Prediction Markets: Does Money Matter
Pros and Cons of Play Money

Pros:
- Easy to operate
- No legal hassle
- Perhaps easier to attract traders (particularly in company forecasts)

Cons:
- Speculated to be less accurate
Background Overview

• Real Money vs. Play Money

• Examples of Play Money Markets:
  - Hollywood Stock Exchange
  - NewsFutures' World News Exchange
  - Foresight Exchange

• Examples of Real Money Markets:
  - Iowa Electronic Market
  - Tradesports
Experimental Design Background

- Tradesports vs. NewsFutures Sports Exchange
- 208 NFL games
- Roughly 100 traders per game
- Results of both exchanges were compared
Results

![Graph showing correlation between trading price and observed frequency of victory. The graph includes two datasets: TradeSports with a correlation of 0.96 and NewsFutures with a correlation of 0.94.](image-url)
### Results: Prediction Accuracy

#### Table 1. Assessing the relative prediction accuracy of real-money markets, play-money markets, and opinion averages

<table>
<thead>
<tr>
<th></th>
<th>ProbabilityFootball Avg</th>
<th>TradeSports (real-money)</th>
<th>NewsFutures (play-money)</th>
<th>Difference TS - NF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Absolute Error = $\text{lose}_\text{price}$ (lower is better)</td>
<td>0.443 (0.012)</td>
<td>0.439 (0.011)</td>
<td>0.436 (0.012)</td>
<td>0.003 (0.016)</td>
</tr>
<tr>
<td>Root Mean Squared Error = $\sqrt{\text{Average}(\text{lose}_\text{price}^2)}$ (lower is better)</td>
<td>0.476 (0.025)</td>
<td>0.468 (0.023)</td>
<td>0.467 (0.024)</td>
<td>0.001 (0.033)</td>
</tr>
<tr>
<td>Average Quadratic Score = $100 - 400 \times (\text{lose}_\text{price}^2)$ (higher is better)</td>
<td>9.323 (4.75)</td>
<td>12.410 (4.37)</td>
<td>12.427 (4.57)</td>
<td>-0.017 (6.32)</td>
</tr>
<tr>
<td>Average Logarithmic Score = $\text{Log}(\text{win}_\text{price})$ (higher (less negative) is better)</td>
<td>-0.649 (0.027)</td>
<td>-0.631 (0.024)</td>
<td>-0.631 (0.025)</td>
<td>0.000 (0.035)</td>
</tr>
</tbody>
</table>
Results: Possibility for Arbitrage

- Trade in one market based on the current value in the other
- NewsFutures → TradeSports: 4.8% Return Rate
- TradeSports → NewsFutures: 8.0% Return Rate
- Both are positive suggesting somewhere in the middle is best
Results: Linear Regression

- Fitted Value: Linear regression
- 45 degree line

n=416 over 208 NFL games.
Correlation between TradeSports and NewsFutures prices = 0.97
Results: Comparison to Individuals

- Predictive Performance of each market was compared against 1947 individual “experts” on ProbabilityFootball
  - Newsfutures Rank: 6th
  - TradeSports Rank: 8th
Experimental Limitations

- People self-select to be in the real- or play-money market
- In a domain with less intrinsic interest you might see more accuracy from real money
- Substantial information regarding the subject is available to the general public
Discussion Questions

• Are there any differences in incentives between a real-money market and a play-money market? Does the fact that only the highest-winners receive anything make all players more risky?

• What other limitations might make us question the conclusions drawn? Are NFL games representative of the type of interest that could be garnered in other areas?