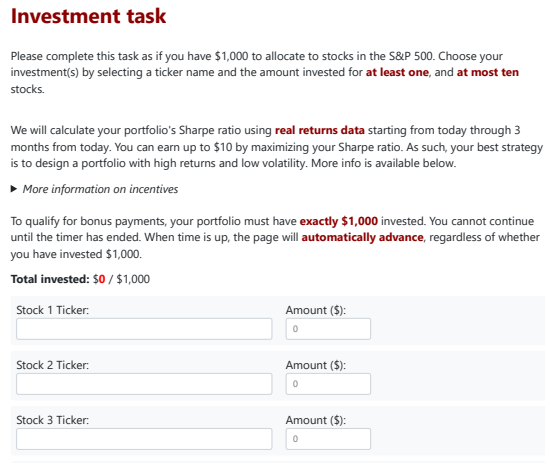
$\Rightarrow$ Need **comparable decisions** & **exogenous variation** in each feature

$\Rightarrow$ Experiment to estimate the **separate contribution** of each one

# Design

# Main task: portfolio allocation

- Hypothetical $1,000 to invest
  - Searchable list of S&P 500 stocks
- Maximize the **Sharpe ratio**
  - Increase returns, reduce risk
  - Bonus up to $10 based on Sharpe
- Randomly assigned **decision mode**



# Decision mode visualization

| INDIVIDUALS | CROWDS | PANELS | TEAMS |
|---|---|---|---|
|  |  |  |  |
| Own portfolio | **Pooled portfolio** | Pooled portfolio | **Joint portfolio** |
| Up to 10 stocks | **Up to 20 stocks** | Up to 20 stocks | Up to 20 stocks |
| No communication | No communication | **Communication** | Communication |
| 128 individuals | 64 pairs | 64 pairs | 66 pairs |

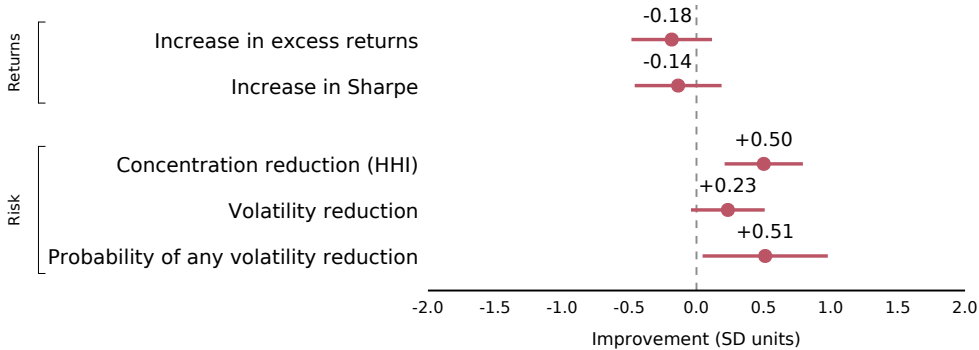
# Portfolio aggregation

- *Crowd* and *Panel* aggregation via portfolio **pooling**
  - Each partner submits a separate portfolio, e.g.:
    - Partner A: $1,000 in Stock A, Partner B: $1,000 in Stock B
    - Pooled portfolio: $500 in Stock A, $500 in Stock B
  - Used to estimate **compositional effects**
- *Teams* aggregate **collaboratively**
  - Shared portfolio input fields, both teammates must agree
  - Not restricted to 50-50 allocation

# Results

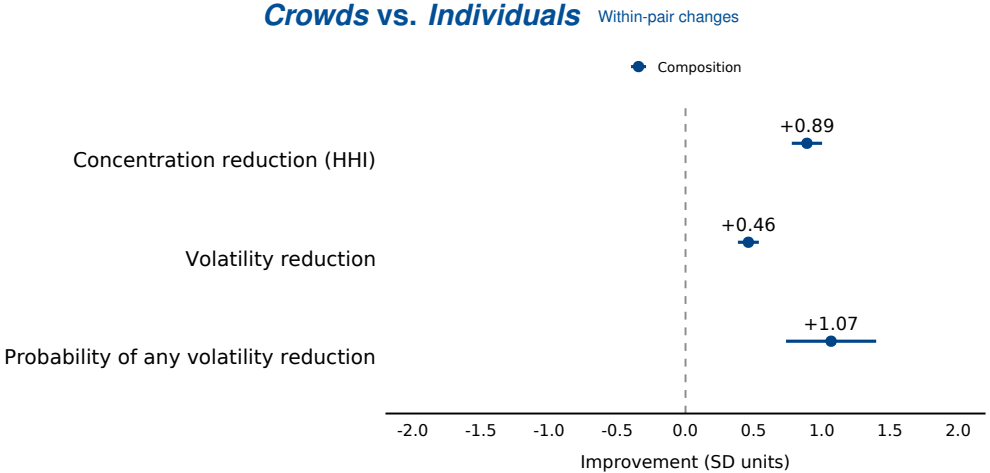
# *Teams* outperform *Individuals* on portfolio risk

***Teams* vs. *Individuals***, controlling for baseline performance Within-pair changes




- But **which features** of joint decision-making explain effects on portfolio risk?

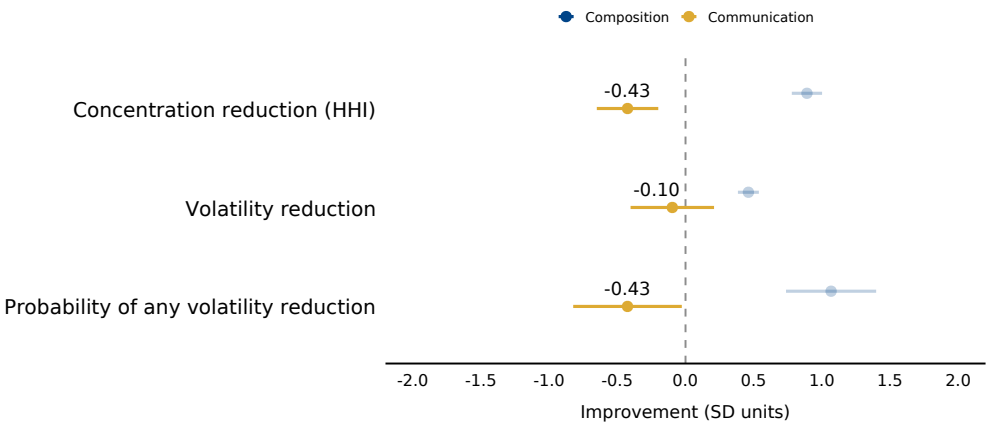
# Strong reductions in risk from combining inputs




- Compositional effects **exceed total effect** of joint decision-making

# Communication undermines diversification

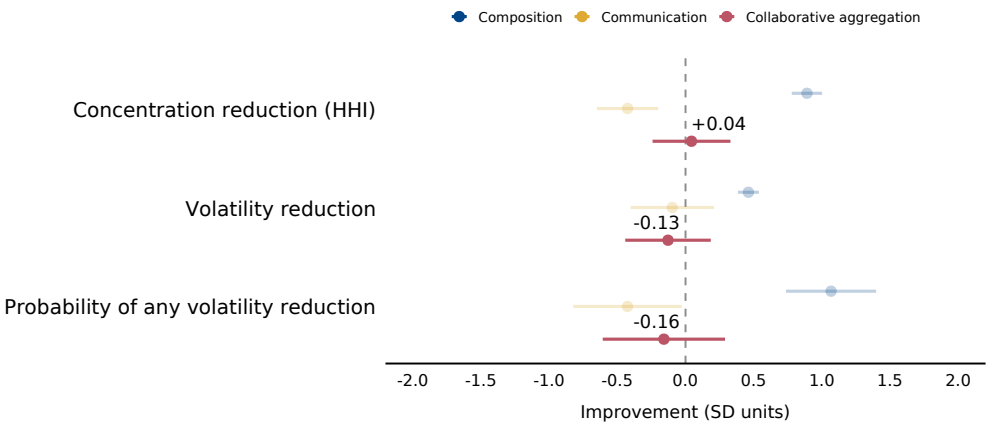
***Panels* vs. *Crowds***, controlling for baseline performance Within-pair changes




- Communication **attenuates the gains** from combining inputs

# No average effect of collaborative aggregation

***Teams* vs. *Panels***, controlling for baseline performance Within-pair changes




- **Small** and **inconsistent** effects on portfolio risk

# Mechanisms & Heterogeneity

# Understanding our results

## Mechanisms

- Why does pooling inputs reduce portfolio risk?
  - Diversification & lower exposure to idiosyncratic asset risk
  - Analogous to **wisdom-of-crowd** effects observed in prior tasks

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# Understanding our results

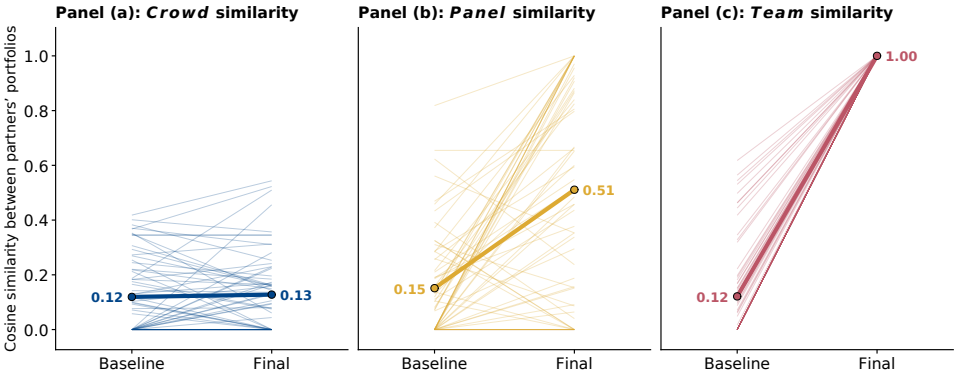
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## Heterogeneity

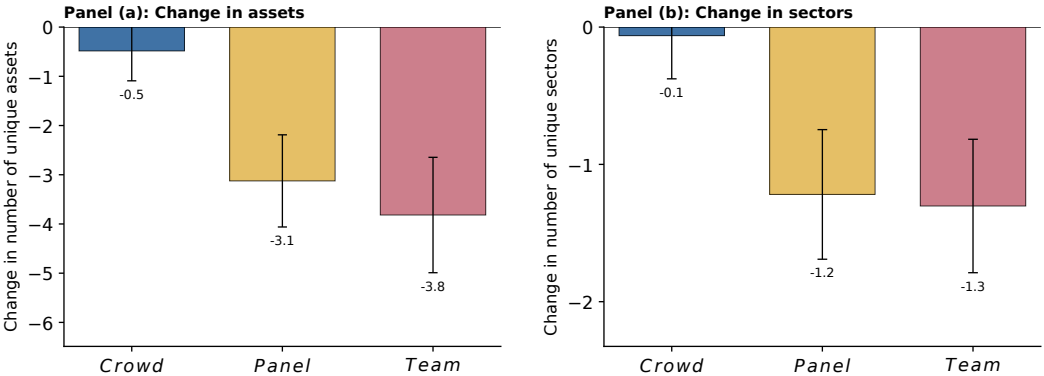
- Do these effects depend on **who is paired** together?
- **Cognitive diversity**, e.g. within-pair differences in beliefs, may matter

# Communication makes portfolios more similar



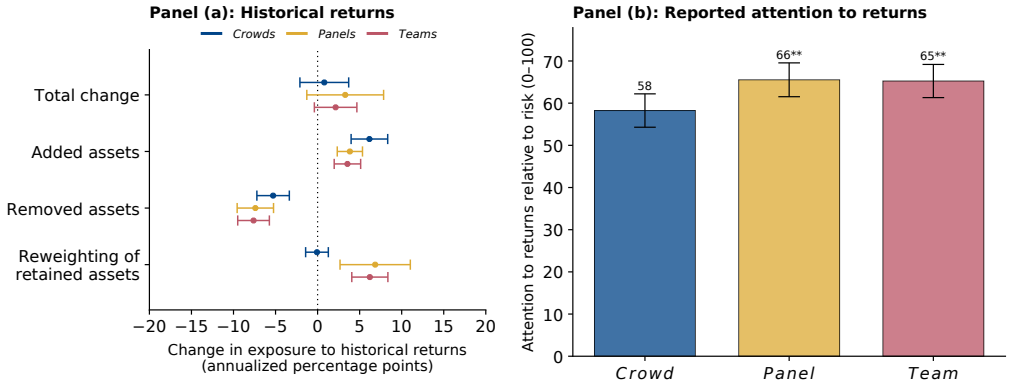

- *Panel* member submissions **converge** despite making **separate decisions**

# Communication reduces portfolio breadth




- *Panels* & *Teams* **drop unique assets & sectors** held in baseline portfolios

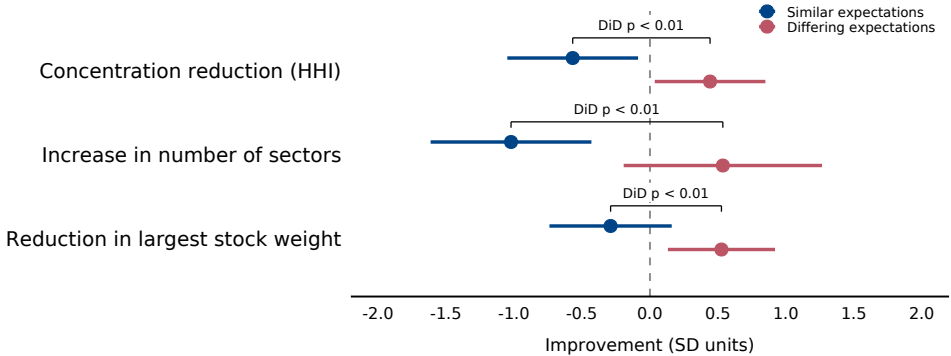
# Communication shifts focus to returns




- *Panels* **double down** on stocks with high historical returns held at baseline
- Higher reported **focus on returns** in communicating modes (both $p < 0.05$)

# Aggregation effects by belief diversity

***Teams* vs. *Panels***, controlling for baseline performance Within-pair changes




- Collaborative aggregation improves diversification for **belief-diverse** pairs

# Alternative explanations

## Are these results:

1. An inevitable consequence of our design? **No**

- Subjects know that diversification is a good strategy Evidence
- Pooling aids diversification & is easy for *Teams* to reproduce
- *Teams* have larger toolkit: communication and collaborative aggregation

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   - Human and LLM portfolios differ systematically Stock choice Breadth

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2. Driven by copying of LLM portfolios? **No**
   - Human and LLM portfolios differ systematically Stock choice Breadth
3. Dependent on the evaluation window? **No**
   - Strongest effects in window-invariant measures, e.g. concentration
   - Similar results in alternative evaluation window Evidence

# Takeaways

- *Crowds*, not *Teams*, perform best on portfolio risk
- *Panel* & *Team* underperformance driven mostly by **communication**
  - Attenuates gains from pooling
  - Shifts focus to returns, but fails to increase them
- Collaborative aggregation can help when groups hold **differing expectations**

# Takeaways

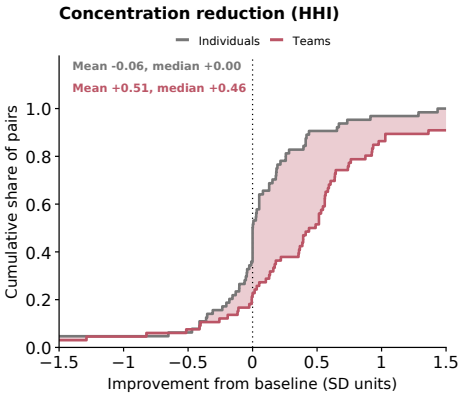
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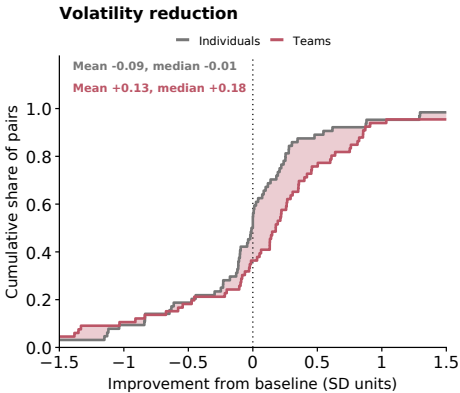
$\Rightarrow$ Decomposition reveals **offsetting effects** that naive comparisons would miss

$\Rightarrow$ **Groups with access to diverse inputs may not fully utilize them**

# Appendix

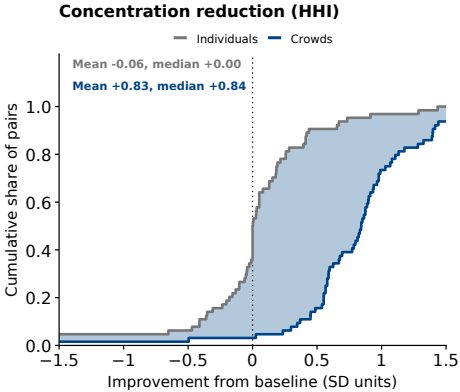
# Within-pair changes: *Teams* and *Individuals*

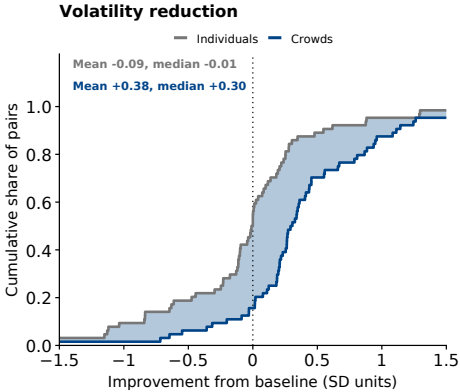



◂ Back to coefficients

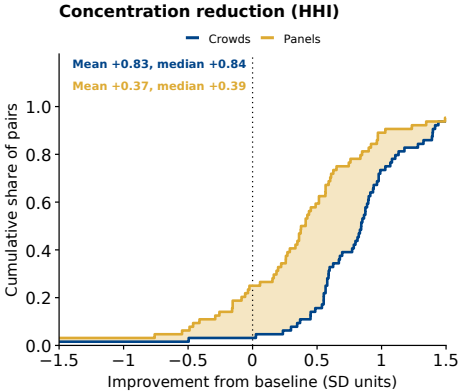
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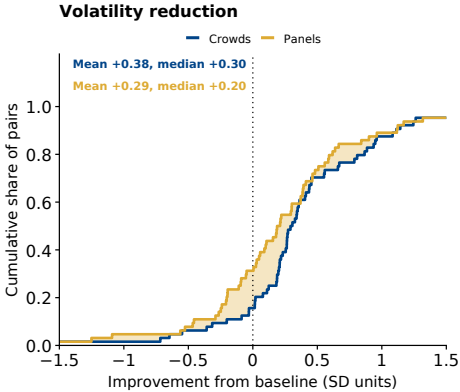



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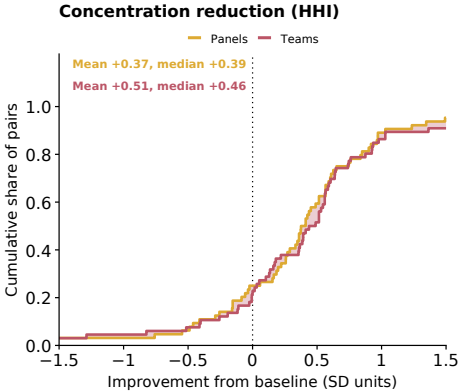
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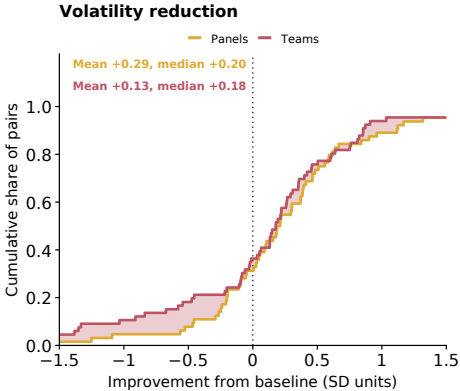



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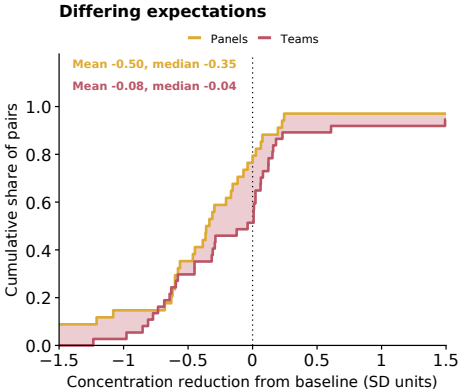
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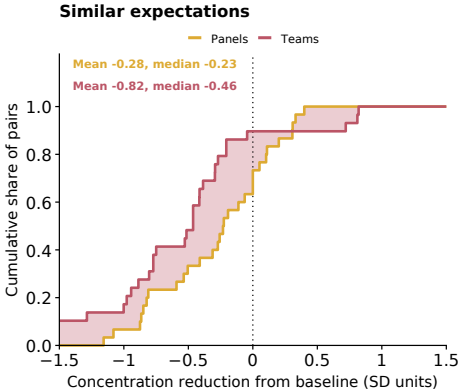



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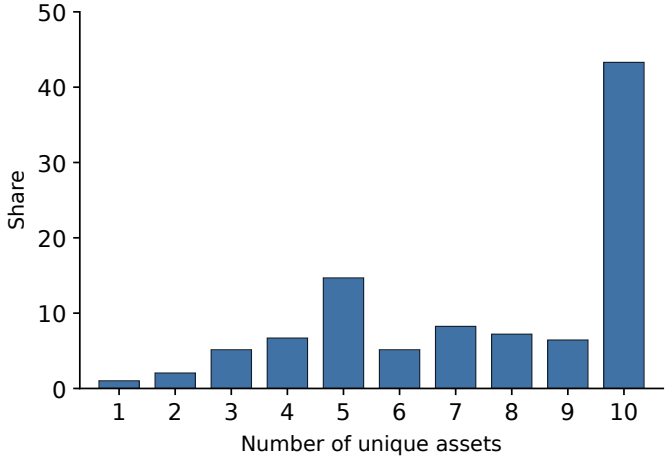
# Within-pair changes by expectations




◂ Back to coefficients

# *Individuals* spread across assets

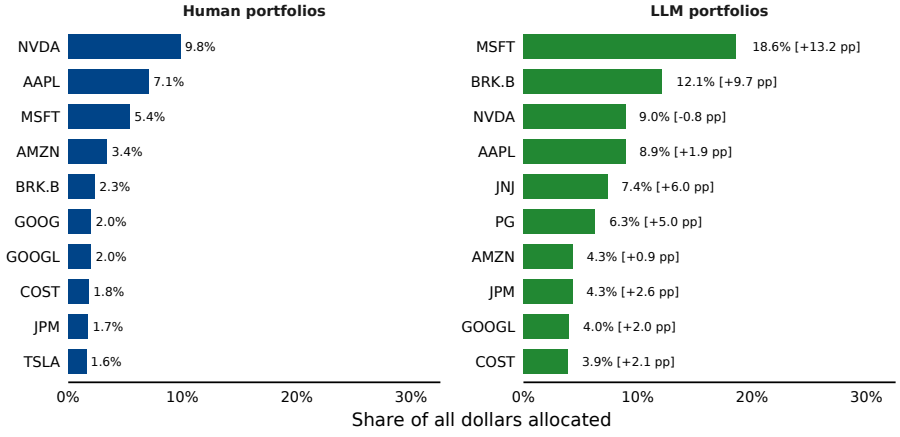



- Mean **7.6** unique assets
- **43%** allocate the maximum of 10

⇒ Attempts to **diversify** in line with incentives

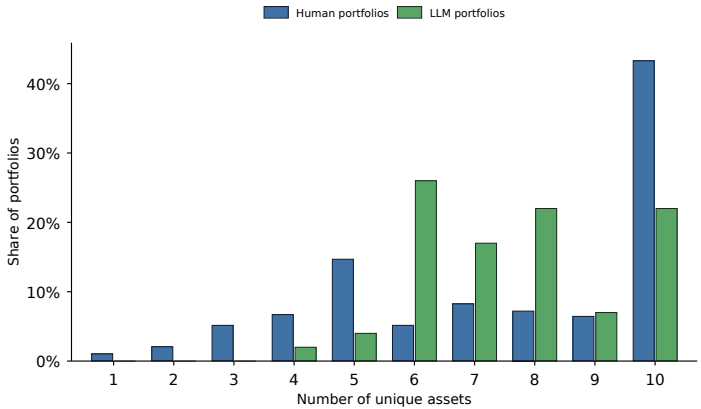
◂ Alternative explanations

# Human and LLM stock choices



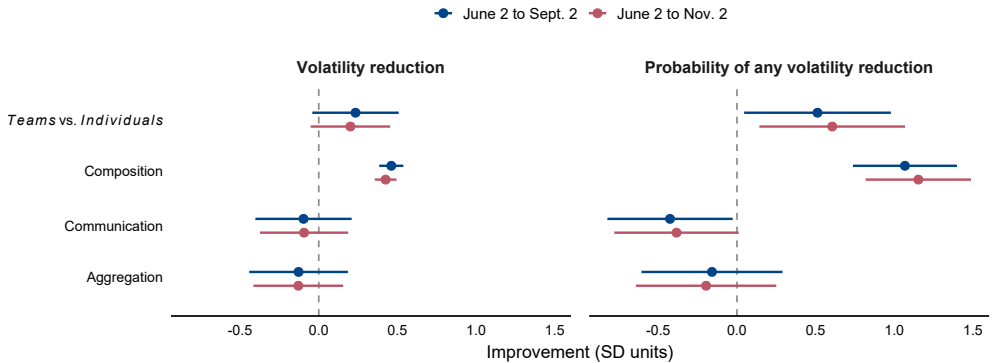

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# Human and LLM portfolio breadth




◂ Alternative explanations

# Alternative evaluation window




◂ Alternative explanations