Overview

- Work at CommerceNet related to PMs
  - Zocalo status report
  - Enhancing PM visibility on the Web (Prediction Markets & Web 2.0)

- Adding liquidity in existing prediction markets
Zocalo Proposal

Zocalo

Developing Open Source Prediction Market Software

Chris Hibbert

CommerceNet Labs
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Opportunity

- **My Objective:**
  - Promote broader use of Prediction Markets

- **One Key Obstacle:**
  - No common software platform for prediction markets yet.

- **Working at CommerceNet provides:**
  - More Visibility for my Views
  - More Collaboration possibilities
Software Development

- Support for Experiments
  - Instrument all Activity
  - Export Data in Useful Formats for Analysis
  - UI updates asynchronously
  - Flexible Support for UIs
Open source means you can freely download the source code, use it, modify it, build on it, sell it, whatever
An Experiment at GMU using Zocalo

• The question:
  • Do Manipulators effect the market price

• An innovation:
  • Forecasters interpret the price signal
Zocalo Screenshot: Forecaster's view

Shared Message
Some players are trying to change the apparent price

Your Earnings
20

Your Estimate
40

Estimate of actual price: Students
Zocalo Screenshot: Trader's view

Orders
- Bid/Ask Order
- Immediate Order

Cancel Orders
Click on an order to cancel it.

Your Information
- Your order
- The ticket value is not 188.
- Brand Message
- Some players are trying to raise the apparent price

Your Holdings
- Cash: 3
- Tickets: 2
- Earnings: 3
I've been working with economists at GMU on an experiment using Zocalo to study manipulation in markets.

This is a replay of one round of a session that we ran of our experiment in Fairfax, Virginia in early November.

I sped it up by a factor of 4.
Zocalo configurability

- Rounds in a session
  - Number of Rounds, duration, asset values
- Participants
  - Number, type (Trader, Manipulator, Forecaster)
  - Hints, Manipulation target
  - Reward structure
- Asset types
I’m working on the Medium term goals now.
Enhancing Prediction Market Visibility
Making Prediction Markets more Visible

- CommerceNet is working on UIs for Web 2.0
- Aggregating info to present in context
  - Like Pennock's GreaseMonkey script that inserts prices and a link to the Buzz Game when it sees relevant content
- Current PM **prices** would be valuable addition
- Success of Search Engines shows that making your information assets visible increases their value
- Current Prediction Markets aren’t very visible to Search Engines
Common Formats for PM Price Info

- Prediction Markets should publish data
  - Either microformats or RSS
- Some markets already provide access
  - Yahoo! Tech Buzz publishes RSS
  - Foresight Exchange has a telnet interface

1. Publish info so search engines find it.
2. Use common formats so information is reusable

- Let’s develop common formats!
Adding Liquidity in Multi-Outcome PMs
Missing A Bet

- Lack of liquidity is a problem
  - Wide spreads mean fewer trades
  - Traders are less willing to bet against things
  - Many (most?) traders are Price Takers

- Failing to display best possible prices means potential trades don’t happen
  - Arbitrage doesn’t address this problem

TradeSports offers a price incentive to encourage traders to list standing orders.

Price taking makes sense when you are worried about sudden price movements due to new information.
Price Taking is expensive, due to the wide spread on many of these markets.
Prediction Markets

- Pose a question, specify a judging date
- Securities pay $1 depending on outcome
- Bank sells pair when total bid reaches $1
- Allow people to buy and sell the security
- Price reflects Probability
Binary Outcome Market

Trading price for outcome: SENNUKE

The Republicans will nuke the Senate to confirm Aileo

Traders willing to SELL:
- greed
  - 17 contracts at $350
- preynstein
  - 17 contracts at $375
- traderId
  - 10 contracts at $320
- jammy
  - 5 contracts at $310

Traders willing to BUY:
- traderId
  - 10 contracts at $312
- goldenshrimp
  - 100 contracts at $311
- kapho
  - 45 contracts at $308
- goldenshrimp
  - 100 contracts at $308

Available Cash
- 180
Contracts
- 40
Holding Val.
- 600
Performance
- 17%
Gain
- 120
Transactions

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In order to bet against a proposition on TradeSports, you sell the asset short. Selling short is bizarre: you collect a payment, and then hold a liability. The similarity with the stock market is confusing. People are familiar with the terminology, but with stocks, people are (and should be) worried about short selling: the liability is unlimited. With defined payouts, selling short is an accounting practice that is nearly symmetric with buying.
This UI shows how you can present the information so all parties bet for a positive outcome.

The same trick works in n-way claims.
This seems to be 4 parallel double auctions, not 8!
Notice that the buy and sell prices are inverted for each pair of matched yes and no claims.

(I.e. 1.60 + 8.40 = 10.00 and 2.59 + 7.41 = 10.00)
Parallel Double Auctions for N-way claims

- Separate Double Auction in each outcome
  - Each Outcome has a separate bid/ask list

- Combined Auction
  - Allow offers to buy or sell each position (like now)
    - Short on A = Long on all but A
  - Sell a set when combined bids total $1.00
  - Sell Not-A when combined asks fall to $1.00
  - => increased liquidity

Most exchanges that support multi-outcome (exclusive) claims manage them as parallel Double Auctions
Parallel Double Auctions for N-way claims

- In an n-way market, bank sells a set when bids total $1.00.
- If bids total $1.00 - \( \varepsilon \), you can buy any coupon by improving the bid by \( \varepsilon \).
- When Asks fall to $1.00, buyers get the complementary coupons.
The bid prices already add up to $1. The offers should be accepted (17 shares worth)
Parallel Double Auctions for N-way claims

When the bid prices are within Epsilon (2.6 here) of $1, the asks can be improved whenever their respective spread is more than epsilon.

In this case, Tories and Other have large spreads, so the market can offer to sell “Tories” if anyone is willing to improve the price by 2.6 to 27.1.
The same effect can be seen on the sell side.

The asks are closer to $1 than some of the spreads, so the market should offer to sell FR-up for 98.9 (or FR-same for .9) if anyone is willing to improve on the existing sell offers.
A Graphical Version of the Argument

- In a combined market, bids on each good add liquidity for the others
A Graphical Version of the Argument

- In a combined market, bids on each good add liquidity for the others.

- When separated into distinct markets, each trade relies on a separate set of bets against.

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N-way Claims

- Manage as a Combined Market
- Display Best Available Price & Quantity
- One trade may involve N traders

→ More Trading from Same Participation
Conclusions

• One purpose of building Zocalo is to demonstrate this kind of improved interface

• Simple changes can make Prediction Markets more visible to Search Engines