Prediction Markets

Background Presentation
Market Supply and Demand
Futures Markets

- The “good” being traded is a contract for future delivery of an actual good.
- Example: January oil costs $45.74 / barrel today.
- Side effect: information about future events.
Efficient Market Hypothesis

- Markets incorporate all information “instantly.”
- Idea: if you know the price is wrong, you will trade and make a profit.
- Consequence: you can’t beat the market without special information.

- Aside: EMH $\Leftrightarrow$ $P = NP$ ??
Prediction Markets

- Goal: predict future events.
- Take advantage of information aggregation in efficient markets.
- The “good” is a bet on whether a future event will happen.
- The point of the market is what’s usually a side effect: learning the price.
Prediction Markets: Details

- Buy and sell a “security” that pays $1 if <Hillary is elected in 2016>.
  - Buying is betting for the outcome.
  - Selling is betting against the outcome.
- If you believe the probability is 52% and the price is $.46, you should buy:
  \[ EV = 0.52 \times 1 + 0.48 \times 0 - 0.46 = 0.06 \]
- When you buy, the price rises, when you sell, it falls.
- The price reflects the average belief of market participants.
Terminology

**Arbitrage**: Buying and selling multiple related commodities for guaranteed profit.

For example, if <Democrats win in 2016> costs $.48 and <Republicans win in 2016> costs $.47, you can buy both and make $.05 profit.

**Short selling**: selling a good you don’t have (and promising to acquire it later).

In prediction markets, selling is equivalent to betting against the outcome, and we want anyone with new information to be able to sell, so shorting is allowed.

In commodities markets, shorting can be problematic and is often regulated.
**Terminology**

**Options:** contracts that let you make a future trade at a fixed price.

If you’re uncertain about future prices, it may be worth it to pay for a contract that locks in today’s price.

In prediction markets, option prices can give information about variance.

**Hedging:** buying or selling commodities as a form of insurance.

If traders use prediction markets for hedging, the price may be distorted and not reflect aggregate beliefs.
Prior Research

- Iowa Electronic Markets (University of Iowa)
  - Runs several experimental prediction markets, mostly for political events.
  - Existed since 1995.
  - Excellent success rate in forecasting elections.

- Because this is a review article, the paper’s goal is to introduce prior research, so go read it...